GOVERNMENT OF KARNATAKA
DEPARTMENT OF TECHNICAL EDUCATION
Board of Technical Examinations, Bengaluru

Course Title	: **COMMUNICATION SKILLS IN ENGLISH**	Course Code	: **15CP01E**
Semester	: **I / II**	Course Group	: **Core**
Teaching Scheme (L:T:P)	: **4:0:0** (in hours)	Credits	: **4 Credits**
Type of course	: **Theory**	Total Contact Hours	: **52**
CIE	: **25 Marks**	SEE	: **100 Marks**

Pre-requisites:

- Basic Knowledge of Grammar
- Listening, Speaking, Reading and Writing Skills as acquired in Secondary Education

Course Objectives:

The students shall be able to:

- Learn to apply the basic grammar in day to day communication in English
- Comprehend the given ideas in a passage and be able to effectively express the same in written form
- Enrich their vocabulary through reading
- Face oral examinations and interviews
- Express their ideas creatively through (spoken/written) exercises

Course Delivery:

The Course will be delivered through lectures, class room interactions, exercises and case studies as detailed below:

Sl. No.	Description	Teaching contact hours
1.	Text	24
2.	Grammar	18
3.	Descriptive writing	5
4.	Comprehension	5
Total		**52**

Text book: Communication Skills in English for Polytechnics – by **ORIENT BLACKSWAN** publishers – published by NITTTR Chennai

Course Content:

UNIT I: CAREER PLANNING (09Hrs)

Glossary; Comprehension Exercises; Vocabulary Exercises – Spelling; Grammar- Parts of Speech; Newspaper Reading and Comprehension; Descriptive Writing – Describing Objects; Listening/ Speaking Exercise – Self Introduction.

UNIT-II: THE GREAT INDIAN PSYCHOTHERAPY (09Hrs)

Glossary; Comprehension Exercises; Vocabulary Exercises – Prefixes and Suffixes; Grammar – Articles and Prepositions; Descriptive Writing – Describing People; Listening/ Speaking Exercises – Listening to speeches and writing gist of it in one's own words.

UNIT III: GLOBAL WARMING (08Hrs)

Glossary; Comprehension Exercises; Vocabulary Exercises – Synonyms and Antonyms; Grammar – Auxiliaries, Question Tags and Short-form Answers; Descriptive Writing – Describing Places; Listening/ Speaking Exercises – Narrating one's own experiences of different situations in their day- to-day life.

UNIT IV: RENDEZVOUS WITH A WOMAN CORPORATE GIANT (09Hrs)

Glossary; Comprehension Exercises; Vocabulary Exercises – Homonyms, Homophones, Homographs; Grammar – Subject-Verb Agreement; Descriptive Writing – Describing Processes; Listening/ Speaking Exercises – A short presentation on a given topic ;Paraphrasing of Proverbs; Different kinds of Interviews.

UNIT V: A UNIQUE PATIENT (09 Hrs)

Glossary; Comprehension Exercises; Vocabulary Exercises – Compound words; Grammar –Tenses; Descriptive Writing – Describing Events (Eg: College Day, National Festivals, Etc.); Comprehension of a paragraph; Quiz – Questions on health and hygiene.

UNIT VI: A FARMER'S WIFE (08 Hrs)

Glossary; Comprehension Exercises; Vocabulary Exercises – Formation of plurals; Grammar – Active and Passive Voices; Descriptive Writing – Describing one's goal and its attainment; Developing hints into a paragraph; Comprehension of an unseen passage.

Reference Books:

1. **HIGH SCHOOL ENGLISH GRAMMAR AND COMPOSITION** BY WREN AND MARTIN (S.CHAND & CO.)
2. **THE KING'S GRAMMAR** BY SANJAY KUMAR SINHA (S.CHAND & CO.)
3. **STRENGTHEN YOUR WRITING** BY V.R. NARAYANA SWAMY (ORIENT BLACKSWAN)
4. **ESSENTIAL ENGLISH** BY E. SURESH KUMAR et.al (ORIENT BLACKSWAN)
5. **ENGLISH GRAMMAR &COMPOSITION AND EFFECTIVE BUSINESS COMMUNICATION** BY M.A.PINK AND THOMAS S.E. (S.CHAND & CO.)
6. **WHAT YOUNG INDIA WANTS: SELECTED ESSAYS AND COLUMNS** BY CHETAN BHAGAT (RUPA PUBLICATION, NEW DELHI)
7. **CHICKEN SOUP FOR THE INDIAN DOCTOR'S SOUL** BY JACK CANFIELD et.al (WESTLAND LIMITED PUBLISHERS)
8. **SOFT SKILLS** BY K. ALEX**(**S.CHAND AND COMPANY)
9. **"REFLECTIONS":** I PUC ENGLISH COURSE BOOK, PUBLISHED BY DEPT.OF PRE-UNIVERSITY EDUCATION, GOVT OF KARNATAKA
10. **A PRACTICAL COURSE FOR WRITING SKILLS IN ENGLISH**BY J.K.GANGAL. (PHI PUBLICATIONS)
11. **ENGLISH LANGUAGE LABORATORIES** – A COMPREHENSIVE MANUAL BY NIRA KONAR (PHI LEARNING)

Course outcomes:

On successful completion of the course, the student will be able to:

1. Read their text, and respond to basic comprehension questions
2. Enhance the students' English grammar skills by using the following grammatical components in written and verbal communication
    - Parts of speech
    - Auxiliaries
    - Articles
    - Tenses
    - Active and Passive voice
    - Prepositions
    - Question Tags and Short form answers
    - Prefixes and Suffixes
    - Subject-Verb Agreement
    - Homonyms/Homophones/ Synonyms /Antonyms
3. Communicate an idea in series logically connected sentences by describing an event such as objects, people, places, processes, expanding proverbs and also conducting activity such as group discussion, presentation, reporting and documentation
4. Comprehend the given passage and able to answer the linked questions

Mapping Course Outcomes with Program Outcomes:

CO –PO Mapping

CO	Course Outcome	PO Mapped	Cognitive Level	Theory Sessions	Allotted marks on cognitive levels			TOTAL
					R	U	A	
CO1	Read their text, and respond to basic comprehension questions	5, 6, 7,9	R/U	24	30	25	-	55
CO2	Enhance the student English grammar skills by using the following grammatical components in written and verbal communication • Parts of speech • Auxiliaries • Articles • Tenses • Active and Passive voice • Prepositions • Question Tags and Short form answers • Prefixes and Suffixes • Subject-Verb Agreement • Homonyms/Homophones/ Synonyms /Antonyms	9	U/A	18	-	16	25	41
CO3	Communicate an idea in series logically connected sentences by describing an event such as objects, people, places, processes, expanding proverbs and also conducting activities such as group discussion, presentation, reporting and documentation	7,8,9,10	U/A	7	-	-	15	15
CO4	Comprehend the given passage and able to answer the linked questions	8,9,10	U/A	3	-	10	-	10
		Total Hours of instruction		52	Total marks			121

R-Remember; U-Understanding; A-Application

Course outcomes –Program outcomes mapping strength

Course	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
COMMUNICATION SKILLS IN ENGLISH	-	-	-	-	**3**	**3**	**3**	**1**	**3**	**1**

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Question Paper Blue Print:

Course: COMMUNICATION SKILLS IN ENGLISH
Course code: 15CP 01E

Sl. No.	Content	Knowledge	Comprehension	Application	Total
1.	**TEXT**				**55**
a	Lesson	30	25		
2.	**GRAMMAR**				**41**
a	Parts of speech			4	4
b	Auxiliaries: Primary and Modals			3	3
c	Articles			3	3
d	Identification of tenses			4	4
e	Active and Passive voice			4	4
f	Prepositions	4			4
g	Question tags			3	3
h	Short form answers			2	2
i	Prefixes and Suffixes	2			2
j	Homonyms/Homophones/	4			4
k	Synonyms and Antonyms	4			4
l	Agreement of the Verb with its Subject	4			4
3.	**DESCRIPTION WRITING**				**15**
a	Descriptive writing – Describing objects, people and places, Process and Events			15	
4.	**COMPRHENSION**				**10**
a	Comprehension of an unseen passage		10		
	Total	**48**	**35**	**38**	**121**

Question Paper Pattern:

Sl. No.	Source	Question	Type	Marks
1.	Textual Units	Answer any twelve of the following questions in one or two sentences each	15 questions to be asked from 6 Textual Units	12 x 2 = 24
2.	Textual Units	Write short notes on any three of the following	5 questions to be asked from 6 Textual Units	3 x 5 = 15
3.	Grammar	Identify the parts of speech of the underlined words	4 sentences are to be given and word to be identified is underlined	4 x 1= 4
4.	Grammar	Fill in the blanks using suitable Auxiliaries	3 sentences are to be given.	3 x 1= 3
5.	Grammar	Fill in the blanks using suitable Articles	3 sentences are to be given	3 x 1=3
6.	Grammar	Identification of Tenses	4 sentences are to be given	4 x 1= 4
7.	Grammar	Active and Passive Voice: Change the voice of the verb in the following sentences	4 sentences are to be given for changing the voice of the verb	4 x 1= 4
8.	Grammar	Prepositions: Fill in the blanks with appropriate prepositions	4 sentences are to be given	4 x 1= 4
9.	Grammar	Question Tags: Add question tags	3 sentences are to be given	3 x 1= 3
10.	Grammar	Short form answers: Give short form answers	2 sentences are to be given	2 x 1= 2
11.	Grammar	Prefixes and Suffixes: Add Prefixes/Suffixes to the stem words	2 stem words are to be given	2 x 1= 2
12.	Grammar	Homonyms, Homophones and Homographs: Use the following words in your own sentences.	4 words are to be given	4 x 1= 4
13.	Grammar	Synonyms / Antonyms: Give the	2 words each are to be given	

		Synonyms/Antonyms for the following words		2 x 1= 2
14.	Grammar	Agreement of the Verb with its Subject: Fill in the blanks with verbs that agree with their subjects	4 sentences are to be given	4 x 1= 4
15.	Composition	Descriptive Writing: Describe objects, people, places and processes	3 questions are to be given	2 x 5 = 10
16.	Composition	Comprehension of an unseen passage: Read the following passage and answer the questions that follow	Questions to be set for 10 marks	10
	Total	-	-	100

Guidelines for Question Paper Setting:

1. The question paper must be prepared based on the blue print without changing the weightage of marks fixed for each category. (As per model question paper)
2. The question paper pattern provided should be adhered to.
3. Care must be taken so that there is only one possible answer for all ‘fill in the blanks’ questions.

Course Assessment and Evaluation:

	What		To Whom	Frequency	Max Marks	Evidence Collected	Course Outcomes
Direct Assessment	CIE (Continuous Internal Evaluation)	I A Tests	Students	Three tests (average of three tests will be computed)	20	Blue Books	1 and 2
		Class room Assignments		Any one Activity(*)	05	Log of Activity	3
				TOTAL	**25**		
	SEE (Semester End Examination)	End Exam	Students	End Of the Course	100	Answer Scripts at BTE	1 to 4
Indirect Assessment	Student Feedback on course		Students	Middle Of The Course	Feedback forms		1 to 3 delivery of the course
	End Of Course Survey			End Of The Course	Questionnaire		1 to 4 Effectiveness of delivery of instructions and assessment

Note: I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit. Any decimals shall be rounded off to the next higher digit. **Eg: 15.1** should be rounded of to **16**.

* Class room Assignments: Evaluated for any ONE activity

Suggested list of Tutorial Exercises leading to the Development of Speaking Skills

1. Introducing oneself
2. Discussion about weather
3. Discussion about hobbies
4. Discussing holiday plans
5. Telephonic conversation
6. Talking about favorite sports, movie, TV shows etc.
7. Description about one's goal and its attainment.

8. Any other topic of your/students' choice.

MODEL OF RUBRICS /CRITERIA FOR ASSESSING STUDENT ACTIVITY

RUBRICS FOR ACTIVITY(5 Marks)						
Dimension	**Unsatisfactory**	**Developing**	**Satisfactory**	**Good**	**Exemplary**	**Student Score**
	1	**2**	**3**	**4**	**5**	
Speaks on the given topic	Does not perform any duties assigned to them	Performs very few duties but unreliable	Performs very few duties	Performs nearly all duties	Performs all duties assigned	Ex: 4
Students' Enunciation	Does not enunciate clearly	Enunciation not up to the mark	Enunciation adequate	Enunciation above average	Enunciation extremely good	3
Presentation Skills	Poor presentation	Scope for improvement	Average presentation skills	Presentation effective	Excellent Presentation	2
Submission of Assignment	Does not collect any information relating to the topic	Collects very limited information	Collects some information	Collects much information	Collects a great deal of information	5
Average / Total marks = (4+3+2+5) /4 = 14/4= 3.5 = 4						**4**

Note: This is only an example. Appropriate rubrics/criteria may be devised by the concerned faculty (course coordinator) for assessing the given activity.

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's Taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1.	Remembering	42
2.	Understanding the course	25
3.	Applying the knowledge acquired from course	33

FORMAT OF I A TEST QUESTION PAPER (CIE)

Test/ Date and Time	Semester/ Year	Course / Course Code	Max. Marks
Ex: I test/6 th week of sem. 10-11 a.m.	I/II SEM	COMMUNICATION SKILLS IN ENGLISH	20
	Year: 2015-16	Course Code:15CP01E	

Name of Course Coordinator : **Units: 2 CO's: 2**

Question No.	QUESTIONS	MARKS	CL	CO	PO
I	**Answer any <u>five</u> of the following in one or two sentences each:** 1. What do you mean by career? 2. Define 'Career Planning'? 3. What should be the major focus of career planning? 4. What are the questions often asked by the young? 5. What are the three traits as identified by the author? 6. How have the content of our films changed? 7. What has startled global experts?	5x 2 = 10	R/U	1	5,7,9
II	**<u>Grammar:</u>** **1. Identify the parts of speech of the underlined words:** a. **<u>All</u>** spoke in his favour. b. Let us **<u>even</u>** the ground. **2. Fill in the blanks with suitable articles:** a. Charlie is ___ European. b. She is ____untidy girl. **3. Fill in the blanks with appropriate prepositions:** a. Caesar was killed ____Brutus____ a dagger. b. We arrived____ Belagavi_____6 o' clock. **4. Add Suffix and Prefix to the following:** _____ nation_____	**2 x 1 = 2** **2 x 1 =2** **4 x 1 = 4** **2 x 1 = 2**	U /A	2	9

Sources:

UNIT 1: CAREER PLANNING: **SOFT SKILLS** -BY DR. K. ALEX

UNIT 2: THE GREAT INDIAN PSYCHOTHERAPY: **WHAT YOUNG INDIA WANTS: SELECTED ESSAYS AND COLUMNS** - BY CHETAN BHAGAT

UNIT 3: GLOBAL WARMING: AN ESSAY BY DR. B.M.RAVINDRA, RETD. DY. DIR., DEPT. OF MINES AND GEOLOGY

UNIT 4: RENDEZVOUS WITH A WOMAN CORPORATE GIANT**: ESSENTIAL ENGLISH** BY E. SURESH KUMAR et.al.

UNIT 5: A UNIQUE PATIENT: **CHICKEN SOUP FOR THE INDIAN DOCTOR'S SOUL** - BY JACK CANFIELD et.al.

UNIT 6: A FARMER'S WIFE: **REFLECTIONS:** I PUC ENGLISH COURSE BOOK, PUBLISHED - BY DEPT. OF P.U. EDUCATION, GOVT. OF KARNATAKA

Government of Karnataka
Department of Technical Education, Bengaluru

Course: COMMUNICATION SKILLS IN ENGLISH

Course code: 15CP 01E

Curriculum Drafting Committee 2015-16

	Name	Designation	Institution
1.	Mrs. Geetha K.	Selection Grade Lecturer	GRICP, Bengaluru
2.	Mr. C.V. Inamdar	Selection Grade Lecturer	Govt. Polytechnic, Belagavi
3.	Mrs. Bharathi Naik	Selection Grade Lecturer	Women's Polytechnic, Mangaluru
4.	Mrs. Rajyashree Srikant	Selection Grade Lecturer	Govt. Polytechnic, Bagepalli
5.	Mrs. Sunitha M.N.	Selection Grade Lecturer	HMS Polytechnic, Tumakuru
6.	Mr. Deepak Dongre	Selection Grade Lecturer	Govt. Residential Women's Polytechnic, Shivamogga

Review committee

	Name	Designation	Institution
1.	Mrs. Rajyashree Srikant	Selection Grade Lecturer	Govt. Polytechnic, Bagepalli
2.	Mrs. Shailaja D.	Lecturer	Women's Polytechnic, Bengaluru

Model Question Paper:

Code: 15CP 01E

I / II Semester Diploma Examination

COMMUNICATION SKILLS IN ENGLISH

(Common to all Diploma programmes)

Time: 3 Hours] **[Max. Marks: 100**

Note:

(i) Answer all the questions as directed.
(ii) Spelling and grammatical errors shall be penalized.
(iii) Answers to Question No. I and II are based on the prescribed text.

I. Answer any TWELVE of the following in one or two sentences each: **2 x 12 = 24**

1. What do you mean by career?
2. Define 'Career Planning'?
3. What should be the major focus of career planning?
4. What are the questions often asked by the young?
5. What are the three traits as identified by the author?
6. How have the content of our films changed?
7. What is Global Warming?
8. How does Global Warming occur?
9. What are the major causes for Global Warming?
10. What was the usual talk when the parents of the children met?
11. What ambition did Nooyi's mother have for her daughter?
12. Who is the sinner according to the poem?
13. Why did the farmer commit suicide?
14. Explain in your own words the reason for the farmer's visit to the clinic.
15. Describe how the doctor fixed the bull's tooth.

II. Write short notes on any THREE of the following: **5 x 3 = 15**

1. How does career planning play a major role in making career choices?
2. How does our environment contribute to our numbness to injustice?
3. Explain in your own words the traditional and modern views of one or two facts expressed in the interview?
4. Explain in your own words the reason for the farmer's visit to the clinic.
5. Why does the farmer's wife resolve to live?

III. GRAMMAR:

1. **Identify the parts of speech of the underlined words:** **4 x 1= 4**
   a. **<u>All</u>** spoke in his favour.
   b. Let us **<u>even</u>** the ground.
   c. I can **<u>shift</u>** for myself.
   d. She lives in **<u>luxury.</u>**

2. **Fill in the blanks with suitable auxiliaries:** **3 x 1 =3**
   a. You _____ not use calculators in the exam hall.
   b. _____I come in sir?
   c. _____ you lend me your scooter?

3. **Fill in the blanks with suitable articles:** **3 x 1 = 3**
   a. Charlie is ___ European.
   b. She is ____untidy girl.
   c. What is ____matter?

4. **Identify the tense of the verbs in the following sentences:** **4 x 1 = 4**
   a. I am writing a letter.
   b. Sun rises in the east.
   c. I have done my homework.
   d. She has been learning western music.

5. **Change the voice of the verb in the following sentences:** **4 x 1 = 4**
   a. Who did this?
   b. The money was lost.
   c. The cat is chasing the mouse.
   d. He was made the king.

6. **Fill in the blanks with appropriate prepositions:** **4 x 1= 4**
   a. Caesar was killed ____Brutus____ a dagger.
   b. We arrived____ Belagavi_____6 o' clock.

7. **Add suitable question tag:** **3 x 1=3**
   a. You were late this morning,_____?
   b. I did not hurt you, _____?
   c. Your father is a doctor, _____?

8. **Give short form answers for the following:** **2 x 1=2**
   a. Does your father smoke? (Negative)
   b. Have you read today's newspaper? (Affirmative)

9. **Add Suffix and Prefix to the following:** **2 x 1= 2**
   a. _____ nation_____

10. **Frame sentences using each word to bring out the difference in meaning clearly:**

4 x 1 = 4

a. (i) Sight (ii) Site
b. (i) Present (ii) Present

11. Give Synonyms to the following words: **2 x 1=2**

a. Teach
b. Agree

12. Give Antonyms to the following words: **2 x 1 = 2**

a. War
b. Happy

13. Fill in the blanks with verbs to agree with their subjects: **4 x 1 = 4**

a. Twenty kilometers _____not a long distance.
b. Either you or I_____ mistake.
c. Gold and Silver_____ precious metals
d. The captain with his team _____arrived.

IV. COMPOSITION: (Answer any <u>two</u> in 80 -100 words each) **5 x 2 = 10**

1. Describe your favorite tourist place.
2. Describe the process of preparing tea.
3. Expand – Work is worship.

V. **COMPREHENSION:**

Read the following passage and answer the questions that follow:

She was all of one-and-a-half years old. Two nurses were holding her down while a third was trying to insert a syringe into a vein to get a blood sample. She was crying loudly, but I was crying even louder. We had no option. It was the fifth day and the fever had not broken; it was imperative that we run the test to rule out typhoid. They finally asked me to leave the room, not just because they were embarrassed at a grown-up crying, but because they thought it would be easier and quicker for the child if the mother was not in the room. They got her out within a few minutes. She jumped into my arms and gave a few more loud wails. Fresh tears streamed down my eyes as we made our way out of the wretched pathology lab. Her paediatrician was getting into the building just then. Between sobs I told him how my daughter had flung the syringe and the lab had to have three attendants on her to collect the sample. As I was talking, my voice broke. To my surprise, Dr. Patel handed me his briefcase and stethoscope, took my girl in his arms and went to the store just a few paces away. He bought her a Cadbury bar and my daughter's face lit up like a million bucks. Gone were the tears, the memory of the syringe, smell of antiseptic, cotton …everything receded to the background as she un wrapped the big bar with her tiny fingers and dug into it with all her heart. I smiled as the angelic doctor handed me my princess.

Meanings of difficult words:

1. **Imperative:** absolutely essential
2. **Wretched:** miserable; unpleasant
3. **Pathology lab:** where the causes and effects of diseases are studied
4. **Receded:** moved back gradually
5. **Paediatrician:** children's doctor
6. **Flung:**(past tense of fling) an act of throwing violently
7. **Attendants:** one who attends

Questions:

1.	How old was the child?	1
2.	What did the nurses have to do to get a blood sample?	2
3.	Why was the mother asked to leave the room?	2
4.	Why does the mother called the pathology lab 'wretched'?	2
5.	How did Dr. Patel calm down the little girl?	2
6.	Suggest a suitable title for this passage.	1

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Model Question Bank:

Course Title :**COMMUNICATION SKILLS IN ENGLISH**	Course Code: **15CP01E**

I. ANSWER IN ONE OR TWO SENTENCES EACH:

1. What do you mean by career?
2. Define 'Career Planning'?
3. What should be the major focus of career planning?
4. List out the benefits of career planning?
5. Identify the guidelines for choosing a career?
6. What are the frequently asked questions about career fields?
7. How do connections help in searching for a suitable job?
8. What are the sample questions asked about a particular job title?
9. What is the role of a career counselor in charting out a career path?
10. List out the factors influencing career decisions?
11. What has startled global experts?
12. What are the questions often asked by the young?
13. What are the three traits as identified by the author?
14. How have the content of our films changed?
15. In what way have we been exposed to corruption from our childhood?

16. How can we contribute to India's progress?
17. What is global warming?
18. How does global warming occur?
19. What are the major causes for Global Warming?
20. What is the quantity of fossil fuel burnt each year?
21. How does the concentration of carbon dioxide in the air increase?
22. Define Greenhouse effect?
23. By burning forests around the world, how much carbon dioxide is added to the atmosphere?
24. What are the steps to be taken to save our environment?
25. What is the possible problem of global warming and its result?
26. What is the effect of global warming?
27. What was the usual talk when the parents of the children met?
28. What ambition did Nooyi's mother have for her daughter?
29. How did Nooyi's mother threaten Nooyi?
30. What good news did Indra Nooyi want to share with her mother?
31. What did Nooyi's mother say when she was told the good news?
32. What lesson did Nooyi learn from her mother?
33. Why does Nooyi's mother take full credit for Nooyi's success?
34. What does Indra Nooyi discover about the language of business in the U.S?
35. What does Indra Nooyi think about herself as a mother?
36. What is the secret of Indra Nooyi's success?
37. How does Indra Nooyi manage time?
38. What is Indra Nooyi's passion?
39. Describe the farmer who visited the dentist's clinic.
41. What was the curious act of the farmer?
42. What request did the farmer make?
43. Why did the doctor almost 'faint in shock'?
44. What did the farmer say when he came back to the clinic?
45. Who do 'you' and 'I' in the poem refer to?
46. Who is the sinner according to the poem?
47. Why did the farmer commit suicide?
48. Explain the meaning of the phrase 'you crossed over'.
49. What are the contrasts depicted by the writer between the farmer's wife and her husband?
50. What memories of her husband trouble her now?

II. ANSWER IN A PARAGRAPH OF NOT MORE THAN 100 WORDS EACH:

1. Write a short note on Guidelines for Choosing a Career.
2. How does career planning play a major role in making career choices?
3. Explain in your own words the first trait of our psyche.
4. How does our environment contribute to our numbness to injustice?
5. Describe the divisiveness that the author talks about**.**
6. What are the causes and effects of global warming?
7. How does deforestation affect our environment?

8. What information do you gather about Indra Nooyi after going through the interview with Nandan Nilekani?

9. How did Indra Nooyi's mother try to teach her the role of a woman in a family? Do you agree with her?
10. How do you think Indra Nooyi's mother and her husband contribute to her success?
11. What does Indra Nooyi mean when she says "I have to decide every moment in time whether I am going be a mother or a wife or an executive"?
12. Explain in your own words the traditional and modern views of one or two facts expressed in the interview?
13. Explain in your own words the reason for the farmer's visit to the clinic.
14. Describe how the doctor fixed the bull's tooth.
15. Describe the lament of the farmer's wife on her husband's death?

III.GRAMMAR:

1. Fill in the blanks with suitable articles:

a. Dr. Sanjay is ___ dentist.
b. My friend is ___ MLA.
c. Have you ever visited___ Himalayas?
d. Please bring me ___ cup of coffee.
e. He is ___untidy boy.
f. She is __backbone of her organization.
g. He is ___ honour to his profession.
h. Raghu is going to___ mall.
i. ____world is ___happy place.
j. I met___ European at ___ party in ___ friend's house.

2. Fill in the blanks with suitable prepositions:

a. She works __ a big shop __ Jayanagar.
b. There is a book ___ the floor. Put it __ the table.
c. I often see Mrs. Dixit __ the station, waiting __ her train.
d. Mangalore is __ the coast __ the south __ India.
e. My daughter isn't __ work today because she isn't feeling well.
f. There were several people __ the bus stop.
g. Mr. and Mrs. Sharma were __ the shop talking __ the assistant.
h. Yesterday we spent the day __ the country.
i. We had lunch __ a pretty little village.
j. When I was __ the bus stop this morning; I saw two boys __ the church roof.

3. Add appropriate prefixes to form new words:

a. form b. regular c. literate d. accurate e. operate
f. pure g. fix h. technic i. tone j. national

4. Add appropriate suffixes to form new words:

a. rich b. love c. start d. beauty e. differ
f. use g. cheer h. attract i. save j. slow

5. Give the synonyms of the following:

a. release b. arrive c. trap d. happinesse. e. large
f. teach g. change h. confusion i. discover j. charge

6. Give the antonyms for the following:

a. rise b. increase c. smiled. d. strict. e.sadness
f. full g. host h. success i. discover j. charge

7. Add the correct question tags to the following statements:

a. It is cold,_____?
b. But it isn't as cold as yesterday, ____?
c. It was very cold yesterday,_____?
d. It hasn't been so cold for a long time, ____?
e. It is snowing in the north, ____?
f. It often snows there, ____?

8. Give short form answers for the following:

a. Does Renu work hard?_____._____.
b. Can you swim?_____._____.
c. Are you angry with me?_____._____.
d. Do you like watching movies?_____._____.
e. Have you met our Prime Minister?_____._____.

9. Fill in the blanks with appropriate words from the brackets:

a. His father-in-law owns a _____ farm. (dairy/diary)
b. Diabetics must take extra care of their _____. (feat/feet)
c. Rekha is a popular ____ of Bollywood.(heroin/heroine)
d. The country was prosperous during the_____of Krishnadevaraya.(rein/reign/rain)
e. You should be_____ in the class. (quite/quiet)

10. Differentiate between the following pairs of words by using each of them in a sentence of your own:

a. Wrong, rung b. Principal, principle c. Hair, hare
d. Gate, gait. e. Sea, see f. Fair, fare
g. Some, sum. h. Sell, cell i. Weather, whether
j. Birth, berth k. Vacation, vocation l. Bear, bare

11. Fill in the blanks with verbs to agree with their subjects:

a. Every seat in the bus ____ taken.
b. All the seats in this bus ____ reserved.
c. One of my friends _____ visiting me this week end.
d. Neither Gopal nor Deepak ____ come today.
e. The Captain of Indian team as well as his players ____ staying here.
f. Intelligence and hard work _____ required to get good marks.
g. Mathematics ____ my favourite subject.
h. _____ your father and mother at home?

12. Identify the tense of the verbs in the following in the sentences.

a. He was listening to her attentively.
b. Raghu denies stealing my purse.
c. She has bought a flat near my house.
d. Kiran fought bravely.
e. The teachers are discussing the details of the annual day function.
f. I am not trying to copy you.
g. Sushma was cooking pasta.
h. The students have been waiting eagerly for the results.
i. Risheeba speaks Tamil very fluently.
j. I have been waiting for her for over an hour.

13. Change the voice:

a. Ramu was making a kite.
b. Close the door.
c. Cable wires have been cut.
d. We prohibit smoking.
e. Everyone loves him.
e. My watch was lost.
f. He was refused admission.
g. Do not insult the poor.
h. Without effort nothing can be gained.
i. They made him captain.

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Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bengaluru

Course Title: **ENGINEERING MATHEMATICS – I**		Course Code	: **15SC01M**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **4:0:0**	Credits	: **4 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **52**
CIE	: **25 Marks**	SEE	: **100 Marks**
Programmes: **Common to all Engineering Diploma Programmes**			

Pre-requisites:

Basics in Algebra, Trigonometry and Coordinate Geometry in Secondary Education.

Course Objectives:

1. Apply the concept of matrices and determinants and their applications to solve the linear equation in engineering field.
2. Apply the vector algebra in solving the problems of statics and mechanics.
3. Analyse the civil engineering problems using concepts of probability.
4. Evaluate the advanced engineering mathematical problems using logarithms.
5. Apply and evaluate trigonometric concept in vector engineering field.
6. Create the basic concept of calculus.

Course Content:

Topic and Contents	Hours	Marks
LINEAR ALGEBRA		
UNIT-1: MATRICES AND DETERMINANTS	10	31
(a) Matrices: Basic concepts of matrices: Definition, types of matrices and mathematical operations on matrices (addition, subtraction and multiplication of matrices).	02	
(b) Determinant: Definition, problems on finding the determinant value of 2^{nd} and 3^{rd} order. Problems on finding unknown quantity in a 2^{nd} and 3^{rd} order determinants using expansion. Solving simultaneous linear equations using determinant method (Cramer's rule up to 3^{rd} order).	04	

(c) Inverse and applications of matrices: Minors and Cofactors of elements of matrix. Adjoint and Inverse of matrices of order 2^{nd} and 3^{rd} order. Elementary row and column operations on matrices. Characteristic equation and characteristic roots (eigen values) of 2x2 matrix. Statement of Cayley-Hamilton theorem and its verification for 2x2 matrix. Solution of system of linear equations using Gauss Elimination method (for 3 unknowns only).	04	
ALGEBRA		
UNITS-2: VECTORS	08	27
Definition of vector. Representation of vector as a directed line segment. Magnitude of a vector. Types of vectors. Position vector. Expression of vector by means of position vectors. Addition and subtraction of vectors in terms of line segment. Vector in plane and vector in a space in terms of unit vector i, j and k respectively. Product of vectors. Scalar product and vector product of two vectors. Geometrical meaning of scalar and vector product. Applications of dot (scalar) and cross (vector) products. Projection of a vector on another vector. Area of parallelogram and area of triangle. Work done by force and moment of force.		
UNITS-3: PROBABILITY AND LOGARITHMS	08	14
(a) **Probability:** Introduction. Random experiments: outcomes and sample space. Event: Definition, occurrence of an event, types of events. Algebra of events- complementary event, the events A or B, A and B, A but not B, mutually exclusive events, exhaustive events, defining probability of an event. Addition rule of probability. Conditional probability: definition, properties of conditional probability, simple problems.	06	
(b) **Logarithms:** Definition of common and natural logarithms. Laws of logarithms (no proof). Simple problems on laws of logarithms.	02	

TRIGONOMETRY		
UNIT-4: ALLIED ANGLES AND COMPOUND ANGLES.	16	47
(a) Recapitulation of angle measurement, trigonometric ratios and standard angles. **Allied angles:** Meaning of allied angle. Signs of trigonometric ratios. Trigonometric ratios of allied angles in terms of θ. Problems on allied angles. (b) **Compound angles:** Geometrical proof of sin(A+B) and cos(A+B) and hence deduce tan(A+B). Write the formulae for sin(A-B), cos(A-B) and tan(A-B), problems. Multiple and sub multiple angle formulae for 2A and 3A. Simple problems. Transformation formulae. Expression for sum or difference of sine and cosine of angles into product form. Expression for product of sine and cosine of angles into sum or differences form.	02 06 08	
UNIT-5:COMPLEX NUMBERS	04	09
Meaning of imaginary number i and its value. Definition of complex number in the form of $a + ib$. Argand diagram of complex number$a + ib$ (Cartesian system). Equality of complex numbers. Conjugate of complex number. Algebra of complex numbers, modulus of complex number, principal value of argument of complex number, polar form: $Z = r(cos\theta + i\, sin\theta)$ and exponential form $Z = re^{i\theta}$of complex number, where r is modulus and θ is principal value of argument of complex number.		
UNIT-6: INTRODUCTION TO CALCULUS	06	17
Limits: Constants and variables. Definition of function. Types of functions: Explicit and implicit function, odd and even functions(definition with example). Concept of $x \to a$.Definition of limit of a function. Indeterminate forms. Evaluation of limit of functions by factorization, rationalization. Algebraic limits. Statement of $\lim_{x\to a} \frac{x^n - a^n}{x-a} = na^{n-1}$ where n is any rational number. Proof of $\lim_{\theta\to 0} \frac{\sin\theta}{\theta} = 1$ where θ is in radian. Related problems. Standard limit (statement only) 1. $\lim_{x\to 0} \frac{a^x - 1}{x} = \log_e a$, 2. $\lim_{x\to 0} \frac{e^x - 1}{x} = 1$ 3. $\lim_{n\to\infty} \left(1 + \frac{1}{n}\right)^n = e$, 4. $\lim_{n\to 0} (1+n)^{\frac{1}{n}} = e$ Simple problems on standard limits.		
TOTAL	**52**	**145**

Course outcomes:

On successful completion of the course, the student will be able to:

1. Find the product of matrices, value of determinants, and inverse of matrix and solve the simultaneous linear equation.
2. Find the product of vectors and their geometrical applications in finding moment of force, work done.
3. Determine probability of various types of events.
4. Solve the problems related to logarithms.
5. Solve the problems on trigonometric functions with angle of any magnitude.
6. Evaluate the limiting value of algebraic and trigonometric functions.

Mapping Course Outcomes with Program Outcomes:

CO	Course Outcome	PO Mapped	Cognitive Level	Theory Sessions	Allotted marks on cognitive levels			TOTAL
					R	U	A	
CO1	Find the product of matrices, value of determinants, and inverse of matrix and solve the simultaneous linear equation	**1,2,3**	**R/U/A**	**10**	**9**	**10**	**12**	**31**
CO2	Find the product of vectors and their geometrical applications in finding moment of force, work done	**1,2,3**	**R/U/A**	**8**	**6**	**15**	**6**	**27**
CO3	Determine probability of various types of events	**1,2,**	**R/U/A**	**8**	**3**	**5**	**6**	**14**
CO4	Evaluate the integrations of algebraic, trigonometric and exponential function	**1,2,3,10**	**R/U/A**	**16**	**15**	**20**	**12**	**47**
CO5	Solve the problems related to logarithms.	**1,2**	**R/A**	**4**	**3**	**0**	**6**	**09**
CO6	Evaluate the limiting value of algebraic and trigonometric functions	**1,2,10**	**R/U/A**	**6**	**6**	**5**	**6**	**17**
		Total Hours of instruction		**52**	**Total marks**			**145**

R-Remember; U-Understanding; A-Application

Course outcomes –Program outcomes mapping strength

Course	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
Engineering Mathematics-I	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Reference:

1. NCERT Mathematics Text books of class XI and XII.
2. Karnataka State PUC mathematics Text Books of I & II PUC by H.K. Dass and Dr.Ramaverma published by S.Chand & Co.Pvt.Ltd.
3. CBSE Class Xi & XII by Khattar&Khattar published PHI Learning Pvt. ltd.,
4. First and Second PUC mathematics Text Books of different authors.
5. www.freebookcentre.net/mathematics/introductory-mathematics -books.html

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	*CIE	Internal Assessment Tests	Student	Three tests (Average of Three tests will be computed).	20	Blue books	1 to 6
		Assignments		Two Assignments based on CO's (Average marks of Two Assignments shall be rounded off to the next higher digit.)	5	Log of record	1 to 6
				Total	25		
	*SEE	Semester End Examination		End of the course	100	Answer scripts at BTE	1 to 6
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 3, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 6, Effectiveness of delivery of instructions and assessment methods

***CIE** – Continuous Internal Evaluation ***SEE** – Semester End Examination

Note: I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit.

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering	25
2	Understanding	40
3	Applying the knowledge acquired from the course	30
	Analysis and Evaluation	5

FORMAT OF I A TEST QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks
Ex: I test/6 th weak of sem 10-11 Am	I/II SEM	ENGINEERING MATHEMATICS –I	20
	Year:	Course code: **15SC01M**	
Name of Course coordinator :			Units:__ CO's:____

Question no	Question	MARKS	CL	CO	PO
1					
2					
3					
4					

Model Question Paper:

Code: 15SC01M

I Semester Diploma Examination

ENGINEERING MATHEMATICS –I

(Common to All Engineering Diploma Programmes)

Time: 3 Hours.][Max marks: 100

Note:

(i) Answer any **Ten** questions from **section-A,** any **Eight** questions from **section-B** and any **Five** questions from **section-C.**

(ii) Each question carries **3** marks in **section-A**.

(iii) Each question carries **5** marks in **section-B**.

(iv) Each question carries **6** marks in **section-C**.

SECTION – A

1. Find the product of $A = \begin{bmatrix} 2 & 3 & 1 \\ 0 & -1 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 4 \\ -1 \\ 5 \end{bmatrix}$
2. If $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 1 \\ 0 & -3 \end{bmatrix}$ find adj(AB).
3. If $A + B = \begin{bmatrix} 3 & -7 \\ 0 & 2 \end{bmatrix}$,$A - B = \begin{bmatrix} 1 & 5 \\ 4 & -6 \end{bmatrix}$ find A.
4. If $\vec{a} = i + 2j - 3k$, $\vec{b} = 3i - 5j + 2k$. Find the magnitude of $2\vec{a} + 3\vec{b}$.
5. If $\vec{A}$=(3,-4), $\vec{B}$= (-5,6) find position vector of A and B and also find $|\overrightarrow{AB}|$
6. Three coins are tossed simultaneously. List the sample space for event.
7. If $\sin\theta = -{}^{8}/_{17}$ and $\pi < \theta < \frac{3\pi}{2}$ find the value of$4tan\theta + 3sec\theta$.
8. Find the value of $\sin 75^{o}$ using standard angles.
9. Show that $\frac{cosec(180-A)\cos(-A)}{\sec(180+A)\cos(90+A)} = cot^2 A$
10. Prove that$\sin(A + B)\sin(A - B) = \sin^2 A - \sin^2 B$.
11. Prove that$\frac{\sin 3A}{\sin A} - \frac{\cos 3A}{\cos A} = 2$.
12. Express the product $(1 + i)(1 + 2i)$ in $a + ib$ form and hence find its modulus.
13. Evaluate : $\lim_{x\to 3}\left[\frac{x-1}{2x^2-7x+5}\right]$
14. Evaluate: $\lim_{x\to\infty}\left[\frac{3x^2+4x+7}{4x^2+7x-1}\right]$

SECTION – B

1. Find the value of x if $\begin{vmatrix} 1 & x & 0 \\ 2 & -1 & 3 \\ -2 & 1 & 4 \end{vmatrix} = 0$.

2. Find the characteristic equation and its roots of a square matrix $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$
3. Find the $sine$ of the angle between the vectors$2i - j + 3k \; and \; i - 2j + 2k$.
4. If vector $\vec{a} = i + j + 2k, \vec{b} = 2i - j + k$ show that $\vec{a} + \vec{b}$perpendicular$\vec{a} - \vec{b}$.
5. Find the projection of $\vec{a} = 2i + j - k$on $\vec{b} = 2i - 3i + 4k$.
6. Prove that $\frac{1}{\log_a abc} + \frac{1}{\log_b abc} + \frac{1}{\log_c abc} = 1$
7. Find the numerical value of$\sin\left(\frac{\pi}{3}\right).\cos\left(-\frac{\pi}{3}\right) - \cos\left(\frac{\pi}{4}\right).\sin\left(-\frac{3\pi}{4}\right)$
8. Prove that $\sin(A + B) = \sin A \cos B + \cos A \sin B$ geometrically
9. If$A + B + C = \frac{\pi}{2}$, prove that $\tan A \tan B + \tan B \tan C + \tan C \tan A = 1$.
10. Show that$\frac{\sin 56^o - \sin 44^o}{\cos 56^o + \cos 44^o} = \cot 82^o$
11. Evaluate:$\lim_{x \to 0}\left[\frac{\sqrt{1+x+x^2}-1}{x}\right]$

SECTION – C

1. Solve for x, y & z using determinant method

$x + y = 0, y + z = 1 \& z + x = 3.$

2. Solve the equation$x + y + z = 6, 2x - 3y + z = 1 \& x + 3y - 2z = 7$ using Gauss elimination method.
3. A force $\vec{F} = 2i + j + k$ is acting at the point (-3,2,1). Find the magnitude of the moment of force $\vec{F}$ about the point (2,1,2).
4. A die is thrown twice and the sum of the numbers appearing is absorbed tobe. What is the conditional probability that the number 5 has appeared at least once?
5. Prove that $\frac{\cos\left(\frac{5\pi}{2} - \theta\right)}{\sin(4\pi + \theta)} + \frac{\tan(-\theta)}{\cot(\pi - \theta)} = sec^2\theta$
6. Prove that $\cos 80^o \cos 60^o \cos 40^o \cos 20^o = \frac{1}{16}$
7. Find the modulus and argument of the complex number $z = -\sqrt{3} + i$ and hence represent in argand diagram.
8. Prove that $\lim_{\theta \to 0}\left(\frac{\sin\theta}{\theta}\right) = 1$ where θ is in radian.

Question Paper Blue Print:

Course: ENGINEERING MATHEMATICS – I **Course Code: 15SC01M**

UNIT NO		HOURS	Each questions to be set for 3 Marks Section - A	Each questions to be set for 5 Marks Section - B	Each questions to be set for 6 Marks Section- C	Weightage of Marks
1	a	2	2	-	-	31
	b	4	-	1	1	
	c	4	1	1	1	
2		8	2	3	1	27
3	a	6	1	-	1	14
	b	2	-	1	-	
4	a	8	1	1	1	47
	b	8	4	3	1	
5		4	1	-	1	9
6		6	2	1	1	17
TOTAL		**52**	**14**	**11**	**08**	**145**
Questions to be answered			**10**	**08**	**05**	**100**

Guidelines for Question Paper Setting:

1. The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.
2. The question paper pattern provided should be adhered to
   Section-A: 10 questions to be answered out of 14 questions each carrying 03 marks
   Section-B: 08 questions to be answered out of 11 questions each carrying 05 marks.
   Section-C: 05 questions to be answered out of 08 questions each carrying 06 marks.
3. Questions should not be set from the recapitulation topics.
4. Questions should not be set from the recapitulation topics.

Model Question Bank:

Course Title: **ENGINEERING MATHEMATICS – I**	Course Code: **15SC01M**

UNIT-1: MATRICES AND DETERMINANTS

3 MARK QUESTIONS

1. If $A = \begin{bmatrix} 3 & -9 \\ -4 & 7 \end{bmatrix}$, find $A + A'$.
2. If $A = [2 \quad -1 \quad 3]$ and $B = \begin{bmatrix} 5 & -2 \\ 3 & 1 \\ 2 & 4 \end{bmatrix}$, find AB matrix.
3. If matrix $A = \begin{bmatrix} 2 & -1 & 3 \\ 5 & 1 & 0 \\ 1 & 0 & x \end{bmatrix}$ is a singular matrix, then find the value of x.
4. Find the adjoint of the matrix $A = \begin{bmatrix} 4 & -5 \\ 3 & -2 \end{bmatrix}$.
5. If $A = \begin{bmatrix} 3 & -1 \\ 0 & -2 \end{bmatrix}$ find the characteristic equation.

5 MARK QUESTIONS

1. Solve the equations $x + y = 3, 2x + 3y = 8$ by Cramer's rule.
2. Solve for x, if $\begin{vmatrix} 1 & 5 & 7 \\ 2 & x & 14 \\ 3 & 1 & 2 \end{vmatrix} = 0$
3. Verify Cayley-Hamilton theorem if $A = \begin{bmatrix} 1 & 3 \\ 2 & -4 \end{bmatrix}$.
4. Verify $A(AdjA) = |A|.I.$ if $A = \begin{bmatrix} 5 & -2 \\ 3 & 1 \end{bmatrix}$.
5. Find the adjoint of the matrix $A = \begin{bmatrix} 3 & -1 & 2 \\ 2 & -3 & 1 \\ 0 & 4 & 2 \end{bmatrix}$

6 MARK QUESTIONS

1. Solve for x &y from the equations $4x + y = 7, 3y + 4z = 5, 5x + 3z = 2$ by Cramer's rule.
2. Find the inverse of the matrix $\begin{bmatrix} 1 & 2 & 2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$
3. Prove that adj(AB)=(adjB).(adjA) if $A = \begin{bmatrix} -1 & 0 \\ 5 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 5 \\ 2 & 4 \end{bmatrix}$

4. Find the characteristic roots of a matrix $\begin{bmatrix} 1 & -1 \\ -6 & -2 \end{bmatrix}$.
5. Solve the equations by Gauss elimination method $3x - y + z = 0, x + 2y - 2z = 3, 3x + z = 4$.

UNIT-2: VECTORS

3 MARK QUESTIONS

1. Find the magnitude of vector 2i +3j – 6k
2. If $\vec{a} = i + 2j - 3k, \vec{b} = 3i - 5j + 2k$ find magnitude of $\overrightarrow{3a} - \overrightarrow{2b}$
3. Show that $\cos\theta i - \sin\theta j$ is unit vector
4. Show that the vectors $2i + 5j - 6k$,and $7i + 2j + 4k$ orthogonal vectors.
5. If $\vec{a} = 5i + 2j - 4k$, and $\vec{b} = 2i - 5j + 3k$find $\vec{a}X\vec{b}$.

5 MARK QUESTIONS

1. Find cosine of the angle between the vectors $4i - 2j - 3k$and $2i - 3j + 4k$.
2. Find the projection of $\vec{b}$ on $\vec{a}$ if $\vec{a} = 5i + 2j - 4k$and $\vec{b} = 2i - 5j + 6k$.
3. If $\vec{a} = 3i + 2j - 4k$ and $\vec{b} = i - 2j + 5k$ are two sides of a triangle, find its area.
4. Simplify $(\vec{a} + \vec{b}).(\vec{a} - \vec{b})$and $(\vec{a} + \vec{b})X(\vec{a} - \vec{b})$.
5. Find the magnitude of moment of force $4i - 2j + 5k$ about (2,5,-7) acting at (4,7,0)

6 MARK QUESTIONS

1. If A=(2,5,7), B=(3,9,4) and C=(-2,5,7) are three vertices of parallelogram find its area.
2. If a force $4i + 6j + 2k$ acting on a body displaces it from (2,7,-8) to (3,9,4). Find the work done by the force.
3. Find the sine of the angle between the vectors $4i - 2j - 3k$and $2i - 3j + 4k$.
4. Find the unit vector in the direction perpendicular to both vector $2i - 5j + k$and $5i + j + 7k$.
5. Show that the points whose position vectors are $i - 3j - 5k$, $2i - j + k$ and $3i - 4j - 4k$ form a right angled triangle.

UNIT-3: PROBABILITY AND LOGARITHMS

3 MARK QUESTIONS

1. Define equally likely events, Independent event, and mutually exclusive event.
2. Define probability of an event.
3. A coin is tossed twice. What is the probability that at least one head occurs.
4. A die is thrown once, what is the probability an odd number appears.
5. If E and F are events such that P(E)=0.6, P(F)=0.3 and P(E∩F)= 0.2. Find P(E/F).

5 MARK QUESTIONS

1. Prove that $\frac{1}{1+\log_c ab} + \frac{1}{1+\log_a bc} + \frac{1}{1+\log_b ca} = 1$
2. If $x = \log_c ab$, $y = \log_b bc$, $z = \log_a ca$,
   Prove that $xyz = x + y + z + 2$
3. If $x = \log_{2a} a$, $y = \log_{3a} 2a$, $z = \log_{4a} 3a$, prove that $xyz + 1 = 2yz$
4. If $a^2 + b^2 = 7ab$, prove that $\log\left(\frac{a+b}{3}\right) = \frac{1}{2}(\log a + \log b)$
5. Solve for x given that $(\log_2 x)^2 + (\log_2 x) - 20 = 0$

6 MARK QUESTIONS

1. An integer is chosen at random from the numbers ranging from 1 to 50 . What is the probability that the integer chosen is a multiple of 3 or 10 ?
2. Two unbiased dice are thrown once . Find the probability of getting the sum of the numbers obtained on the two dice is neither a multiple of 2 nor a multiple of 4 .
3. One card is drawn from a well shuffled pack of 52 cards. If E is the event "the card drawn is a king or an ace" and F is the event " the card drawn is an ace or a jack " then find the conditional probability of the event E, when the event F has already occurred .
4. A pair of dice is thrown once. If the two numbers appearing on them are different, find the probability that the sum of the numbers is 6.
5. A family has two children. What is the probability that both the children are boys given that (i) the youngest is a boy. (ii) at least one is a boy ?

UNIT-4: ALLIED ANGLES AND COMPOUND ANGLES

ALLIED ANGLES

3 MARKS QUESTIONS

1. Find the value of $\cos ec(-1110^0)$
2. Find the value of $\frac{\cos ec(180^0 - A)\cos A}{\sec(180^0 + A)\cos(90^0 + A)}$
3. 3.If $\sin\theta = \frac{1}{2}$ and $\frac{\pi}{2} \subset \theta \subset \pi$, find $\cos\theta$
4. 4. If A+B+C =180^0 Prove that $\cot\left(\frac{A+B}{2}\right) = \tan c/2$
5. 5.find the value of $\tan\left(\frac{7\pi}{3}\right)$

5 MARKS QUESTIONS

1. Prove that $\frac{\sin(180^0 - A)COS(360^0 - A)\tan(180^0 + A)}{COS(270 + A)\sin(90 + A)\cot(270 - A)} = 1$
2. If secx = 13/5 and $270^0 \subset x \subset 360^0$, Find the value of $\frac{3\sin x - 2\cos x}{9\cos x + 4\sin x}$
3. Find the value of $\cos 570^0 \sin 510^0 - \sin 330^0 \cos 390^0$
4. Evaluate $\frac{\sin(-\alpha)}{\sin(90^0 + \alpha)} - \frac{\cos(-\alpha)}{\cos(90 - \alpha)} - \frac{\sec(90^0 - \alpha)}{\cos(180^0 + \alpha)}$
5. Show that $\tan 225^0 x \cot 405^0 + \tan 765^0 x \cot 675^0 + \operatorname{cosec} 135^0 x \sec 315^0 = 0$

6 MARK QUESTIONS

1 .Evaluate $\tan 315^0 x \cot 405^0 + \tan 765^0 x \cot 675^0 + \operatorname{cosec} 135^0 x \sec 315^0$

2. Find x if $\frac{x \sin^2 300^0 \sec^2 240^0}{\cos 225^0 \cos ec^2 240^0} = \cot^2 315^0 \tan^2 300^0$
3. If $\sin\theta = \frac{-1}{4} and \pi \subset \theta \subset \frac{3\pi}{2}$, find the value of $\frac{\cos\theta + \tan\theta}{\cot\theta + \sec\theta}$
4. Evaluate $\frac{\sin(2\pi - A)}{\sin(\pi - A)} - \frac{\tan\left(\frac{\pi}{2} + A\right)}{\cot(2\pi + A)} + \frac{\cos ec(-A)}{\sec\left(\frac{\pi}{2} + A\right)}$
5. Show that $\tan^2(315^0)\cot(-405^0) + \cot(495^0)\tan(-585^0) = 0$

COMPOUND ANGLES

3 MARKS QUESTIONS

1. Find the value of $\sin 15^0$
2. Show that $\tan(45^0 + \theta) = \frac{1 + \tan\theta}{1 - \tan\theta}$
3. Prove that $\frac{\sin(A-B)}{\cos A \cos B} + \frac{\sin(B-C)}{\cos B \cos C} + \frac{\sin(C-A)}{\cos C \cos A} = 0$
4. Using tan(A+B), prove that $\cot(A+B) = \frac{\cot A \cot B - 1}{\cot A + \cot B}$
5. Prove that $\frac{\sin 2A}{\sin A} - \frac{\cos 2A}{\cos A} = \sin A$

5 MARKS QUESTIONS

1. Prove that cos(A-B) cos(A+B)= $\cos^2 A - \sin^2 B$
2. Show that $\sin\left(A+\frac{\pi}{4}\right)+\cos\left(A+\frac{\pi}{4}\right)=\sqrt{2}\cos A$
3. If sinA= $\frac{1}{\sqrt{10}}, \sin B = \frac{1}{\sqrt{5}}$ $prove that A+B = 45^0$
4. Prove that $\tan 3\theta - \tan 2\theta - \tan\theta = \tan\theta \tan 2\theta \tan 3\theta$
5. If A+B = $\frac{\pi}{4}$, $prove that (1+\tan A)(1+\tan B)) = 2$

TRASFORMATION FORMULAE

3 MARKS QUESTIONS

1 P.T $\frac{\cos A+\cos B}{\sin A+\sin B} = \cot\left(\frac{A+B}{2}\right)$

2 P.T $\frac{\sin 68^\circ + \sin 52^\circ}{\cos 68^\circ + \cos 52^\circ} = \sqrt{3}$

3 Show that $\cos 40^\circ - \cos 50^\circ = \sqrt{2}\ \sin 5^\circ$

4 Show that $\sin 47^\circ + \cos 77^\circ = \cos 17^\circ$

5 Show that $\cos 80^\circ + \cos 40^\circ - \cos 20^\circ = 0$

MARKS QUESTIONS

1 P.T $\frac{\sin\theta+\sin 3\theta+\sin 5\theta}{\cos\theta+\cos 3\theta+\cos 5\theta} = \tan 3\theta$

2 In and triangle ABC prove that tanA + tanB +tanC = tanA tanB tanC

3 Show that $\frac{\sin 9^\circ + \cos 9^\circ}{\cos 9^\circ - \sin 9^\circ} = \tan 54^\circ$

4 Prove that $\cos 55^\circ + \cos 65^\circ + \cos 175^\circ = 0$

5 Prove that $\sin 20^\circ \times \sin 40^\circ \times \sin 80^\circ = \frac{\sqrt{3}}{8}$

MARKS QUESTIONS

1 Prove that $\cos 20^0 x \cos 40^0 x \cos 80^0 x \cos 60^0 = 1/16$

2 In any triangle ABC prove that sinA + sinB + sinC=4Cos(A/2)cos(B/2)cos(C/2)

3 Show that $\frac{\cos x+\cos 2x-\cos 3x-\cos 4x}{\sin x+\sin 2x+\sin 3x+\sin 4x} = \tan x$

4 If A+B+C = 180^0 prove that $\cos^2 A+\cos^2 B+\cos^2 C = 1-2\cos A\cos B\cos C$

5 If A+B+C = 180^0 prove that sin2A-sin2B+sin2C=4cosAcosCsinB

UNIT-5: COMPLEX NUMBERS

3 MARK QUESTIONS

1. Evaluate i^{-999}
2. Find the complex conjugate of $(1+2i)(3i-4)$
3. Express $(3+4i)^{-1}$ in the form a+ib
4. Find the real part and imaginary part of $\frac{1}{\sqrt{2}+i}$
5. $if\, x+iy = \cos\theta + i\sin\theta$ show that $x+\frac{1}{x} = 2\cos\theta$

5 MARK QUESTIONS

1. Evaluate $\left(i^{19}+\left(\frac{1}{i}\right)^{25}\right)^2$
2. Find the modulus and amplitude of $\left(1-i\sqrt{3}\right)$
3. Express in a + ib form: $\frac{(2+3i)}{(1+3i).(2+i)}$
4. Express the complex number 1 + i in the polar form.
5. Find the amplitude of $\sqrt{3}+i$ and represent in Argand diagram.

UNIT-6: INTRODUCTION TO CALCULUS

3 MARK QUESTIONS

1. Evaluate: $\lim_{x\to -3}\frac{x^2-9}{x+3}$
2. Evaluate: $\lim_{\theta\to 0}\left(\frac{\tan m\theta}{\sin n\theta}\right)$
3. Evaluate: $\lim_{n\to\infty}\left(\frac{n+1}{n}\right)^n$.
4. Evaluate: $\lim_{x\to\infty}\left(\frac{3x^2-2x+1}{2x^2+5x-1}\right)$
5. Evaluate: $\lim_{x\to 0}\left(\frac{1-\cos 2x}{x^2}\right)$

5 MARK QUESTIONS

1. Evaluate:$\lim_{x\to 1}\frac{x^2+x-2}{x^2-1}$.
2. Evaluate: $\lim_{x\to 0}\left(\frac{\sqrt{a+x}-\sqrt{a-x}}{3x}\right)$
3. Evaluate: $\lim_{x\to 1}\left(\frac{x^m-1}{x^n-1}\right)$

4. Evaluate: $\lim_{\theta \to 0} \left(\frac{1-\cos x+\tan^2 x}{x \sin x} \right)$
5. Evaluate: $\lim_{x \to 0} \left(\frac{e^{ax}-e^{bx}}{x} \right)$.

6 MARK QUESTIONS

1. Prove that $\lim_{\theta \to 0} \frac{\sin\theta}{\theta} = 1$, if θ is in "radian".
2. Evaluate: $\lim_{x \to 0} \left(\frac{\sin \pi x}{x-1} \right)$
3. Evaluate: $\lim_{n \to \infty} \left(\frac{(5-n^2)(n-2)}{(2n-3)(n+3)(5-n)} \right)$.
4. Evaluate: $\lim_{x \to 1} \frac{x^2-5x+4}{x^2-12x+11}$.
5. Evaluate: $\lim_{x \to 2} \left(\frac{x^2-4}{\sqrt{x+2}-\sqrt{3x-2}} \right)$

Government of Karnataka
Department of Technical Education, Bengaluru

Course: ENGINEERING MATHEMATICS - I

Course code: 15SC01M

Curriculum Drafting Committee 2015-16

	Name	Designation	Institution
1	**Dr. D.S. Prakash**	Asst. Director (LRDC)	DTE, Bengaluru
2	**Dr.MokaShekhu, ,**	Lecturer (Selection Grade /Science)	Government Polytechnic, Channasandra, Bengaluru
3	**Sri.Sathyanaraya Dixit,**	Lecturer (Selection Grade /Science)	PVP Polytechnic, Bengaluru
4	**Sri. Guruprasad V**	Lecturer (Selection Grade /Science)	APS Polytechnic, Somanahalli
5	**Dr.RajasekharHeera,**	Lecturer/Science,	Government Polytechnic, Gulbarga.

Curriculum Review committee

	Name	Designation	Institution
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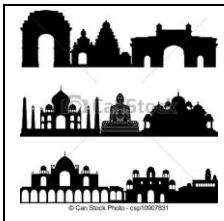
Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bengaluru



Course Title: **HISTORY OF ARCHITECTURE - I**		
Scheme (L:T:P) : **4:0:0**	Total Contact Hours: **52**	Course Code: **15AR11T**
Type of Course: **Lectures, Self Study & Quiz**	Credit **:04**	Core/ Elective: **Core**
CIE- 25 Marks		SEE- 100 Marks

Pre-requisites: Knowledge of Social Science with basic sketching in Secondary Education.

Course Objective:

1. Recognize, explain, evaluate and appreciate the growth, development, materials and planning of historical buildings.
2. Interpret and appreciate the evolution of temple forms, its concept and structure, constructional techniques and ornamentation of religious and civic buildings.

On successful completion of the course, the students shall be able to:

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Outline the evolution of architecture	***R/U***	1,2,5,7,10	5
CO2	Explain salient features and styles of Buddhist architecture	***R/U***	1,2,5,7,10	5
CO3	Describe features of Jain architecture and interpret styles in modern architecture	***R/U***	1,2,5,7,10	5
CO4	List the characteristic features of Hindu architectural styles.	***R/U/A***	1,2,5,7,10	15
CO5	Illustrate Hindu architecture in respect of temples.	***R/U/A***	1,25,7,10	10
CO6	Explain salient features of Islamic architecture.	***R/U/A***	1,2,5,7,10	12
			Total sessions	**52**

Legend- R; Remember U: Understand Ap: Application Ay: Analysis C:Creation E: Evaluation

Mapping Course Outcomes with Program Outcomes

Course	Programme Outcome									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
History of architecture I	3	3	-	-	3	-	3	-	-	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.

If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3

If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2

If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1

If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Course content and blue print of marks for SEE

Unit	Major Topics	Hours Allotted	Questions to be set for SEE						Marks weightage	weightage (%)
			Cognitive Levels							
			R	U	Ap	Ay	C	E		
1	Introduction	5	**5**	5					**10**	**10**
2	Buddhist Architecture	5	**5**	5					**10**	**10**
3	Jain Architecture	5	**5**	5					**10**	**10**
4	Hindu Architecture	25	**15**	35	**15**				**65**	**48**
5	Islamic Architecture	12	**5**	30	**15**				**50**	**23**
Total		52	**35**	**80**	30				**145**	**100**

Legend- R: Remember U: Understand Ap: Application Ay: Analysis C:Creation E: Evaluation

UNIT I: INTRODUCTION 5 Hours

Introduction- Architecture, Brief on Architecture development and influences.

UNIT II: BUDDHIST ARCHITECURE **5 hours**

Buddhist architecture -Brief Architectural character – Example- Stupa at Sanchi, Chaitya hall in Karli, Viharas at Nasik and Ashoka pillar at Saranath

UNIT III: JAIN ARCHITECTURE **5 hours**

Brief Architectural character- Example-Adinath temple at Ranakpur and Gomateshwara Statue at Shravanabelagola.

UNIT IV: HINDU ARCHITECTURE **25 hours**
CHALUKYAN / HOYSALAN STYLE

Brief Architectural character of Chalukyan style of hindu period-Example- Virupaksha Temple at Pattadakal, Cave temple at Badami and Durga temple at Aihole
Brief Architectural character of Hoysalan style -Example-Hoysaleswara temple at Halebid and Channakesava Temple at Belur.

PALLAVAN AND CHOLAN STYLE

Brief architectural character of Cholan style of Hindu Period - Examples-Brihadeeswara Temple at Thanjavur, Meenakshi temple at Madurai,
Brief architectural character of Pallavan style of Hindu Period- Examples- Rathas, Shore Temple at Mahabalipuram

ORISSAN STYLE

Brief architectural character of Orissan style of Hindu period – Example: Lingaraj temple at Bhuvaneshwar , Sun temple at Konark.

UNIT V: ISLAMIC ARCHITECTURE **12 hours**

Brief architectural character like Domes, Arches, Minarates - Example-Tajmahal at Agra, Charminar at Hyderabad, Gol Gumbaz at Bijapur, Jama Masjid at Delhi and Qutub Minar at Delhi, Diwan i Khas at Fathepur Sikri.

Reference:

1. A history of Architecture - Bannister Fletcher.
2. World Architecture - Hiraskar.
3. Indian Architecture volume I and II –Percy Brown

Web link:

1. www.all-art.org
2. www.digiLibraries.com/ History of architecture

Course Delivery: The course will be delivered through lectures and presentations, suitable Videos and site visit to similar sites.

Course Assessment and Evaluation Scheme:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
Direct Assessment	CIE*	IA	Students	Three IA tests (Average of three tests will be computed)	20	Blue books	1,2,3,4,5,6
				Student activity	05	Assignment books	1,2,3,4,5,6
				Total	**25**		
	SEE*	End Exam		End of the course	100	Answer scripts at BTE	1,2,3,4,5,6
Indirect Assessment	Student Feedback on course		Students	Middle of the course		Feedback forms	1, 2,3Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2,3,4,5,6 Effectiveness of Delivery of instructions & Assessment Methods

***CIE** – Continuous Internal Evaluation ***SEE** – Semester End Examination

Note: I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit.

SUGGESTED LIST OF STUDENT ACTIVITY

1. Each student should do any one of the following type of activity or similar activity related to the course
2. Each student should conduct different activity.

1	Prepare a detailed hand written report along with sketches and pictures of Stupa at Sanchi.
2	Prepare a detailed hand written report along with sketches and pictures of Stupa at Sanchi.
3	Prepare a detailed hand written report along with sketches and pictures of Cave temple at Badami.
4	Prepare a detailed hand written report along with sketches and pictures of Hoysaleswara temple at Halebid
5	Prepare a detailed hand written report along with sketches and pictures of Domes, Arches, Minarates.
6	Prepare a detailed hand written report along with sketches and pictures of Qutub Minar at Delhi.
7	Prepare a detailed hand written report along with sketches and pictures of Lingaraj temple at Bhuvaneshwar .

Example of model of rubrics / criteria for assessing student activity

Dimension	Students score (Group of five students)				
	STUDENT 1	STUDENT 2	STUDENT 3	STUDENT 4	STUDENT 5
Rubric Scale	Unsatisfactory **1**, Developing **2**, Satisfactory **3**, Good **4**, Exemplary5				
1.Literature	5				
2.Fulfill team's roles & duties	2				
3.Conclusion	3				
4.Convensions	4				
Total	14				
Average=(Total /4)	14/4=3.5=4				
Note: Concerned faculty (Course coordinator) must devise appropriate rubrics/criteria for assessing Student activity for 5 marks One activity to attain last CO (course outcome) may be given to a group of FIVE students					

Note: Dimension should be chosen related to activity and evaluated by the course faculty

Rubric Model- Example only:

Dimension	Rubric Scale				
	1 Unsatisfactory	2 Developing	3 Satisfactory	4 Good	5 Exemplary
1.Literature	Has not included relevant info	Has included few relevant info	Has included some relevant info	Has included many relevant info	Has included all relevant info needed
2. Fulfill team's roles & duties	Does not perform any duties assigned	Performs very little duties	Performs partial duties	Performs nearly all duties	Performs all duties of assigned team roles
3.Communication	Poor	Less Effective	Partially effective	Effective	Most Effective
4.Convensions	Frequent Error	More Error	Some Error	Occasional Error	No Error

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

1. Remembering and Understanding : - 40% weightage
2. Applying the knowledge acquired from the course : - 50 % weightage
3. Analysis : - 5% weightage
4. Evaluation : - 2% weightage
5. Creating new knowledge : - 3% Weightage

FORMAT OF I A TEST QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks
Ex: I test/6 th week of sem 10-11 Am	I SEM	HISTORY OF ARCHITECTURE-I	20
	Year:	Course code:15AR11T	

Name of Course coordinator :
CO's:_1,2,3___
Units:_1,2,3_

Question no	Question	MARKS	CL	CO	PO
1	Describe various factors that influences the development of architecture.	05	U	1	1,2, 5,7, 10
2	What are the features of Ashoka pillar. OR What are the architectural manifestation of 'Viharas'.	05	R	2	1,2, 5,7, 10
3	Sketch and Explain Stupa at Sanchi. .	05	AP	2	1,2, 5,7, 10
4	Explain architectural features of Jain architecture. OR Explain with a neat sketch Adinath temple at Ranakpur .	05	U	3	1,2, 5,7, 10

Note: Internal choice may be given in each CO at the same cognitive level (CL).

Model Question Paper

Code : 15AR11T

First Semester Diploma Examination

HISTORY OF ARCHITECTURE-1

Time**: 3 hours** Max marks: **100**

Note: 1 Answer any SIX question from Part A
2. Answer any SEVEN full questions From Part B

Section A 5X6=30

1. Write a note on Viharas at Nasik.
2. Explain with sketch Ashoka pillar at Saranath.
3. Briefly explain important features of Jain Temple at Shravanabelagola.
4. Write a short note on Chalukyan order with sketch.
5. Sketch a Hindu temple Gopuram.
6. Briefly explain how Hindu Architecture is classified.
7. Sketch and explain Orissan Vimana.
8. Write a note on Diwan i khas at Fathepur Sikri
9. Define dome sketch any two types of domes seen in India.

Section B 10X7=70

10. Describe with neat sketches the various factors that influences the development of architecture.
11. Briefly explain with neat sketches the Sanchi stupa of Buddhist Architecture.
12. Briefly explain with neat sketches the important features of Jain architecture with Adinath Temple as an example.
13. Briefly explain with neat sketches the important Features of Hoysalan architecture with an example.
14. Briefly explain with neat sketches the important Features of cholan architecture with an example.
15. Describe with sketch, the arrangement of the temple of Lingaraja Temple at Bhuvaneshwar.
16. Explain briefly with sketches the important Features of Islamic architecture with Jama masjid as an example.
17. Explain with neat sketch Gol Gumbaz at Bijapur. .
18. Explain with neat sketch the following
    a. Qutub minar
    b. Charminar
19. Highlight the important features of Dravidian Architecture with supporting sketches.

Model Question Bank

I Semester Diploma in Architecture

Course Title: HISTORY OF ARCHITECTURE-I **Code: 15AR11T**

CO -1 KNOW THE EVOLUTION OF ARCHITECTURE

Level – 1. Remembering.

1. What is architecture and state the importance of architecture.

Level – 2. Understanding.

2. Briefly explain the development and influences of architecture.

CO -2 EXPLAIN SALIENT FEATURES AND STYLES OF BUDDHIST ARCHITECTURE

Level – 1. Remembering.

1. With neat sketch briefly explain important features of Buddhist Architecture.
2. Sketch a Buddhist order.
3. Sketch Buddhist entrance Torana.
4. Sketch Ashoka Stamba at Saranath.
5. Sketch entrance view of Chaitya hall showing horse shoe shaped door opening.

Level – 2. Understanding.

1. Briefly explain with neat sketch of Buddhist Chaitya hall at Karli.
2. Highlight important features of Buddhist sanchi stupa along with sketch.
3. Sketch and explain Buddhist Vihara.

CO -3 DESCRIBE FEATURES OF JAIN ARCHITECTURE AND INTERPRET STYLES IN MODERN ARCHITECTURE

Level – 1. Remembering.

1. Briefly explain Characteristic features of Jain Architecture.
2. Sketch Jain Order.
3. Sketch shikara belongs to Jain Architecture.

Level – 2. Understanding.

1. With neat sketch explain important features of Adinath Temple at Ranakpur.

CO - 4 & 5
LIST THE CHARACTERISTIC FEATURES OF HINDU ARCHITECTURAL STYLES. ILLUSTRATE HINDU ARCHITECTURE IN RESPECT OF TEMPLES.

Level – 1. Remembering

1. Sketch any one order of Chalukyan style.
2. Explain how Hindu architecture is classified.
3. Highlight important features of Hoysala Architecture with help of sketch.
4. Sketch Vimana of Hoysala Architecture.
5. Highlight the important features of Dravidian Architecture with supporting sketches.

Level – 2. Understanding.

1. Sketch and explain Durga Temple at Aihole.
2. Briefly explain with neat sketch Hoysaleswara Temple at Halebidu.
3. Briefly explain with neat sketch Keshava temple at Belur.

4. Sketch and explain Dravidian order.
5. Explain with neat sketch the Brihadeshwara Temple at Tanjore.
6. Sketch and explain with neat sketches Lingaraja Temple at Bhuvaneshawara.

CO -6 EXPLAIN SALIENT FEATURES OF ISLAMIC ARCHITECTURE.

Level – 1. Remembering

1. Sketch any two Arches belongs to Islamic Architecture.

Level – 2. Understanding

1. With neat sketch explain Taj Mahal at Agra.
2. Sketch and explain one Minarate which belongs to Bijapur.
3. Explain important features of Gol gumbaz at Bijapur.
4. Sketch and explain one Dome belongs to Mughal period.
5. Explain important features of Jama Masjid at Dehli.

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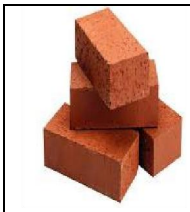	Course Title: **MATERIALS OF CONSTRUCTION-I**		
	Scheme (L:T:P) : **4:0:0**	Total Contact Hours: **52**	Course Code: **15AR12T**
	Type of Course: **Lectures, Self Study & Quiz**	Credit **:04**	Core/ Elective: **Core**
CIE- 25 Marks			SEE- 100 Marks

Prerequisites: Knowledge of Science and Geology in Secondary Education

Course Objectives:

1. Identify the different kinds of materials.
2. Classify various materials based on properties and uses.

On successful completion of the course, the students shall be able to:

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Recognize the various types of stones based on their properties	***R/U/A***	1,2,5,7,10	8
CO2	Identify the sources of various types of limes and their application	***R/U/A***	1,2,5,7,10	5
CO3	Explain types of bricks and their suitability in building construction.	***R/U/A***	1,2,5,7,10	13
CO4	Enumerate different types of clay tiles and their application .	***R/U/A***	1,2,5,7,10	07
CO5	Classify various types of aggregates and their role in making mortar and concrete	***R/U/A***	1,25,7,10	05
CO6	Describe timber as an engineering material.	***R/U/A***	1,2,5,7,10	14
			Total sessions	**52**

Legends: R=Remember U=Understand A= apply and above levels (Bloom's revised taxonomy)

Course	Programme Outcome									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
MATERIALS OF CONSTRUCTION-I	3	3	-	-	3	3	3	-	-	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.

If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3

If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2

If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1

If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Course content and blue print of marks for SEE

Unit	Major Topics	Hours Allotted	Questions to be set for SEE						Marks weightage	weightage (%)
			Cognitive Levels							
			R	U	Ap	Ay	C	E		
1	Stones	08	**5**	**10**	**15**				30	**15**
2	Lime	05	**5**	**5**	**5**				15	**10**
3	Bricks	13	**5**	**10**	**15**				30	**25**
4	Clay products	7	**5**	**5**	**5**				15	**13**
5	Coarse and Fine aggregates	5	**5**	**5**	**5**				15	**10**
6	Timber	14	**5**	**20**	**15**				40	**27**
Total		52	**30**	**55**	**60**				145	**100**

Legend- R; Remember U: Understand Ap: Application Ay: Analysis C:Creation E: Evaluation

UNIT I: STONES 08 Hours

Introduction to stones –Engineering aspects of stones, Uses of stones as an engineering material, Classification of rocks based on geological, physical, and chemical properties, Characteristics of good stones, Properties and uses of important types of stones and artificial stones like mosaic, terrazzo and cement concrete blocks.

UNIT II: LIME 5 Hours

Introduction to lime. Engineering aspects of lime. Technical terms in connection with lime. Sources of lime. Various types of lime and their uses. Compare different types of lime.

UNIT III: BRICKS 13 Hours

Engineering aspects of bricks. Raw materials for manufacturing bricks. Ingredients of good brick earth. Dimensions of bricks as per I.S. specification and existing practice. Requirements of good bricks. Classification of bricks based on- shape, material of brick and purpose. Refractory bricks-their types and uses. Alternate to burnt bricks-cement concrete blocks (solid and hollow), stabilized soil blocks, fly ash bricks, burnt clay blocks.

UNIT IV: CLAY PRODUCTS 7 Hours

Engineering aspects of clay products. Clay tiles-Characteristics, types, shape, sizes and uses. Terracotta tiles-definition, types and uses, Ceramic tiles-properties, types, commercial sizes and uses. Vitrified tiles-Properties, types, commercial sizes and uses.

UNIT V: COARSE AND FINE AGGREGATES 5 Hours

Fine aggregate-sources, properties, its role in mortar and concrete, bulking of sand.
Course aggregate -properties, sources, its role in concrete.

UNIT VI: TIMBER 14 Hours

Engineering aspects of timber, Classification of trees, Hard wood and soft wood and their differences, Defects in timber, Methods of seasoning of timber, Market forms of timber, Industrial timber-properties, sizes and uses of plywood, block board, particle board, fiber board, laminates and veneers.

Reference books

1. Engineering Materials by S.C.Rangawala.
2. Engineering Materials by Sushil kumar.
3. Engineering Materials by G.J. Kulkarni.
4. Engineering Materials by P.C.Varghese.

Web links:

1. https://en.wikipedia.org/wiki/Building_material
2. http://nptel.ac.in/courses/105102088/
3. http://www.journals.elsevier.com/construction-and-building-materials/
4. http://freevideolectures.com/Course/86/Building-Materials-and-Construction

Course Delivery: The course will be delivered through lectures and presentations, suitable Videos, sample collections and site visits.

Course Assessment and Evaluation Scheme:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
Direct Assessment	CIE*	IA	Students	Three IA tests (Average of three tests will be computed)	20	Blue books	1,2,3,4,5,6
				Assignment/quiz, Seminar /charts to display sample materials- Student activity	05	Report	1,2,3,4,5,6
				Total	**25**		
	SEE*	End Exam		End of the course	100	Answer scripts at BTE	1,2,3,4,5,6
Indirect Assessment	Student Feedback on course		Students	Middle of the course		Feedback forms	1, 2,3
	End of Course Survey			End of the course		Questionnaires	1,2,3,4,5,6 Effectiveness of Delivery of instructions & Assessment Methods

***CIE** – Continuous Internal Evaluation ***SEE** – Semester End Examination

Note: I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit.

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

1. Remembering and Understanding : - 35% weightage
2. Applying the knowledge acquired from the course : - 50 % weightage
3. Analysis : - 10% weightage
4. Evaluation : - 3% weightage
5. Creating new knowledge : - 2% weightage

SUGGESTED LIST OF STUDENT ACTIVITY

1. Each student should do any one of the following type of activity or similar activity related to the course
2. Each student should conduct different activity.

Prepare a detailed hand written report along with sketches and pictures for any one of the following.
1. Artificial stones like mosaic, terrazzo and cement concrete blocks..
2. Rocks.
3. Stabilized soil blocks, fly ash bricks, burnt clay blocks.
4. Vitrified tiles and Ceramic tiles.
5. Industrial timber.
6. Hard wood and soft wood .

Example of model of rubrics / criteria for assessing student activity

Dimension	Students score (Group of five students)				
	STUDENT 1	STUDENT 2	STUDENT 3	STUDENT 4	STUDENT 5
Rubric Scale	Unsatisfactory **1**, Developing **2**, Satisfactory **3**, Good **4**, Exemplary5				
1.Literature	5				
2.Fulfill team's roles & duties	2				
3.Conclusion	3				
4.Convensions	4				
Total	14				
Average=(Total /4)	14/4=3.5=4				

Note: Concerned faculty (Course coordinator) must devise appropriate rubrics/criteria for assessing Student activity for 5 marks One activity to attain last CO (course outcome) may be given to a group of FIVE students

Note: Dimension should be chosen related to activity and evaluated by the course faculty

Rubric Model- Example only:

Dimension	Rubric Scale				
	1 Unsatisfactory	2 Developing	3 Satisfactory	4 Good	5 Exemplary
1.Literature	Has not included relevant info	Has included few relevant info	Has included some relevant info	Has included many relevant info	Has included all relevant info needed
2. Fulfill team's roles & duties	Does not perform any duties assigned	Performs very little duties	Performs partial duties	Performs nearly all duties	Performs all duties of assigned team roles
3.Communication	Poor	Less Effective	Partially effective	Effective	Most Effective
4.Convensions	Frequent Error	More Error	Some Error	Occasional Error	No Error

FORMAT OF I A TEST QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks
Ex: I test/6 th week of sem 10-11 Am	I SEM	MATERIALS OF CONSTRUCTION-I	20
	Year:	Course code:15AR12T	
Name of Course coordinator : CO's:__1,2__			Units:__1,2

Question no	Question	MARKS	CL	CO	PO
1	What are the engineering uses of stones? OR What are the characteristics of good building stone.	05	R	1	1,2, 5,7, 10
2	Explain classification of lime.	05	U	2	1,2, 5,7, 10
3	Explain engineering aspects of lime.	05	U	2	1,2, 5,7, 10
4	Explain the geological classification of stone. OR Explain characteristics of good stone.	05	U	1	1,2, 5,7, 10

Note: Internal choice may be given in each CO at the same cognitive level (CL).

Model Question Paper

Code : **15AR12T**

I Semester Diploma Examination

MATERIALS OF CONSTRUCTION I

Time: 3 Hours] [Max Marks: 100

Note: i. Answer any SIX questions from Part-A
ii. Answer any SEVEN questions from Part-B

PART-A

5x6=30 marks

1. What are the engineering uses of stones?
2. Write short notes on artificial stones.
3. Explain engineering aspects of lime.
4. Write advantages of Hollow concrete blocks.
5. Explain the Cross- section of an exogenous tree with a neat sketch.
6. List the market forms of timber.
7. List the functions of sand in mortar.
8. Define terra-cotta. Explain its types.
9. Differentiate hard wood and soft wood.

PART-B

10x7=70 marks

10. Explain the geological classification of stone.
11. Explain characteristics of good stone.
12. Explain classification of lime.
13. Write short notes on soil stabilized soil blocks & clay blocks.
14. Explain classification of bricks based on shape
15. What are advantages and uses of ceramic tiles?
16. What are the properties and sources of fine and course aggregate?
17. Explain market forms of timber.
18. Explain the defects in timber due to natural forces.
19. Write properties, sizes and uses of plywood.

Model Question Bank

1st Semester Diploma in Architecture

Course title: MATERIALS OF CONSTRUCTION - I Code : **15AR12T**

CO1	Recognize the various types of **stones** based on their properties

LEVEL 1: Remember

1. Write short note on igneous rocks.
2. What are the characteristics of good stone?

LEVEL 2: Understand

3. Briefly explain the classification of stones.
4. Briefly explain the physical classification of rocks.
5. Briefly explain the chemical classification of rocks.

CO2	Identify the sources of various types of limes and their application

LEVEL 3: Analyse

1. Distinguish fat lime and hydraulic lime.

CO3	Explain types of bricks and their suitability in building construction.

LEVEL 1: Remember

1. List the properties of good building bricks.
2. Write short notes on soil stabilised blocks & clay blocks.
3. Write short notes on fly ash bricks & concrete blocks.
4. Write short notes on Concrete blocks - solid and hollow?

LEVEL 2: Understand

1. Explain ingredients of good brick earth.
2. Explain the classification of bricks.

LEVEL 3: Analyse

1. Differentiate stabilized soil blocks and conventional burnt bricks.
2. Compare solid concrete blocks with burnt bricks.
3. Compare hollow concrete blocks with burnt bricks.
4. Compare fly ash bricks with burnt bricks.

CO4	Enumerate different types of clay tiles and their application .

LEVEL 2: Understand

1. Explain the types of clay tiles.
2. Explain the types of tiles, their characteristics and uses.

CO5	Classify various types of aggregates and their role in making mortar and concrete

LEVEL 2: Understand

1. Explain sources of sand and bulking of sand.

CO6	Describe timber as an engineering material.

LEVEL 1: Remember

1. List the properties of good timber.
2. Write short notes on seasoning of timber.
3. What are composite boards and list various types of composite boards.

LEVEL 2: Understand

1. Briefly explain Industrial timber.
2. Explain classification of timber.
3. Explain the Cross- section of an exogenous tree with a neat sketch.
4. Explain the defects in timber due to natural forces.
5. Explain the method of natural seasoning of timber.
6. Explain market forms of timber.

LEVEL 3: Analyse

1. Compare natural timber with industrial timber
2. Distinguish exogenous and endogenous trees.
3. Distinguish heart wood and sap wood.

Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bengaluru

Course Title: **ARCHITECTURAL GRAPHICS - I**		
Scheme (L:T:P) : **0:2:4**	Total Contact Hours: **78**	Course Code: **15AR13P**
Type of Course: Tutorial and practice	Credit **:3**	Core/ Elective: **Core**
CIE- 25 Marks		SEE- 50 Marks

Prerequisites: Knowledge of Geometry in secondary education.

Course Objectives:

1. The course is aimed at developing Basic Graphic skills.
2. Develop Skills In Preparation of Basic Drawings.
3. Develop Skills in Reading and Interpretation of Engineering Drawings.

Course Outcome:

On successful completion of the course, the students will be able to:

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Identify the importance of dimensioning a drawing and to show dimensions for a drawing by various methods.	***U***	1,2,3,4,9,10	9
CO2	Prepare given drawings by performing various geometrical tasks.	***R***	1,2,3,4,9,10	12
CO3	Reproduce drawings to given scales.	***U***	1,2,3,4,9,10	6
CO4	Develop 2Dimensional views using principles of orthographic projection.	***A***	1,2,3,4,9,10	30
CO5	Draw the sectional views	***A***	1,2,3,4,9,10	12
CO6	Development of surface for various Geometrical objects	***A***	1,2,3,4,9,10	9
			Total sessions	**78**

Legends: R=Remember. U=Understand. A= apply (Bloom's revised taxonomy)

Course	Outcome Programme									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
ARCHITECTURAL GRAPHICS I	3	3	3	3	-	-	-	-	3	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.

If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3

If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2

If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1

If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

UNITI: DIMENSIONING (9 Hours)

Introduction to Architectural Graphics -Drawing Instruments – Standard Sizes of Drawing sheets-Layout of drawing sheets-Title block- Types of lines and their applications-Graphical conventions of various materials-Introduction to Dimensioning-Elements of Dimensioning–Types of Dimensioning- 1. Unidirectional. 2.Aligned system of dimensioning as per B.I.S.

UNIT II: GEOMETRICAL CONSTRUCTIONS (12 Hours)

1. Dividing line into given number of equal parts and ratios.
2. Construction of polygons without angular measurements.
3. Inscription of circle in polygons.
3. Inscription of equal circles in regular polygons touching each other and midpoints of sides of polygon.
4. Circumscription of circle to regular polygons.

UNIT III: SCALE DRAWING (6 Hours)

Introduction to various scales used in architectural drawings- Actual, Reducing and Enlarging. Reproduce drawings to the given scale.

UNIT IV: ORTHOGRAPHIC PROJECTION (30 Hours)

Introduction to orthographic projection- Principal planes of projection- Concept of First angle projection.

1. Draw plan and elevation of Geometrical objects given the position and location.
2. Draw the orthographic views of objects - cube, prism, pyramids, cylinder and cone.

Note: To consider the object in simple and stable positions for developing orthographic views.

UNIT V: SECTION OF SOLIDS (12 Hours)

Section of solids and true shapes of sections of inclined cuts on solids - cube, prisms, cylinder, pyramids, cone (with simple positions of object).

UNIT VI: DEVELOPMENT OF SURFACE (9 Hours)

Development of surfaces of solids (cube, prism, pyramid, cylinder and cone).

Total Contact Hours: 78

Course Assessment and Evaluation:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
DIRECT ASSESSMENT	CIE (Continuous Internal Evaluation)	Drawing sheets	Students	Average of marks allotted to each graded exercise	25	Drawing Sheets	1,3,4,5,6
				TOTAL	**25**		
	SEE (Semester End Examination)	End Exam		End of the course	50	Drawing Sheets at BTE	1,3,4,5,6
INDIRECT ASSESSMENT	Student Feedback on course		Students	Middle of the course		Feedback forms	1,2,3 Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2,3,4,5,6 Effectiveness of Demonstrations& Assessment Methods

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

Sl. No	Bloom's Category	% Weightage
1	**Understanding**	**22**
2	**Applying the knowledge acquired from**	**70**
3	**Analysis**	**04**
4	**Evaluation& Creating new knowledge**	**04**

Resources:

a) References:

1.K.R.Gopalakrishna"Fundamentals of Drawing" Subhas Publications, 2010.
2.K.R.Gopalakrishna"Engineering Drawing" (Vol 1.), Subhas Publications, 2014.
3. Geometrical Art and Drawing - I. H.Morris.
4. Engineering Drawing – N.D.Bhatt.

b) Web links:

1. www.engineeringdrawing.org/
2. https://en.wikipedia.org/wiki/Engineering_drawing/

SCHEME OF EVALUATION:

Sl. no.	Performance	Max.Marks
1	For solving given problems	35*
5	Portfolio	10
6	Viva-voce	05
	TOTAL	**50**

*Weightage may be considered for line types, dimensioning of drawing and compositions.

GUIDELINES FOR QUESTION PAPER SETTING

1. The question paper must be prepared based on the contents without changing the weightage of marks fixed for each unit.

2. The question paper will beset by adhering to the following pattern:(for the total marks of 35)

One Question of 05 marks on	**Dimensioning (Aligned/ Unidirectional).**
Two Questions of05 marks on	**Geometrical constructions.**
One Question of 15 marks on	**Orthographic projections.**
One Question of 10 marks on	**Sections of solids.**
One Question of 05 marks on	**Development of surfaces.**

MODEL QUESTION BANK

Course Title**: Architectural Graphics-I** Code**: 15AR13P**

Time: **4 Hours**. Max Marks: **50**

Instructions: 1.Retain all constructional details.
2. Missing data may be suitably assumed and clearly stated.
3. Usage of appropriate line types and dimensioning of drawing will carry weightage.

5 Marks Question

1. Reproduce the given views to its full size and dimension the same by
   a) Unidirectional system of dimensioning.
   b) Aligned system of dimensioning.

5 Marks Questions on Geometrical constructions

1. Divide a line of length 165 mm into seven equal parts.
2. Divide a line of length 110 mm in the ratio of 1:2:3.
3. Construct a pentagon of side 30 mm without angular measurements.
4. Construct a hexagon of side 35mm without angular measurements.
5. Inscribe three equal circles in an equilateral triangle of side 100 mm such that each circle touches one side of the triangle and other two circles.
6. Inscribe five equal circles in a pentagon of side 30 mm such that each circle touches one side of the polygon and other two circles.
7. Inscribe six equal circles in a hexagon of side 30 mm such that each circle touches one side of the polygon and other two circles.
8. Draw a circum- circle to a square of side 80 mm.
9. Draw a circum circle to a pentagon of side 60 mm.
10. Draw circum circle to a hexagon of side 60 mm

15 Marks Questions on Orthographic projections

1. A triangular prism of base edge 55 mm and axis length 75 mm is resting on one of its lateral edge such that two of its adjacent rectangular faces containing this lateral edge are equally inclined to HP. The edge on which it is resting is parallel to VP and lies at a distance of 50 mm in front of it. The two edges of the axis which is nearest to LPP and RPP are 20 mm and 30 mm from these two planes of projection; draw the projection of the prism.

2. A cylinder base diameter 50 mm and axis length 85 mm is resting on one of its generator such that the axis of the cylinder is parallel to both the profile planes and at 60 mm from RPP and 70 mm from LPP. The nearest end of the axis is at 30 mm in front of VP. Draw the top, front and profile views of the cylinder.

3. A triangular pyramid of base edge 50 mm and axis length 75 mm is having its base on VP such that two of its adjacent base edges are equally inclined to HP and one of the base corner containing these two edges is nearer to HP and lies at 20 mm above it. The nearest base corners to LPP and RPP are at 25 mm and 30 mm from these two planes of projection. Draw the projections of the pyramid.

4. A pentagonal prism of base edge 40 mm and axis length 85 mm is resting on one of its longer edges such that two of its adjacent rectangular faces containing this longer edge are equally inclined to HP. The edge on which it rests is perpendicular to VP. The nearest pentagonal face is lying at a distance of 20 mm in front of VP. The two longer edges which are nearer to LPP and RPP are at 20 mm and 25 mm from these two planes of projection. Draw the projections of the prism.

5. A cone of base diameter 50 mm and axis length 80 mm is resting on its circular base on VP such that the axis of the cone lies at 20 mm above HP. The axis of the cone is at a distance of 40 mm from LPP and 50 mm from RPP respectively. Draw the projections of the cone.

10 Marks Questions on Section of solids

1. A pentagonal prism of base 35 mm and height 85 mm is standing on HP, with its axis vertical and one of its rectangular faces is perpendicular to VP. A section plane perpendicular to VP and inclined at 45° to HP passes through a point on the axis 10 mm below the top face. Draw the sectional front view, sectional top view and true shape of the section.

2. A cone of base diameter 50 mm and axis length 80 mm is resting on its circular base such that the axis of the cone is perpendicular to HP. A section plane parallel to one of its end generator and perpendicular to VP passes through a point at a distance of 50 mm below its apex. Draw the sectional front view, sectional top view and true shape of the section.

3. A cylinder of base diameter 40 mm and axis length 80 mm is resting on its circular base such that the axis is perpendicular to HP. A section plane inclined at 50° to HP, and perpendicular to VP passes through the top end of the axis. Draw the sectional front view, sectional top view and true shape of the section.

05 Marks Questions on Development of surfaces

1. Develop the complete surface of a pentagonal prism of base edge 30 mm and axis length 80 mm.

2. Develop the complete surface of a hexagonal pyramid of base edge 30 mm and axis length 80 mm.

3. Develop the complete surface of a cylinder of base diameter 30 mm and axis length 80 mm.

4. Develop the complete surface of a cone of base diameter 30 mm and axis length 80 mm.

SECTION – III

5. Develop the complete surface of a pentagonal prism of base edge 30 mm and axis length 80 mm.

6. Develop the complete surface of a Hexagonal pyramid of base edge 30 mm and axis length 80 mm.

7. Develop the complete surface of a cylinder of base diameter 30 mm and axis length 80 mm.

8. Develop the complete surface of a cone of base diameter 30 mm and axis length 80 mm.

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	Course Title: **VISUAL ART DRAWING - I**		
	Scheme (L:T:P) : **0:2:4**	Total Contact Hours: **78**	Course Code: **15AR14P**
	Type of Course: **Tutorial & Practice**	Credit **:03**	Core/ Elective: **Core**
CIE- 25 Marks			SEE- 50 marks

Pre-requisites: Drawing Aptitude in Secondary Education.

Course Objectives:

1 Facilitate to use one's visual perception to develop a sense of scale, proportion, depth, mass, light and shade
2. Explore different media for visual communication.

On successful completion of the course, the students will be able to:

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Apply the knowledge of various techniques in free hand drawing of man-made form	***R/U/A***	1,2,3,9,10	4
CO2	Apply the knowledge of Free Hand Lettering and calligraphy.	***R/U/A***	1,2,3,9,10	10
CO3	Represent proportionate natural forms	***R/U/A***	1,2,3,9,10	12
CO4	Sketch manmade forms.	***R/U/A***	1,2,3,9,10	12
CO5	Reproduce symmetrical forms	***R/U/A***	1,2,3,9,10	16
CO6	Prepare artistic drawing by applying principles of rendering in different media	***R/U/A***	1,2,3,9,10	24
			Total sessions	78

Legends: R=Remember U=Understand A= apply and above levels (Bloom's revised taxonomy)

Course	Programme Outcome									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
VISUAL ART DRAWING-I	3	3	3	-	3	-	-	-	3	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.

If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3

If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2

If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1

If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Course Contents

UNIT- I: INTRODUCTION 4 Hours

Use and understanding of different materials like pencil, charcoal, pastels, water colour, poster colour, brushes, Frottage, collage and mono prints. Express sensitivity of using line, volume, tone, texture etc.

UNIT- II: LETTERING 10 Hours

Graded exercise on Free Hand Lettering in different styles and calligraphy.

UNIT- III: SKETCHING OF NATURAL FORMS 12 Hours

Free hand drawing and rendering of natural forms - plants, trees etc.

UNIT IV: SKETCHING OF MANMADE OBJECTS 12 Hours

Study and Sketch manmade objects like stool, chair, table and dressing unit.

UNIT-V: SYMMETRICAL FORMS	16 Hours

Study and design symmetrical forms using geometrical, ornamentals and natural forms.

UNIT- VI:OBJECT DRAWING	24 Hours

Draw and render different objects and study of shade and light by using different media like pencil, pastel, charcoal etc.

REFERENCE BOOKS

1. The Thames and Hudson manual of rendering with Pen and Ink –Robert W Gill
2. Architectural rendering Techniques- Mike W.Lin,Alsa
3. Lettering for Architects and designers I& II Martha Sutherland

LIST OF LEARNING WEBSITES:

1. www.visualartists.co
2. www.visual-arts-cork.com/definitions/

Weightage of Marks for SEE			
Sl. No.	**Particulars**	**Marks**	**Hrs.**
1	Introduction		04
2	Lettering	5	10
3	Sketching of natural elements.	5	12
4	Sketching of manmade objects	7	12
5	Symmetrical Forms	8	16
6	Object drawing	10	24
Total		**35**	**78**

Total marks = [35 + 10 marks portfolio+ 5 marks viva voce] =50

Course Assessment and Evaluation:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
DIRECT ASSESSMENT	CIE (Continuous Internal Evaluation)	Drawing sheets	Students	Average of marks allotted for each graded exercise.	25	Drawing Sheets	1-6
				TOTAL	**25**		
	SEE (Semester End Examination)	End Exam		End of the course	**50**	Drawing Sheets at BTE	1-6
INDIRECT ASSESSMENT	Student Feedback on course		Students	Middle of the course		Feedback forms	1-3 Delivery of course
	End of Course Survey			End of the course		Questionnaires	1-6 Effectiveness of Demonstrations& Assessment Methods

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

Sl. No	**Bloom's Category**	**% Weightage**
1	**Understanding**	**20**
2	**Applying the knowledge acquired from**	**60**
3	**Analysis**	**05**
4	**Evaluation& Creating new knowledge**	**15**

SCHEME OF EVALUATION

Sl. No.	Performance	Max.Marks
1	Graceful lettering.	05
2	Composition	10
3	Proportion	10
3	Rendering	10
5	Portfolio	10
6	Viva-Voce	05
	TOTAL	**50**

MODEL QUESTION BANK

Course Title: **VISUAL ART DRAWING - I**	Course Code : **15AR14P**

1. Give a brief note on use of pencil in drawing 2 M
2. Print the following in gothic characters “ARCHITECTURE”. 5M
3. Sketch the natural given nature form 5M
4. Reproduce the remaining half of the given symmetrical form. 10M
5. Draw and render the given objects and render them in pencil. 20M
6. Write a note on different types of brushes used in water colour 2M
7. Complete the given symmetrical form 5M

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Course Title	:**APPLIED SCIENCE**	Course Code	: **15SC03S**
Semester	: **I / II**	Course Group	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **4:0:0**	Credits	: **4 Credits**
Type of course	: **Lecture &Assignments**	Total Contact Hours	: **52**
CIE	: **25 Marks**	SEE	: **100 Marks**
Programme: **Common to all Engineering Diploma Programmes**			

Prerequisite:

Dynamics, Heat, Sound, Matter, recent trends in Physics, Basic chemistry in Secondary Education.

Course Objective:

1. Learn concepts of Units, Laws of vectors, parallel forces, moment of force, couple.
2. Learn the fundamentals of properties and behavior of the materials
3. Learn the concepts of heat and thermodynamics.
4. Enhance theoretical and practical principles with applications of sound wave.
5. Understand different types of communication systems.
6. Develop awareness about corrosion, materials, and energy sources in engineering field.

Course Content:

UNIT I:MECHANICS **(08 Hrs)**

Units and Measurements: Definition of unit, types of unit (fundamental and derived)
SI units: Definition, Basic and supplementary units, advantages.
Measuring Instruments: Vernier calipers, principle and least count, diagram of vernier calipers with labeling the parts. Screw gauge(pitch, ZE, ZC), principle and least count, diagram of screw gauge with labeling the parts, simple problems.

Scalars and Vectors: Definition of scalar and vector with examples, representation of a vector, definition of resultant, equilibrium and equilibrant. Laws of vectors: Statement of law of parallelogram of forces, Converse law of triangle of forces, Lami's theorem. Deriving an expression for magnitude and direction of resultant of two vectors acting at a point. Resolution of vectors, mentioning rectangular component of resolution of vector.

Experimental verification of law of parallelogram of forces, Converse law of triangle of forces, Lami's theorem. Simple problems on laws of vectors

Parallel forces. Types of parallel forces, Moment of force: definition, S.I unit, types and examples. Couple: definition with examples. Moment of a couple. Conditions of equilibrium of coplanar parallel forces, applications. Experimental verification of Conditions of equilibrium of coplanar parallel forces using moment bar and simple problems.

UNIT-2: PROPERTIES OF SOLIDS AND LIQUIDS: (10 Hrs)

Properties of solids: Definitions of deforming force, elasticity and plasticity, examples for elasticity and plasticity, definition of stress and its types with examples and its S.I unit, definition of strain and its types with examples, elastic limit, Hooke's law, stress - strain graph with explanation. Modulie of elasticity and its types, derivation of an expression for Young's modulus of a material. Definition of Compressibility and factor of safety. Simple problems on stress, strain and Young's modulus.

Properties of liquids: Definition of thrust and pressure with S.I units. Derivation of expression for pressure at a point inside the liquid at rest, simple problems.

Energy of liquid in motion: Kinetic, Potential energies and Pressure energy in moving liquid. Bernoulli's theorem: statement and expression (No derivation). Cohesive and adhesive forces, angle of contact.

Surface Tension: Definition of surface tension and its S.I unit, factors affecting surface tension, applications of surface tension, capillarity and its applications.

Viscosity: Types of flow of liquid, definition of stream line flow and turbulent flow, definition of viscosity, expression for coefficient of viscosity, experimental determination of coefficient of viscosity of water, effect of temperature on viscosity. List of applications of viscosity. Simple problems.

UNIT III: HEAT AND PROPERTIES OF GASES. (07Hrs)

Concept of heat & temperature: Definitions of heat and temperature with S.I units, definition of Specific heat of substance with S I unit, equation for specific heat of a substance (no derivation).

Transmission of heat: Definitions of conduction, convection and radiation with examples, definition of thermal conductivity, derivation of co-efficient of thermal conductivity(K) and its S.I unit. Applications of conduction, convection and radiation, simple problems on K.

Gas laws: Statement of Boyle's law, Charle's law, Gay-Lussac's law, derive the relation between them (PV=nRT), definition of C_p and C_v ,relation between them (Mayer's equation no derivation), simple problems on Boyle's law and Charle's law.

Thermodynamics: Definition of thermodynamics, Laws of thermo dynamics: Zeroth law, I^{st}law and II^{nd}law (only statement), types of thermodynamics process: isothermal process, adiabatic process.

UNIT IV: WAVE MOTION (10Hrs)

Simple Harmonic Motion: Definition of periodic motion with example, definition of Simple Harmonic Motion, representation of S.H.M with respect to particle in circular motion, derivation of displacement of a particle executing S.H.M. Definitions of period, frequency, amplitude, in case of vibrating particle.

Wave: Definition of wave, wave period(T), wave frequency (n or f), wave amplitude (a), wave length(λ) and wave velocity (v) in case of wave motion. Derive the relation between v, n and λ. simple problems.

Types of waves: Mechanical and Non mechanical waves with examples. Definition of longitudinal and transverse waves, differences.

Propagation of sound waves in air: Newton's formula for the velocity of sound in air and Laplace's correction to it, various factors affecting velocity of sound in air. Simple problems.

Vibrations: Free vibrations, Forced vibration, Damped vibrations and Un-damped vibrations with examples. Resonance with examples. Laws of transverse vibrations of stretched string, derivation of equation for fundamental frequency of vibrations of stretched string. Simple problems.

Experiment to determine the unknown frequency of a given tuning fork by absolute and comparison methods using sonometer.

Stationary waves: Formation of stationary waves and their characteristics. Experimental determination of velocity of sound in air by using resonance air column apparatus.

Beats: Formation of Beats, definition of beat frequency, its applications.

UNIT V:MODERN PHYSICS (07Hrs)

Electromagnetic waves: Definition, generation of electromagnetic waves and their properties.

Electromagnetic spectrum: Definition, classification and its applications.

Lasers: Principle and listing the types of Laser, properties of Laser, applications.

Nano-Technology: Definition of Nano-Technology, advantages and dis-advantages of nano-Technology.

Advance Communication Systems: Basic elements of communication systems with block diagram, List commonly used terms in electronic communication systems.

Satellite communication: Introduction, advantages and disadvantages,
Optical fiber: principle and applications.

UNIT VI: INDUSTRIAL CHEMISTRY (10 Hrs)

Electrolysis: Definition of electrolyte, types of electrolytes with examples, definition of electrolysis. Arrhenius theory of electrolytic dissociation. Mechanism of Electrolysis. Faradays laws of Electrolysis: state and explain.
Corrosion: Definition, necessary conditions for corrosion, electrochemical theory of corrosion, list the preventive methods of corrosion.
Batteries: Basic concept, classification and applications of batteries.
Fuel cells: Definition, mentioning the types and advantages.
Metallurgy: Definitions of minerals, ore, flux, slag, alloys. Purpose of making alloys, composition and uses of alloys.
Polymers: Definition and classification of polymers, methods of polymerization and applications.
Composite materials: Definition, types, advantages and dis-advantages of composite materials.
Solutions: Definition of solute, solvent, solutions. Saturated and unsaturated solutions, concentration of solutions: normal, molar and molal solutions, simple problems on concentration of solution.
pH Value: Hydrogen ion concentration and concept of pH, definition of pH of solution, pH scale, applications of pH in different fields.

Course Delivery:

The Course will be delivered through lectures, class room interaction and exercises.

Course Outcome:

On successful completion of the course the student will be able to:

1. Determine the dimensions of objects using measuring instruments and analyze vector in mechanics.
2. Create knowledge of properties of matter applicable to engineering.
3. Apply the concepts of thermal properties of matter and gas laws related to engineering.
4. Analyse the different concepts of waves and vibration in the field of engineering.
5. Analyse the recent trends in physics related to engineering.
6. Apply the basic concepts of chemistry in the field of engineering.

Mapping Course Outcomes with Program Outcomes:

CO –PO mapping

	Course Outcome	PO Mapped	Cognitive Level	Theory Sessions	Allotted marks on cognitive levels			TOTAL
					R	U	A	
CO1	Determine the dimensions of objects using measuring instruments and analyze vector in mechanics	1,2,3,4,9	R/U/A	08	8	10	6	24
CO2	Create knowledge of properties of matter applicable to engineering.	1,2	R/U/A	10	6	15	6	27
CO3	Apply the concepts of thermal properties of matter and gas laws related to engineering	1,2,3,9	R/U/A	07	4	10	6	20
CO4	Apply the different concepts of waves and vibration in the field of engineering.	1,2,3,9	R/U/A	10	4	10	18	32
CO5	Apply the recent trends in physics related to engineering.	1,2,6	R/U/A	07	4	10	6	20
CO6	Apply the basic concepts of chemistry in the field of engineering.	1,2,6	R/U/A	10	4	20	6	30
		Total Hours of instruction		52	Total marks			153

R-Remember; U-Understanding; A-Application

Course outcomes –Program outcomes mapping strength

Course	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
Applied Science	3	3	3	1	-	2	-	-	2	-

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Reference Books:

1. Principle of physicsfor class XI and XII by V.K.Mehata and Rohit Mehta, as per Karnataka state PUC syllabusS.Chand and Company, New Delhi
2. Engineering chemistry for Diploma by Ranjan Kumar Mahapatra (PHI Learning Pvt. Ltd., New Delhi)
3. Basic Physics by Kongbam Chandramani Singh (PHI Learning Pvt. Ltd., New Delhi)
4. Principle of physics by P.V.Naik (PHI Learning Pvt. Ltd. New Delhi)

Website:

1. www.rsc.org/Education/Teachers/resources/Inspirational/…/4.3.1.pdf
2. www.nanogloss.com/nanotechnology/advantages and disadvantages
3. www.freebookcentre.net/physics/ introductory-physics-books.html

e-books:

1. Introduction to physics – II, Robert P Johnson.
2. Lecture notes physics university of Rochester.
3. Text book of Physics poynting J.H Thomson sir J.J.

Course Assessment and Evaluation:

	What		To Whom	Frequency	Max Marks	Evidence Collected	Course Outcomes
Direct Assessment	CIE (Continuous Internal Evaluation)	I A Tests	Students	Three tests (average of three tests will be computed)	20	Blue Books	1 to 6
		Class room Assignments		Two Assignments based on CO's (Average marks of Two Assignments shall be rounded off to the next higher digit.)	05	Log of Activity	1 and 6
				TOTAL	25		
	SEE (Semester End Examination)	End Exam	Students	End Of the Course	100	Answer Scripts at BTE	1 to 6
Indirect Assessment	Student Feedback on course		Students	Middle Of The Course	Feedback forms		1 to 3 delivery of the course
	End Of Course Survey			End Of The Course	Questionnaire		1 to 6 Effectiveness of delivery of instructions and assessment

*__CIE__ – Continuous Internal Evaluation *__SEE__ – Semester End Examination

Note: I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit.

FORMAT OF I A TEST QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks
Ex: I test/6 th weak of sem 10-11 Am	I/II SEM	APPLIED SCIENCE	20
	Year:	Course code:15SC03S	
Name of Course coordinator :			Units:__ CO's:____

Question no	Question	MARKS	CL	CO	PO
1					
2					
3					
4					

Note: Internal Choice may be given for each CO at the same cognitive level (CL).

Question Paper Blue Print:

Course Title	:**APPLIED SCIENCE**	Course Code	: **15SC03S**

Name and Unit No.	Allotted Hours	Questions to be set for (2marks) PART - A	Questions to be set for (5marks) PART - B	Questions to be set for (6marks) PART - C
Mechanics **I**	08	04	02	01
Properties of Solids and Liquids **II**	10	03	03	01
Heat and properties of gases **III**	07	02	02	01
Wave motion **IV**	10	02	02	03
Modern Physics **V**	07	02	02	01
Industrial chemistry **VI**	10	02	04	01
Total	**52**	**15**	**15**	**8**

Guidelines for Question Paper Setting:

1. The question paper must be prepared based on the blue print without changing the weightage of model fixed for each unit.
2. The question paper pattern provided should be adhered to

Part – A: 10 questions to be answered out of 15 questions each carrying 02 marks
Part – B: 10 questions to be answered out of 15 questions each carrying 05 marks.
Part – C: 05 questions to be answered out of 08 questions each carrying 06 marks.

Model Question Paper:

Code:15SC03S

I Semester Diploma Examination

APPLIED SCIENCE

(Common for All Engineering Programmes)

Time: 3 Hours][Max Marks: 100

***Note*:** i) Answer any 10 questions from section A, each carry 02marks.
ii) Answer any 10 questions from section B, each carry 05 marks.
iii) Answer any 05 questions from section C, each carry 06 marks.

SECTION – A

1. Define Unit.
2. Differentiate scalars and vectors.
3. Define Resultant of forces.
4. Define moment of couple.
5. Define plasticity.
6. Define compressibility.
7. Define viscosity of liquid.
8. Define specific heat of substance.
9. Define thermodynamics.
10. Define time period.
11. Define beats.
12. Define Electro-magnetic waves.
13. Define Nano-Technology.
14. Define electrolyte.
15. Define composite materials.

PART-B

1. Draw a neat diagram of Vernier calipers and label its parts.
2. Write the condition for equilibrium of coplanar parallel forces with an example.
3. Explain stress-strain graph.
4. Define K.E of liquid in motion. State Bernoulli's theorem.
5. Define capillarity? Write any three application of surface tension.
6. State 1st law of thermodynamics. Explain isothermal & adiabatic process.
7. State the three gas laws.(Boyle's law, Charle's law & Gay-Lussac law)

8. Explain mechanical &non- mechanical waves with examples.
9. Distinguish between longitudinal & transverse waves.
10. Write any three advantages and two disadvantages of F.M.
11. Write the principle of laser. Lists its properties.
12. Explain the mechanism of electrolysis of HCL.
13. Write the basic concepts of batteries. Mention any three applications of batteries.
14. Distinguish between minerals and ore. Write any three applications of pH.
15. Define composite materials. Write the advantages of composite materials.

PART-C

1. Derive an expression for magnitude and direction of resultant of two forces acting at a Point.
2. Describe an experiment to determine coefficient of viscosity of water by Poiseuille's method.
3. 1.25cc volume of a gas at 15^0C &755mm of mercury pressure. Calculate volume at NTP.
4. Derive an expression for fundamental frequency of transverse vibrations of stretched string.
5. Describe an experiment to find the unknown frequency of the given tuning fork using sonometer by comparison method.
6. Calculate the velocity of sound in air at 25^0C & 75cm of mercury pressure, if the density of air at 0^0C & 76cm of mercury pressure is $1.29 kgm^{-3}$. (given γ=1.41 for air).
7. Write the basic elements of communication system with block diagram.
8. Explain any two methods of polymerization.

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Model Question Bank:

Course Title :**APPLIED SCIENCE**	Course Code : **15SC03S**

UNIT – I : MECHANICS

PART – A (02MARKS QUESTIONS)

1. Define unit of a physical quantity.
2. Define fundamental and derived units.
3. List supplementary units in S.I systems.
4. Define S.I units give two eg of S.I, basic units.
5. Define least count of measuring instrument.
6. Write the principle of Vernier calipers and screw gauge.
7. Define least count of Vernier calipers?
8. Define pitch of a screw.
9. Define ZE and ZC in screw gauge.
10. Define scalar quantity & give its examples.
11. Define vector quantity & give its examples.
12. Write the relation between resultant and equilibrant.
13. State law of parallelogram of vectors.
14. State Converse law of triangle of forces.
15. State Lami's theorem.
16. Define moment of force.
17. Write the two rectangular component of a vector.
18. Write how moment of force is measured.
19. Discus why the handles of the doors and windows are fixed at the end.
20. Define couple.
21. Define is moment of couple.
22. Write how you measure moment of couple.
23. Define equilibrium.
24. Write the conditions of equilibrium when number of co-planar parallel forces acting on a body.
25. Define like & unlike parallel forces.

PART – B (05 MARKS QUESTIONS)

1. Mention seven basic units and two supplementary units of SI system.
2. Draw a neat diagram of Vernier calipers and label its parts.
3. Draw a neat diagram of Screw Gauge and label its parts.
4. Explain parallel forces with their types.

5. List two types of moment of force. Write any three applications of couple.
6. Write the advantages of S.I system.
7. Mention the difference between scalars and vectors.
8. State Converse law of triangle of forces; write the line diagram & equation of Converse law of triangle of forces.
9. State Lami's theorem, write the line diagram & equation of lami's theorem
10. Define moment of force, write the equation to measure moment of force & give its examples.

PART – C (06 MARKS QUESTIONS)

1. Derive an expression for magnitude and direction of resultant of two forces acting at a point.
2. Derive an expression for horizontal and vertical components of force acting at an angle θ with horizontal.
3. Write the conditions for equilibrium of coplanar parallel forces acting on a rigid body with equations & diagram.
4. Describe an experiment to verify law of parallelogram of forces.
5. Describe an experiment to verify Converse law of triangle of forces.
6. Describe an experiment to verify Lami's theorem.
7. Describe an experiment to verify the conditions of equilibrium of co-planar parallel forces using moment bar.
8. A main scale is divided into 0.5 mm the length of vernier attached to it is 12mm and is divided into 25equal parts. Calculate the value of 1vsd and L.C of vernier.
9. In Vernier calipers, main scale is divided into 1mm;9division of main scale is divided into 10 equal parts on Vernier scale. In a setting zero of Vernier scale lies between 4.8cm and 4.9cm, and 7^{th} division of vernier coincide with the main scale division. What is the total reading?
10. A screw gauge has a pitch of 0.5mm and 50 divisions on head scale. The reading when jaws touch is +5div. When gripping a wire the reading is 3 turns and 17 div. What is the diameter of the wire?
11. The resultant of two equal forces acting at a right angle to each other is 1414N.Findthe magnitude of each force.
12. Two forces of 5kg wt. and 10kg wt. acts at right angles to one another. Find the magnitude and direction of the resultant forces.
13. Two unlike parallel forces equal to 20N and 12N acts at two points A and B on a rigid body. Find the magnitude and direction of their resultant and the point where it acts if AB=0.8m
14. Two like parallel forces equal to 80N and 100N act on a body at two points A and B. If AB=0.6m,find the magnitude and the point where there resultant acts.
15. Three forces P, Q and 100 N acting on a body in equilibrium. If the angles opposite to P and Q are 120^0 and 150^0 respectively. Find the magnitude of P and Q.

UNIT II: PROPERTIES SOLIDS & LIQUIDS

PART – A (02MARKS QUESTIONS)

1. Define plasticity.
2. Define elasticity.
3. Define deforming force.
4. Define restoring force.
5. Define stress.
6. Write the types of stress.
7. Define strain.
8. Write the type of strain.
9. Define elastic limit.
10. State Hooke's law.
11. Define Young's modulus.
12. Define Bulk modulus.
13. Define Rigidity modulus.
14. Define compressibility? Write its S.I unit.
15. Write S.I units of stress and strain.
16. Define pressure of liquid.
17. Write equation for the pressure at a point inside the liquid at rest.
18. State Bernoulli's theorem.
19. Define cohesive force.
20. Define Adhesive force.
21. Write reason why glue stick to paper?
22. Define angle of a contact.
23. Name the type of angle of a contact formed for water and glass, water and mercury.
24. Define surface tension.
25. List the factors affecting surface tension.
26. Define capillarity.
27. Write any four applications of capillarity.
28. List the applications of surface Tension.
29. Write the equation used to determine surface tension of water by capillary raise method.
30. Define viscous force.
31. Give two examples of viscous liquid.
32. Define co-efficient of viscosity. Write its S.I unit.
33. List the factors affecting viscosity of liquid.
34. Write the effect on viscosity of gas if temperature is increased.
35. Write any four applications of viscosity.
36. List the types of flow of liquid.

PART – B (05 MARKS QUESTIONS)

1. Explain elasticity with an example.
2. Define elasticity and list three types of modulei of elasticity.
3. Define strain. Write the types of strain. Give e.g. for each type of strain.
4. Define stress. Write the types of stress. Give e.g. for each type of stress.
5. Define elastic limit. State Hooke's law? Write its mathematical form .
6. Explain stress-strain graph.
7. Define compressibility and factor of safety. Write the SI unit of stress.
8. Define thrust and pressure, write their SI units.
9. Define K.E and P.E of liquid. State the Bernoulli's theorem.
10. Define cohesive and adhesive force with an example.
11. Define pressure energy and angle of contact.
12. Define two types of flow of liquid with an example.
13. Define angle of a contact. What type of angle of contact is formed for water and glass, water and mercury? List the factors affecting surface tension.
14. Define capillarity. Write any four applications of capillarity.
15. Write the difference between stream line flow and turbulent flow of liquids.
16. Define viscosity and write the effect of temperature on viscosity of liquid & gas.
17. Define stress and explain the types of stress.
18. Define strain and explain the types of strain.
19. State Hooke's law? List any three applications of viscosity.
20. Define surface tension. Mention any three factors affecting surface tension.

PART – C (06 MARKS QUESTIONS)

1. Derive an expression for young's modulus of elasticity.
2. Derive an expression for pressure at any point inside the liquid at rest.
3. Derive an expression for co-efficient of viscosity of liquid.
4. Describe an experiment to determine the surface tension of water by capillary rise method.
5. Describe an experiment to determine coefficient of viscosity of water by Poiseuille's method.
6. A uniform wire of length 0.5m and diameter 0.0006m when stretched by a mass of 5kgextends by 0.0004m. Calculate Young's modulus of wire.
7. A wire of length 1m is fixed at one end and a mass of 1kg is hung from free end, the area of cross section of the wire is 2.5×10^{-6} m^2 and the Young's modulus of the material of the wire is 2×10^{11} Nm^{-2}. Calculate stress, strain and extension of the wire.
8. A spring 60cm long is stretched by 2cm by the application of a load 200g. What will be the length when the load of 500g is applied (given g = 980cm/s^2).

9. A rectangular tank is 3m long,2m wide and 1.5m in height, it contains water to a depth of 1m,the density of water is 1000kg/m^3. Calculate the pressure at the bottom of the tank.
10. Calculate the pressure at the bottom of a swimming pool 10m wide if the water is 3m deep, the density of water is 1000kg/m^3.
11. A square plate of 6cm side moves parallel to another plate with a velocity of 10cm/s, both the plates being immersed in water (η = 0.01poise). If the distance between the plates 0.5mm.Calculate the viscous force.
12. In a certain experiment on the flow of water through a capillary tube, the following data were obtained. Volume of water coming out per minute = 15cc; pressure head of water = 30cm
    Length of tube = 25cm; radius of tube = 0.05cm; calculate coefficient of viscosity of water(g=980cm/s^2, density=1gm/cc)
13. A castor oil of viscosity 98.6NS/ m^2 fills the space between two horizontal plates1cm apart. If the lower plate is stationary and upper plate is moving horizontally with a velocity of 3m/s . Find the tangential force per unit area.

UNIT-III: HEAT AND PROPERTIES OF GASES.

PART – A (02MARKS QUESTIONS)

1. Define heat & write SI unit of heat.
2. Define temperature & write SI unit of temperature.
3. Define specific heat of substance & write its SI unit.
4. Define conduction of heat.
5. Define convection of heat.
6. Define Radiation of heat.
7. Define Thermal conductivity.
8. Define specific heat of a gas at constant volume.
9. Define specific heat of a gas at constant pressure.
10. State Boyle's law.
11. State Charle's law.
12. State Gay-Lussac's law
13. Define isothermal process.
14. Define adiabatic process.
15. Define thermodynamics.
16. State zeroth law of thermodynamics.
17. State I^{st} law of Thermodynamics.
18. State II^{nd} law of Thermodynamics
19. Write Mayer's equation.

PART – B (05 MARKS QUESTIONS)

1. Write any five differences between heat & temperature.

2. Define heat, temperature & specific heat of Substance. Write Mayer's equation for gas.
3. Define conduction, convection, radiation and thermal conductivity.
4. Write any five applications of conduction.
5. Write any five applications of convection.
6. Write any five applications of radiation.
7. Define Cp & Cv , write the relation between them.
8. Define conduction, write applications of conduction.
9. Define convection, write applications of convection.
10. Define radiation, write applications of radiation..
11. State 1st law of thermodynamics, explain isothermal & adiabatic process.
12. Derive an expression for coefficient of thermal conductivity (K).
13. Compare the three modes of transfer of heat.
14. State the three gas laws. (Boyle's law, Charle's law & Gay-Lussac's law).
15. State zeroth law, 1st law& 2nd law of thermodynamics.

PART – C (06 MARKS QUESTIONS)

1. With usual notations prove that pv = nRT
2. Define thermal conductivity. Derive an equation for co-efficient of thermal conductivity (K).
3. Define specific heat of a substance. Derive an equation for specific heat of substance.
4. Describe an experiment to verify Boyle's law.
5. The volume of a gas at 27^0c at2 atmospheric pressure is 2 liters.
   If the pressure is double & absolute temperature is reduced to half.
   What will be the new volume of gas?
6. A sealed glass bulb contains air at 30^0C at normal pressure. The bulb is immersed in an oil bath &heated gradually. Find the temperature in degree centigrade at which the bulb bursts if it can withstand a maximum pressure of 3.5atm.
7. The volume of certain mass of a gas at STP is $2x10^{-4}$ m^3. Find its volume at 27 ^{0}C at pressure $2.2x10^5$ Pa.
8. The volume of a gas at 15^0C is1.25cc &755mm of mercury pressure. Calculate volume at NTP.
9. How much heat is required to raise the temperature of 5kg of copper from 27^0C to its melting point of 1063^0C? Given that specific heat of copper is 400 J/k^{0}C.
10. A hot iron ball of mass 0.2kg is dropped into 0.5g of water at 10^0C. The resulting temperature is 30^0C. Calculate the temperature of the hot ball. Specific heat of iron = 336J/kg^{0}C and specific heat of water = 4200J/kg^{0}C.
11. A silver rod 0.15m long has cross-sectional area of $0.0003m^2$. If one end is maintained at 10^0C and other end at 75^0C. How much heat will flow through the rod in 5 minutes? Given that co-efficient of thermal conductivity of silver = 406 J/ms^{0}C.

UNIT-IV: WAVE MOTION

PART – A (02MARKS QUESTIONS)

1. Define frequency and amplitude of a vibrating particle.
2. Wrote the relation between frequency and time period.
3. Define periodic motion with example.
4. Define S.H.M with example.
5. Write the equation for displacement of the particle in S.H.M.
6. Define wave motion.
7. Define wave period, wave frequency.
8. Write the relation between wave velocity, wavelength & wave frequency
9. Define non mechanical wave. Give an example.
10. Define mechanical wave. Write two types of Mechanical wave
11. Define transverse wave & give an example.
12. Define longitudinal wave & give an example.
13. Write any two differences between transverse wave and longitudinal wave.
14. Write two characteristics of transverse wave.
15. Write two characteristics of longitudinal wave.
16. Write Newton's equation for velocity of sound in a medium and name the terms involved in the equation.
17. Write the Newton's Laplace equation for velocity of sound in air
18. Write the effect of pressure on velocity of sound in air.
19. Write the effect of temp on velocity of sound in air.
20. Write the equation for velocity of sound in air at 0°c.
21. Write the effect of humidity on velocity of sound in air.
22. Define free and forced vibration.
23. Define natural frequency.
24. Define resonance.
25. Give any two practical examples of resonance.
26. Define how stationary waves are produced?
27. Write any two characteristics of stationary waves.
28. Define nodes and antinodes.
29. Write the difference between stationary waves and progressive waves.
30. Write the fundamental note in vibration of stretched string.
31. Write the formula for the fundamental frequency of vibration of stretched string.
32. State the law of tension as applied to the vibration of stretched string.
33. State the law of length as applied to the vibration of stretched string.
34. State the law of mass per unit length as applied to the vibration of stretched string.
35. Define beats.
36. Define beat frequency.
37. Write any two applications of beats.

38. Write how beat frequency can be calculated?

PART-A (05 MARKS QUESTIONS)

1. Define period, frequency & amplitude of vibrating particle.
2. Explain mechanical &non mechanical waves with examples.
3. Define longitudinal waves & transverse waves.
4. Define beat and beat frequency.
5. Obtain the relation between v, n and λ.
6. Define periodic motion & SHM with example in each.
7. Derive an expression for displacement of a particle executing SHM.
8. Define wave period, wave frequency, wave amplitude, wave length and wave velocity.
9. Distinguish between longitudinal & transverse waves.
10. Explain propagation of sound waves in air with practical example.
11. Describe Newton's formula for velocity of sound in air.
12. Explain Newton's formula for velocity of sound in air and hence Laplace correction to it.
13. Explain various factors affecting velocity of sound in air.
14. What is stationary wave? Mention the characteristics of stationary waves.
15. Why the soldiers are asked to break steps while marching across bridges.

PART- C (06 MARKS QUESTIONS)

1. Derive an expression for displacement of a particle executing SHM
2. Derive an expression for velocity of wave in terms of its frequency and wavelength.
3. Derive an expression for fundamental frequency of vibrations of stretched string.
4. Describe an experiment to determine the velocity of sound in air at room temperature by resonance air column method.
5. Describe an experiment to find the unknown frequency of the given tuning fork using sonometer by comparison method.
6. Describe an experiment to determine frequency of Turing fork by absolute method using sonometer.
7. A wave of frequency 600MHZ travels at a speed of $3x10^8$ m/s. Calculate its wavelength &calculate the frequency of same type of wave whose wavelength is 40m.
8. If the frequency of tuning fork is 500Hz & velocity of sound is 300m/s. Find how far sound travels while the fork completes 25 vibrations.
9. Calculate the velocity of sound in air at 25^0C & 75cm of mercury pressure, if the density of air at 0^0C & 76cm of mercury pressure is 1.29kgm^{-3}. (Given γ=1.41 for air).
10. Calculate the speed of sound at -50^0 C & at $+100^0$C, given speed of sound at 0^0c is 332 m/s.
11. The density of air at NTP is 1.293 kgm^{-3}&γ=1.402. Calculate the frequency of a tuning fork which emits sound of wavelength 0.75m at 26^0 c.
12. A string of length 2m is stretched by a force of 3200N. If the frequency of vibration is

100Hz. Find the mass of the string.

13. A string has length of 0.3m & weight $2x10^{-3}$kg. What must be the tension in the string so that when vibrating string transversely, it has a fundamental frequency 320 Hz?
14. A Sonometer wire of 0.5m long vibrates in two segments & is stretched by a force of 5kg wt. Calculate the frequency of the note emitted. ($g=9.8m/s^2$ linear density of the wire=0.018kg/m).
15. The frequency of Sonometer wire is doubled when the tension is increased by 12kg wt. Find the original tension.

UNIT V: MODERN PHYSICS

PART – A (02MARKS QUESTIONS)

1. Define electromagnetic waves.
2. State two characteristics of electromagnetic waves.
3. Write how electromagnetic waves are produced?
4. Define electromagnetic spectrum.
5. Write any two uses of electromagnetic spectrum.
6. Write the principle of LASER.
7. List any two types of LASER.
8. Write any two principle of LASER.
9. Write any two applications of LASER.
10. Define nanotechnology.
11. Write two advantages of nanotechnology.
12. Write two disadvantages of nanotechnology.
13. Write what do you mean by communication?
14. Write the basic elements of communication system.
15. List any two commonly used terms in electronic communication system.
16. Write two advantages of communication satellite.
17. Write two disadvantages of communication satellite.
18. Define optical fiber.
19. Write the principle of optical fiber.
20. Write two advantages of optical fiber.

PART-B (05 MARKS QUESTIONS)

1. Describe the generation of electromagnetic waves.
2. Write any five properties of electromagnetic waves.
3. Explain how electromagnetic spectrum is classified?
4. Write any five applications of electromagnetic spectrum.
5. Explain the principle of LASER. List the properties of LASER.
6. Write any five advantages of LASER.
7. Write five advantages of nanotechnology.
8. Write advantages and disadvantages of nanotechnology.

9. Write the block diagram of communication system.
10. List any five commonly used terms in electronic communication system..
11. Write five advantages of satellite communication.
12. Write any five disadvantages of satellite communication.
13. Write any five advantages of optical fiber.
14. Explain satellite communication. List any two disadvantages of satellite communication system.

PART- C (06 MARKS QUESTIONS)

1. Define electromagnetic waves. Write four properties of electromagnetic waves.
2. Define electromagnetic spectrum. Explain how electromagnetic spectrum is classified.
3. Write the applications of electromagnetic spectrum.
4. List six applications of LASER.
5. Write six advantages of nanotechnology.
6. Write what you mean by communication system. Write the block diagram of communication system..
7. Define satellite communication system. Write four advantages of satellite communication system.
8. Write the principle of optical fiber. Write four applications of optical fiber.

UNIT VI INDUSTRIAL CHEMISTRY

PART – A (02MARKS QUESTIONS)

1.Define electrolysis.
2.Define electrolyte.
3.Write any four examples of electrolyte.
4.Define strong and weak electrolyte.
5.Write any two postulates of Arrhenius theory of electrolytic dissociation.
6.State Faradays Ist law of electrolysis.
7.State Faradays IInd law of electrolysis.
8.Define corrosion.
9.List any two preventive methods of corrosion.
10.Define batteries.
11.Write any two applications of batteries.
12.Define fuel cells.
13.Write any two types of fuel cells.
14.Write any two advantages of fuel cells.
15.Define minerals.
16.Define ore.
17.Define flux.
18.Define slag.
19.Define an alloy.
20.Write any two uses of alloys.

21.Define polymers.
22.Define polymerization.
23.Write any two applications of polymers.
24.List the methods of polymerization.
25. Define composite materials.
26.Write any two types of composite materials.
27.Write two advantages of composite materials.
28. Write two disadvantages of composite materials.
29.Define solute.
30.Define solvent.
31.Define solution.
32.Define saturated solution.
33.Define unsaturated solution.
34.Define concentration of a solution.
35.Define normal solution.
36. Define molar solution.
37.Define molal solution.
38.Define pH of a solution.
39.Write any two applications of pH.
40.Write hydrogen ion concentration in case of neutral solution.

PART-B (05 MARKS QUESTIONS)

1.Explain the mechanism of electrolysis of HCl.
2.Define corrosion. Write the necessary condition of corrosion.
3.Write any five postulates of Arrhenius theory of electrolytic dissociation.
4.State Ist and IInd Faradays laws of electrolysis.
5.Write any five preventive methods of corrosion.
6. Write the classification of batteries. Write two applications of batteries.
7. Write two types of fuel cells. List any three advantages of fuel cells.
8.Define alloys. Write the purpose of making alloys.
9. Write the classification of polymers. Write any three applications of polymers.
10.Define composite material. Write any two advantages of composite materials.
11. Calculate the concentration of solution when 110gmof copper sulphate is dissolved in 550gm of a solvent.
12. Define pH of a solution. Explain acid, base, and neutral solution on the basis of pH value.

PART- C (06 MARKS QUESTIONS)

1. State and explain Faradays laws of electrolysis?
2. Explain the mechanism of electrolysis of HCL.
3. Define corrosion. Write the necessary condition for corrosion.
4. Write any six preventive methods of corrosions.
5. Explain the electrochemical theory of corrosion.

6. Mention what is battery? Write the applications of batteries.
7. Define fuel cells. Mention the types of fuel cells.
8. Write the advantages of fuel cells.
9. Define minerals, ore, flux, slag and alloys?
10. Write the composition steel. List three uses of alloys.
11. Explain any two methods of polymerization.
12. Write the applications of polymers.
13. Write the advantages and disadvantages of composite materials.
14. Define molar and normal solution. What is concentration of a solution?
15 .Write any six applications of pH.

---0-0-0---

Government of Karnataka
Department of Technical Education, Bengaluru

Course: APPLIED SCIENCE

Course code: 15SC03S

Curriculum Drafting Committee 2015-16

	Name	Designation	Institution
1	Mr. R B Pawar	Principal	Govt. Polytechnic, Bijapur
2	Mr. K.Nazeer Ahmed	Selection Grade Lecturer	Govt. Polytechnic, Mulbagilu
3	Mr. Liyakhat Ali Khan	Selection Grade Lecturer	S.J. Govt. Polytechnic, Bengaluru
4	Dr. HanumanthaNayak	Selection Grade Lecturer	S.J. Govt. Polytechnic, Bengaluru
5	Ms. Bhagirathi B N	Selection Grade Lecturer	S.J. Govt. Polytechnic, Bengaluru

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Curriculum Review Committee

	Name	Designation	Institution
1	Mr. K.Nazeer Ahmed	Selection Grade Lecturer	Govt. Polytechnic, Mulbagilu
2	Mr. Liyakhat Ali Khan	Selection Grade Lecturer	S.J. Govt. Polytechnic, Bengaluru
3	Smt. Revathi	Selection Grade Lecturer	M.E.I. Polytechnic, Bengaluru

Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bengaluru

	Course Title: **HISTORY OF ARCHITECTURE - II**		
	Scheme (L:T:P) : **4:0:0**	Total Contact Hours: **52**	Course Code: **15AR21T**
	Type of Course: **Lectures, Self Study & Quiz**	Credit **:04**	Core/ Elective: **Core**
	CIE : **25 Marks**		SEE : **100 Marks**

Pre-requisites: History of Architecture in I.

Course Objective

1. Focus on growth, development, materials and planning of historical buildings.
2. Analyze development of architecture based on various influencing factors.

On successful completion of the course, the students shall be able to:

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Describe the evolution of Egyptian architecture.	***U/R/A***	1,2,5,7,10	10
CO2	List the characteristic features of Greek architectural style	***U/R/A***	1,2,5,7,10	12
CO3	Explain Roman architectural features.	***U/R/A***	1,2,5,7,10	12
CO4	Describe the features of Early Christian and Byzantine Architecture referring to examples	***U/R***	1,2,5,7,10	06
CO5	Identify the features of Romanesque Architecture referring to examples	***U/R***	1,2,5,7,10	06
CO6	Sketch and explain features of architectures	***U/R***	1,2,5,7,10	06
			Total sessions	**52**

Course	Programme Outcome									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
History of Architecture II	3	3	-	-	3	-	3	-	-	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.

If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3

If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2

If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1

If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Course content and blue print of marks for SEE

Unit	Major Topics	Hours Allotted	Questions to be set for SEE						Marks weightage	weightage (%)
			Cognitive Levels							
			R	U	Ap	Ay	C	E		
1	Egyptian Architecture	10	**5**	**10**	**15**				30	**19**
2	Greek Architecture	12	**5**	**10**	**20**				35	**24**
3	Roman Architecture	12	**5**	**10**	**20**				35	**24**
4	Early Christian and Byzantine Architecture	06	**5**	**10**					15	**11**
5	Romanesque Architecture	06	**5**	**10**					15	**11**
6	Gothic Architecture	06	**5**	**10**					15	**11**
Total		52	**30**	**60**	**55**				145	**100**

1. **Legend- R; Remember U: Understand Ap: Application Ay: Analysis C:Creation E: Evaluation**

COURSE CONTENT

UNIT- I: EGYPTIAN ARCHITECTURE (10 Hours)

Brief Architectural character – Example- Great Pyramid of Cheops Giza, temple of Karnak, sphinx, pylons.

UNIT- I: GREEK ARCHITECTURE (12 Hours)

Brief Architectural character- classical orders –Doric, Corinthian and Ionic
Examples: Temple of Parthenon, Open Air Theater Epidaurus, Agora.

UNIT- III: ROMAN ARCHITECTURE (12 Hours)

Brief Architectural character, The Two orders- Tuscan and composite, Examples- Colloseum, Pantheon, Arch of Constantine, column of Trajan, Thermae of Caracalla, Aqueduct and Bridges

UNIT- IV: EARLY CHRISTIAN AND BYZANTINE ARCHITECTURE (6 Hours)

Brief architectural character Examples- Basilica of San Lorenzo, Hagia Sophia.

UNIT- V: ROMANESQUE ARCHITECTURE (6 Hours)

Brief architectural character– Example: Durham Cathedral

UNIT- VI: GOTHIC ARCHITECTURE (6 Hours)

Brief architectural character- Example-Notre Dame, de Paris.

Reference:

1. A history of Architecture-Bannister Fletcher..
2. World Architecture - Hiraskar.
3. History of art-H.W.Johnson

Web link:

1. www.all-art.org
2. www.digiLibraries.com/ History of architecture

Course Delivery: The course will be delivered through lectures and presentations, relevant videos.

Course Assessment and Evaluation Scheme:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
Direct Assessment	CIE	IA	Students	Three IA tests (Average of three tests will be computed)	20	Blue books	1,2,3,4,5,6
				Charts comprising sketches and photographs	05	Assignment books	1,2,3,4,5,6
				Total	**25**		
	SEE	End Exam		End of the course	100	Answer scripts at BTE	1,2,3,4,5,6
Indirect Assessment	Student Feedback on course		Students	Middle of the course		Feedback forms	1, 2,3 Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2,3,4,5,6 Effectiveness of Delivery of instructions & Assessment Methods

***CIE** – Continuous Internal Evaluation ***SEE** – Semester End Examination

Note: I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit.

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

1. Remembering and Understanding : - 30% weightage
2. Applying the knowledge acquired from the course : - 60 % weightage
3. Analysis : - 5% weightage
4. Evaluation : - 2% weightage
5. Creating new knowledge : - 3% weightage

FORMAT OF I A TEST QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks
Ex: I test/6 th week of sem 10-11 Am	I SEM	HISTORY OF ARCHITECTURE-II	20
	Year:	Course code:15AR21T	

Name of Course coordinator : Units:__ 1 & 2
CO's: _1 & 2___

Question no	Question	MARKS	CL	CO	PO
1	Outline the use of important building materials used in Egyptian architecture	05	U	1	1,2,5,7,10
2	Explain salient features of Great Pyramid of Cheops Giza along with a neat sketch. OR Sketch and explain Egyptian Sphinx	05	U	1	1,2,5,7,10
3	What are the unique features of the Temple of Parthenon at Athens.	05	R	2	1,2,5,7,10
4	Sketch and explain Doric order. Label its parts. OR Sketch and explainOpen Air Theater Epidaurus	05	U	2	1,2,5,7,10

Note: Internal choice may be given in each CO at the same cognitive level (CL).

Example of model of rubrics / criteria for assessing student activity

Dimension	Students score (Group of five students)				
	STUDENT 1	STUDENT 2	STUDENT 3	STUDENT 4	STUDENT 5
Rubric Scale	Unsatisfactory 1, Developing 2, Satisfactory 3, Good 4, Exemplary5				
1.Literature	5				
2.Fulfill team's roles & duties	2				
3.Conclusion	3				
4.Convensions	4				
Total	14				
Average=(Total /4)	14/4=3.5=4				

Note: Concerned faculty (Course coordinator) must devise appropriate rubrics/criteria for assessing Student activity for 5 marks One activity to attain last CO (course outcome) may be given to a group of FIVE students

Note: Dimension should be chosen related to activity and evaluated by the course faculty

Rubric Model- Example only:

Dimension	Rubric Scale				
	1 Unsatisfactory	2 Developing	3 Satisfactory	4 Good	5 Exemplary
1.Literature	Has not included relevant info	Has included few relevant info	Has included some relevant info	Has included many relevant info	Has included all relevant info needed
2. Fulfill team's roles & duties	Does not perform any duties assigned	Performs very little duties	Performs partial duties	Performs nearly all duties	Performs all duties of assigned team roles
3.Communication	Poor	Less Effective	Partially effective	Effective	Most Effective
4.Convensions	Frequent Error	More Error	Some Error	Occasional Error	No Error

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

1. Remembering and Understanding : - 40% weightage
2. Applying the knowledge acquired from the course : - 50 % weightage
3. Analysis : - 5% weightage
4. Evaluation : - 2% weightage
5. Creating new knowledge : - 3% weightage

MODEL QUESTION PAPER

II – Semester Diploma in Architecture

Course Title: **HISTORY OF ARCHITECTURE - II**	Course Code : **15AR21T**

Time: **3 hours**] [Max marks: **100**

Note: 1 Answer any SIX question from Part-A
2. Answer any SEVEN full questions From Part-B

PART – A

5X6=30

1. Sketch Egyptian Sphinx.
2. List the important Building materials used in Egyptian Architecture.
3. Draw neat sketch of Doric order. Label its parts.
4. Explain briefly Temple of Parthenon
5. Draw a sketch of Roman Aquaduct.
6. Draw neat sketch of Tuscan order and label its pats.
7. Write a note on Architectural features of Basilican Church .
8. Sketch Durham Cathedral
9. Sketch and explain Gothic Buttresses.

PART – B 10X7=70

10. Briefly explain with sketch a important features of Egyptian Architecture.
11. Explain character features of Great Pyramid of Cheops Giza with sketches.
12. Explain with neat sketch The Temple of Parthenon at Athens.
13. Explain and sketch Greek open Air Theatre.
14. Explain architectural feature of Greek architecture.
15. Explain important features of Early Christian Architecture with sketches.
16. Sketch and explain important features of Pantheon of Roman Architecture.
17. Highlight important features of Colloseum of Roman.
18. Briefly explain with sketch Durham Cathedral of Romanesque Architecture.
19. Explain important features of Gothic Architecture with sketches.

MODEL QUESTION BANK

Course Title: **HISTORY OF ARCHITECTURE - II**	Course Code : **15AR21T**

CO1 - DESCRIBE THE EVOLUTION OF EGYPTIAN ARCHITECTURE.

Level -1. Remembering

1. Give a brief note on the use of important building materials used in Egyptian architecture.
2. Sketch and explain Egyptian Sphinx.
3. Sketch and explain Egyptian Pylons.
4. Sketch and explain of an Egyptian order.
5. Sketch of an Egyptian order.

Level -2. Understanding

1. Describe the architectural features of Pyramid of Cheops with neat sketches.
2. Explain important features of Temple of Karnak.
3. Briefly explain with sketch important features of Egyptian Architecture.

CO2 - IDENTIFY THE CHARACTERISTIC FEATURES OF GREEK ARCHITECTURAL STYLE

Level -1. Remembering

1. Draw the neat sketch and label their parts of Doric and Ionic order of Greek order.
2. Sketch and explain Doric order. Label its parts.
3. Draw neat sketch of Ionic order and label all the parts.
4. What is Agora? Sketch plan of an Agora.

Level -2. Understanding

1. Explain with neat sketch The Temple of Parthenon at Athens.
2. Explain and sketch Theatre Epidaurus.

CO3 - EXPLAIN ROMAN ARCHITECTURAL FEATURES

Level -1. Remembering

1. Draw neat sketch of Tuscan order and label its parts.
2. Sketch Column of Trajan.
3. Sketch a Roman bridge.

Level -2. Understanding

1. Explain important features of Thermae of Caracalla of Roman Architecture.
2. Explain important features of Roman Architecture with neat sketches.
3. Highlight important features of Colloseum, Rome.
4. Sketch and explain important features of Pantheon.

CO4 - DESCRIBE THE FEATURES OF EARLY CHRISTIAN AND BYZANTINE ARCHITECTURE REFERRING TO EXAMPLES

Level -1. Remembering

1. What important features of Early Christian Architecture with sketches.

Level -2. Understanding

1. Describe in detail Architectural features of Basilica of San Lorenzo
2. Highlight features of Hagia Sophia belonging to Byzantine Architecture.

CO5 - IDENTIFY THE FEATURES OF ROMANESQUE ARCHITECTURE REFERRING TO EXAMPLES

Level -1. Remembering

1. List the architectural characteristics of Romanesque architecture.

Level -2. Understanding

2. Briefly explain with sketch Durham Cathedral of Romanesque Architecture.

CO6 - SKETCH AND EXPLAIN FEATURES OF GOTHIC ARCHITECTURE.

Level -1. Remembering

1. What are the important features of Gothic Architecture.
2. Sketch tracery window of Gothic Period.

Level -2. Understanding

1. Explain the Gothic Buttresses with neat sketch .
2. Highlight the important features of Notre Dame.

Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bengaluru

	Course Title: **MATERIALS OF CONSTRUCTION-II**		
	Scheme (L:T:P) : **4:0:0**	Total Contact Hours: **52**	Course Code: **15AR22T**
	Type of Course: **Lectures, Self Study & Quiz**	Credit **:04**	Core/ Elective: **Core**
CIE- 25 Marks			SEE- 100 Marks

Prerequisite: Knowledge of Science in Secondary Education.

Course Objectives:

1. Identify engineering aspects of building materials and their suitability.
2. Classify various materials based on properties and uses.

On successful completion of the course, the students shall be able to:

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Explain engineering aspects of cement and classify types of cement.	***R/U/A***	1,2,5,7,10	10
CO2	List the ingredients of cement mortar, cement concrete and Describe the process of making the same.	***R/U/A***	1,2,5,7,10	7
CO3	Identify various market forms of metals and application in the construction.	***R/U/A***	1,2,5,7,10	14
CO4	List characteristics of good paint, varnishes and distempers and compare their applications.	***R/U/A***	1,2,5,7,10	10
CO5	Discuss different types of glass and plastics.	***R/U/A***	1,25,7,10	05
CO6	Identify various modern building materials and discuss their applications.	***R/U/A***	1,2,5,7,10	06
			Total sessions	**52**

Legends: R=Remember U=Understand A= apply and above levels (Bloom's revised taxonomy)

Course	Programme Outcome									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
MATERIALS OF CONSTRUCTION-II	3	3	-	-	3	-	3	-	-	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.

If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3

If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2

If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1

If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Course content and blue print of marks for SEE

Unit	Major Topics	Hours Allotted	Questions to be set for SEE						Marks weightage	weightage (%)
			Cognitive Levels							
			R	U	Ap	Ay	C	E		
1	Cement	10	**5**	**10**	**10**				25	**19**
2	Cement concrete and Mortars	07	**5**	**5**	**10**				20	**13**
3	Metals and Alloys	14	**5**	**10**	**20**				35	**27**
4	Paints, Varnishes and Distempers	10	**5**	**10**	**10**				25	**19**
5	Glass and plastics	05	**5**	**5**	**10**				20	**10**
6	Miscellaneous and Modern building materials	06	**5**	**5**	**10**				20	**12**
Total		52	**30**	**45**	**70**				145	**100**

Legend- R; Remember U: Understand Ap: Application Ay: Analysis C:Creation E: Evaluation

COURSE CONTENT

UNIT I: CEMENT (9 Hours)

Introduction to cement- Engineering aspects of cement. Composition of ordinary cement. Definitions of natural cement and artificial cement. Functions of ingredients of cement. Hydration of cement. Initial setting time and final setting time of cement. Methods of storing cement. Types of cement and their specific uses and properties.

UNIT II: CEMENT CONCRETE AND MORTARS (6 Hours)

Cement concrete – Engineering aspects of cement concrete. Definition. Ingredients of concrete and their functions in concrete. Advantages of concrete. Grades of concrete as per I.S code. Properties, advantages and uses of R.C.C. Mortars –Definition, properties and proportion of mortars. Different types of mortar and their suitability. Uses of Mortar.

UNIT III: METALS AND ALLOYS (14 Hours)

Ferrous metals- Engineering aspects of ferrous metals. Properties and uses of ferrous metals like cast-iron, wrought iron, mild steel. Market forms of cast-iron, wrought iron and mild steel and their engineering application. Non-Ferrous metals- Engineering aspects of non-ferrous metals. Properties and uses of non-ferrous metals like Copper, Aluminum, Zinc and Tin. Market Forms of copper, Aluminum, Zinc and Tin and their engineering application. Alloys -Engineering aspects of alloys. Properties and uses of aluminum, copper and steel alloys. Market forms of alloys and their engineering applications.

UNIT IV: PAINTS, VARNISHES AND DISTEMPERS (12 Hours)

Engineering aspects of paints, varnishes and distemper, Objects of painting, varnishing and distempering. Ingredients of paints, varnishes and distemper and their functions. Characteristics of good paint, varnishes and distempers, Types and common brands of paints, varnishes and distempers. Methods of painting, varnishing and distempering.

UNIT V: GLASS AND PLASTICS (5 Hours)

Engineering aspects of glass and plastics. Properties and uses of different types of glass and plastics. Properties and uses of FRP (Fibre Reinforced Plastics)

UNIT VI: MISCELLENEOUS AND MODERN BUILDING MATERIALS . (6 Hours)

Engineering aspects of miscellaneous and modern building materials. Properties and uses of Cellular Plastics (thermocol), adhesives and Plaster of Paris. Different types of doors and windows hardware.

Reference Books:

1. Engineering Materials by S.C.Rangawala.
2. Engineering Materials by Sushil kumar.
3. Engineering Materials by G.J. Kulkarni.
4. Engineering Materials by P.C. Varghese.

Web links:

1. https://en.wikipedia.org/wiki/Building_material
2. http://nptel.ac.in/courses/105102088/
3. http://www.journals.elsevier.com/construction-and-building-materials/
4. http://freevideolectures.com/Course/86/Building-Materials-and-Construction

Course Delivery: The course will be delivered through lectures and presentations, suitable Videos, sample collections and site visits

Course Assessment and Evaluation Scheme:

method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
Direct Assessment	CIE	IA	Students	Three IA tests (Average of three tests will be computed)	20	Blue books	1,2,3,4,5,6
				Assignment/ Quiz /Seminar	05	Report	1,2,3,4,5,6
				Total	**25**		
	SEE	End Exam		End of the course	100	Answer scripts at BTE	1,2,3,4,5,6
Indirect Assessment	Student Feedback on course		Students	Middle of the course		Feedback forms	1, 2,3 Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2,3,4,5,6 Effectiveness of Delivery of instructions & Assessment Methods

***CIE** – Continuous Internal Evaluation ***SEE** – Semester End Examination

Note: I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit.

Example of model of rubrics / criteria for assessing student activity

Dimension	Students score (Group of five students)				
	STUDENT 1	STUDENT 2	STUDENT 3	STUDENT 4	STUDENT 5
Rubric Scale	Unsatisfactory **1**, Developing **2**, Satisfactory **3**, Good **4**, Exemplary5				
1.Literature	5				
2.Fulfill team's roles & duties	2				
3.Conclusion	3				
4.Convensions	4				
Total	14				
Average=(Total /4)	14/4=3.5=4				
Note: Concerned faculty (Course coordinator) must devise appropriate rubrics/criteria for assessing Student activity for 5 marks One activity to attain last CO (course outcome) may be given to a group of FIVE students					

Note: Dimension should be chosen related to activity and evaluated by the course faculty

Rubric Model- Example only:

Dimension	Rubric Scale				
	1 Unsatisfactory	2 Developing	3 Satisfactory	4 Good	5 Exemplary
1.Literature	Has not included relevant info	Has included few relevant info	Has included some relevant info	Has included many relevant info	Has included all relevant info needed
2. Fulfill team's roles & duties	Does not perform any duties assigned	Performs very little duties	Performs partial duties	Performs nearly all duties	Performs all duties of assigned team roles
3.Communication	Poor	Less Effective	Partially effective	Effective	Most Effective
4.Convensions	Frequent Error	More Error	Some Error	Occasional Error	No Error

FORMAT OF I A TEST QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks
Ex: I test/6 th week of sem 10-11 Am	II SEM	MATERIALS OF CONSTRUCTION-II	20
	Year:	Course code:15AR22T	

Name of Course coordinator :

CO's:1,2

Units:1,2__

Question no	Question	MARKS	CL	CO	PO
1	Explain the composition on of ordinary Portland cement.	05	U	1	1,2,5,7, 10
2	List the functions of ingredient of cement. OR Write a short note on varieties of cement.	05	R	1	1,2,5,7, 10
3	What are the advantages and uses of concrete?	05	R	1	1,2,5,7, 10
4	What are the ingredients of concrete?	05	R	1	1,2,5,7, 10

Note: Internal choice may be given in each CO at the same cognitive level (CL).

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

Sl. No	Bloom's Category	% Weightage
1	**Understanding**	**30**
2	**Applying the knowledge acquired from**	**50**
3	**Analysis**	**10**
4	**Evaluation& Creating new knowledge**	**10**

MODEL QUESTION PAPER

Code : **15AR22T**

Second Semester Diploma Examination

MATERIALS OF CONSTRUCTION II

Time: **3 Hours**] [Max Marks: **100**

Note: i) Answer any **SIX** Questions in **Part-A**
ii) Answer any **SEVEN** Questions in **Part-B**

Part-A

5X6 = 30 marks

1. Explain the composition on of ordinary Portland cement.
2. What are the advantages and uses of concrete?
3. Explain properties of mortars.
4. List the types of mild steel.
5. Write the properties & uses of cast iron
6. Write a note on Fiber Reinforced Plastics.
7. What are the ingredients of varnish?
8. What are the objects of distemper?
9. What are the properties of plaster of Paris?

Part-B

10X7 =70 marks

10. Explain the types of cement and their properties and uses.
11. What are the ingredients of concrete? Explain their function in concrete?
12. a) List the precautions to be taken in storing of cement.
    b) What are the Engineering aspects of cement?
13. Write the properties & uses of types of re-bars.
14. a) List the properties & uses of aluminium.
    b) List the properties & uses of zinc.
15. a) What are the objects of varnish?
    b) Write the characteristics of varnish.
16. a) Write the characteristics of distemper.
    b) What are the ingredients of distemper?
17. Explain the properties and uses of glass in building construction.
18. a) Write the types of copper alloy.
    b) Write the types of steel alloy.
19. List the various types of adhesives and door and window hardware. 1

MODEL QUESTION BANK

Second Semester Diploma in **Architecture**

Course title**: MATERIALS OF CONSTRUCTION II** Code: **15AR22T**

CO1	Explain engineering aspects of cement and classify types of cement.

LEVEL 1: Remember

1. List the functions of ingredient of cement.
2. Write a short note on varieties of cement.
3. List the precautions to be taken in storing of cement.
4. What are the Engineering aspects of cement?
5. Write a short note on varieties of cement.
6. List the precautions to be taken in storing of cement.

LEVEL 2: Understand

7. Explain the composition of ordinary Portland cement.
8. Explain the types of cement and their properties and uses.

CO2	List the ingredients of cement mortar, cement concrete and Describe the process of making the same.

LEVEL 1: Remember

1. What are the ingredients of concrete? Explain their function in concrete
2. What are the advantages and uses of concrete?

LEVEL 2: Understand

1. Explain properties of mortars.
2. Explain different types of mortar and their suitability.

CO3	Identify various market forms of metals and application in the construction.

LEVEL 1: Remember

1. Write the types of cast iron.
2. Write the types of wrought iron.
3. Write the types of mild steel.
4. Write the properties & uses of cast iron.
5. Write the properties & uses of wrought iron.

6. Write the properties & uses of mild steel.
7. List 5 market forms of cast iron.
8. List 5 market forms of wrought iron.
9. List 5 market forms of mild steel.
10. Write the properties & uses of Tor steel.
11. Write the properties & uses of Tiscon steel.
12. Write the properties & uses of structural steel.
13. List the properties & uses of deformed bars.
14. Write the properties & uses of High tensile steel.
15. List the properties & uses of copper.
16. Write the properties & uses of aluminium.
17. List the properties & uses of zinc.
18. Write the properties & uses of tin.
19. List 5 market forms of copper.
20. List 5 market forms of aluminium.
21. List 5 market forms of zinc.
22. List 5 market forms of tin.
23. Write the types of aluminium alloy.
24. Write the types of copper alloy.
25. Write the types of steel alloy.
26. Write the properties & uses of aluminium alloy.
27. Write the properties & uses of copper alloy.
28. Write the properties & uses of steel alloy.

CO4	List characteristics of good paint, varnishes and distempers and compare their applications.

LEVEL 1: Remember

1. What are the objects of paints?
2. Write the characteristics of good paint.
3. What are the ingredients of paint?
4. What are the objects of varnish?
5. Write the characteristics of varnish?
6. What are the ingredients of varnish?
7. What are the objects of distempering?
8. Write the characteristics of distemper.
9. What are the ingredients of distemper?

CO5	Discuss different types of glass and plastics.

LEVEL 2: Understand

1. Explain the properties and uses of glass in building construction.
2. Explain the properties and uses of plastics in building construction.

CO6	Identify various modern building materials and discuss their applications.

LEVEL 1: Remember

3. Write a note on Fibre Reinforced Plastics.
4. Write a note on Cellular plastics.
5. What are the properties and uses of Plaster of Paris?

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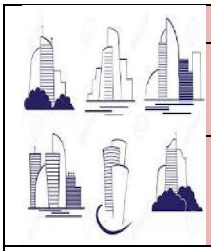

Course Title: **ARCHITECTURAL GRAPHICS II**		
Scheme (L:T:P) : **0:2:4**	Total Contact Hours: **78**	Course Code: **15AR23P**
Type of Course: Tutorial and practice	Credit **:3**	Core/ Elective: **Core**
CIE- 25 Marks		SEE- 50 Marks

Prerequisite: Architectural graphics-I

Course Objectives:

1. The course is aimed at developing 3D views.
2. Develop the rendering skill that includes shadows.
3. Develop skills in preparation of plan, elevation and section of building.

On successful completion of the course, the students shall be able to –

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Develop 3D views like axonometric- isometric, diametric and trimetric	***U***	1,2,3,4,9,10	9
CO2	Develop techniques and methods in drawing perspectives of geometrical objects.	***R***	1,2,3,4,9,10	12
CO3	Apply the knowledge of sciography and draw shadows of the simple architectural forms on horizontal plane.	***U***	1,2,3,4,9,10	6
CO4	Prepare plan, elevation and section of a small dwelling unit.	***A***	1,2,3,4,9,10	30
			Total sessions	78

Course	Programme Outcome									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
ARCHITECTURAL GRAPHICS II	3	3	3	3	-	-	-	-	3	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.

If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3

If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2

If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1

If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

COURSE CONTENTS

UNIT- I: AXONOMETRIC VIEWS — 18 Hours

Introduction to 3D views of objects in terms of isometric, diametric and trimetric views-Develop views of geometrical objects - cube, prism, pyramid, cylinder and cone – Develop views of simple objects like steps, pedestal, table, teapoy.

UNIT- II: PERSPECTIVE DRAWING — 24Hours

Introduction to perspective drawing – terms used in perspective – techniques and methods of perspective drawing of geometrical objects –

1. One point
2. Two point

UNIT- III: SCIOGRAPHY — 9 Hours

Introduction to sciography – study of shadows of simple geometrical objects on horizontal planes.

UNIT-IV: BUILDING DRAWING — 27Hours

Prepare plan, elevation and section of a small dwelling unit given the constructional details along with line diagram –.

Resources :

a) List of Reference books :

1. K.R.Gopalakrishna“ Fundamentals of Drawing” Subhas Publications, 2010.
2. K.R.Gopalakrishna“ Engineering Drawing” (Vol 1.), Subhas Publications, 2014.
3. Engineering Drawing – N.D.Bhatt

b) Web links :

1. www.engineeringdrawing.org
2. https://en.wikipedia.org/wiki/Engineering_drawing

Course Assessment and Evaluation:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
DIRECT ASSESSMENT	CIE (Continuous Internal Evaluation)	Drawing sheets	Students	Average of marks allotted to each graded exercises	25	Drawing Sheets	1,2,3,4
				TOTAL	25		
	SEE (Semester End Examination)	End Exam		End of the course	50	Answer scripts at BTE/End Examination Drawing Sheets	1,2,3,4
INDIRECT ASSESSMENT	Student Feedback on course		Students	Middle of the course		Feedback forms	1,2 Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2,3,4 Effectiveness of Demonstrations& Assessment Methods

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

Sl. No	**Bloom’s Category**	**% Weightage**
1	**Understanding**	**40**
2	**Applying the knowledge acquired from**	**50**
3	**Analysis**	**04**
4	**Evaluation& Creating new knowledge**	**06**

SCHEME OF EVALUATION:

Sl. no.	Performance	Max.Marks
1	For solving given problems	35*
2	Portfolio	10
3	Viva-voce	05
	TOTAL	**50**

*Weightage may be considered for line types, dimensioning of drawing and composition

GUIDELINES FOR QUESTION PAPER SETTING

1. The question paper must be prepared based on the contents without changing the Weightage of marks fixed for each unit.
2. The question paper should be set by adhering to the following pattern:(for the total marks of **50**)

MODEL QUESTION PAPER

Code: 15AR23P

Second semester Diploma in **Architecture/Interior Decoration**
Course title**: ARCHITECTURAL GRAPHICS-II**

Time: **4 Hours**] [Max. Marks: **50**

Instructions:1.Retain all constructional details.
2.Missing data may be suitably assumed and clearly stated.
3.Usage of appropriate line types and dimensioning of drawing will carry weightage.

10 Marks Question on Isometric views

1. (a) Draw the Isometric views of the following solids (Any one) 4
   i) Prisms
   ii) Pyramids
   iii) Cylinder
   iv) Cone

(b)Draw the Isometric view of the object whose orthographic views are given in the fig. 6

10 Marks Question on Diametric or Trimetric views

2. (a) Draw the Diametric or Trimetric views of the following solids (Any one) 4
   i) Prisms
   ii) Pyramids
   iii) Cylinder
   iv) Cone

(b) Draw the Diametric or Trimetric view of the object whose Orthographic views are given in the fig. 6

10Marks Question on Perspective drawing

1. Given the position of the station point and orthographic views of an object, to draw the perspective view of the same.

05 Marks Question on Sciography

1. Given the orthographic views of an object, to obtain the shadow cast by the object on the horizontal plane.

15 Marks Question on Building drawing

1. Given the line diagram of a residential building along with constructional details, to draw

i)	Plan	5M
ii)	Elevation	4M
iii)	Section showing maximum constructional details.	6M

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Course Title: **MODEL MAKING - I**		
Scheme (L:T:P) : **0:2:4**	Total Contact Hours: **78**	Course Code: **15AR24P**
Type of Course: Tutorial and practice	Credit **:3**	Core/ Elective: **Core**
CIE- 25 Marks		SEE- 50 marks

Course Objectives:

1. Understand and use the technique of model making.
2. Prepare models of geometrical shapes and Block model of simple building.

On successful completion of the course, the students will be able to:

3.

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Interpret and select model making materials	***U***	1,2,3,4,9,10	9
CO2	Understand the basic geometrical models to relate with architectural form	***R***	1,2,3,4,9,10	12
CO3	Develop models of building components	***U***	1,2,3,4,9,10	6
CO4	Compose model space with various geometrical forms	***A***	1,2,3,4,9,10	30
CO5	Prepare scale down models to demonstrate skill, workmanship, preciseness to enhance visualization of drawings to reality (Model).	***A***	1,2,3,4,9,10	21
			Total sessions	**78**

Course	Programme Outcome									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
MODEL MAKING I	3	3	3	3	-	-	-	-	3	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Course Contents:

UNIT- I: INTRODUCTION 6Hours

Introduction to models and model making-clay, plaster of paris, plywood, veneer, thermocol, mount board, hard board, handmade sheets etc.

UNIT- II: INTRODUCTION OF DIFFERENT MATERIALS 6Hours

Different materials used for the representation of components and surroundings of building like sticks, sponge, sand paper, cork sheets and any other available materials and tools. .

UNIT- III: SOLID MODELLING 12 Hours

Prepare models of Cube, Cylinder, Cone Sphere, Pyramid, Prism .

UNIT- IV: BUILDING COMPONENTS 12Hours

Prepare the models of Building components like columns, decorative works, jaliworks, staircase, doors and windows.

UNIT- V: COMPOSITE FORMS 12 Hours

Prepare models of architectural forms by combining more than three forms

UNIT- VI: BLOCK MODEL 30Hours

Prepare scale down model of simple building (block model).

Resources:

a) References :

1. The Graphic arts studio Manual-Bert Braham

b) Web link;`

1. En.wikipedia.org/wiki/model_building

Course Assessment and Evaluation:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
DIRECT ASSESSMENT	CIE (Continuous Internal Evaluation)	Drawing sheets	Students	Average of marks allotted for each graded exercise	25	Models	1,2,3,4,5
				TOTAL	25		
	SEE (Semester End Examination)	End Exam		End of the course	50	Models	1,2,3,4,5
INDIRECT ASSESSMENT	Student Feedback on course		Students	Middle of the course		Feedback forms	1,2,3 Delivery of course
	End of Course Survey			End of the course		Models	1,2,3,4,5 Effectiveness of Demonstrations& Assessment Methods

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

1. Remembering and Understanding: - 10% weightage
2. Applying the knowledge acquired from the course: - 55 % weightage
3. Analysis: -10% weightage
4. Evaluation:- - 5% weightage
5. Creating new knowledge: - 10% weightage

SCHEME OF EVALUATION

Sl. no.	Performance	Max.Marks
1	Development of given 2D sketch	5
2	Preparing model	20
2	Applying suitable texture	10
3	Sessional works/ portfolio	10
4	Viva-voce	05
	TOTAL	**50**

Course Title: **Basic Computer Skills Lab**	Course Code: **15AR25P**
Credits (L:T:P) : **0:2:4** **Credit:3**	Core/ Elective: **Core**
Type of course: **Tutorial, Practice**	Total Contact Hours: **78**
CIE- 25 Marks	SEE- 50 marks

Prerequisites: Applied science**,** Knowledge of English comprehension.

Course Objectives:

Learn and understand the Basics of Computers and apply the application tools like word processor, spread sheet and presentation to create documents and presentation in engineering domain.

On successful completion of the course, the students will be able to attain CO:

Course Outcome		CL	Experiments linked	Linked PO	Teaching Hrs
CO1	Understand the basic organization of the computer.	***R/U/A***	1and 2 of Unit-1	1,2,3,4,8,9,10	**03**
CO2	Use the different tools and utilities of the operating system.	***R/U/A***	3 to 7 of Unit-1	1,2,3,4,8,9,10	**18**
CO3	Demonstrate specified skills of using word processor module.	***R/U/A***	1 to 6 of word processor part of Unit-2	1,2,3,4,8,9,10	**18**
CO4	Demonstrate specified skills of using word spread sheet module	***R/U/A***	1 to 5 of spread sheet part of Unit-2	1,2,3,4,8,9,10	**18**
C05	Demonstrate specified skills of using presentation module.	***R/U/A***	1 to 3 of presentation part of Unit-2	1,2,3,4,8,9,10	**09**
C06	Utilize the concepts learned to create a mini project.	**U/A**	Contents mini project part of Unit2	All ten	**12**
		Total sessions			**78**

COURSE PO ATTAINMENT MATRIX

Course	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
Basic Computer skills Lab	**3**	**3**	**3**	**3**	**1**	**1**	**1**	**3**	**3**	**3**

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

Course Contents:

Tutorials and Practice

Unit – I

Introduction to Computer Hardware and Software

1. Identify and understand the models of Computers, Identify and understand front panel switches and back panel connections of a Computer system, Identify and understand the physical components of a Computer.
2. Conduct computer system connection and understand the booting process.
3. Study and Practice of Basic DOS Commands.
4. Familiarization of GUI based Operating System environment.
5. Practice creating Icons and Folders, Creating/Opening of file, Editing and saving the document, Copy, Cut and Paste operations, in-built utilities of OS like – Text editors, paint, calculator, etc.
6. Practice browsing of different sites using search engine.
7. Practice Creating E-Mail accounts, Sending, Receiving of E-Mails.

Unit –II

Word Processing

1. Create a Business Letter and Personal Letter.
2. Create a Company Letterhead.
3. Create a Simple Newsletter with minimum three columns. Insert a Clip art in the newsletter.
4. Create a Resume for a Job Application.
5. Create the cover page of a Project Report (use Word Art, insert Picture Image).
6. Prepare the class time table for your class.

Spreadsheet

1. Create a worksheet with five columns. Enter ten records and find the sum of all columns using auto sum feature.
2. You have a monthly income of Rs.11000. Your monthly expenditures are Rent- Rs 3500, Food- Rs. 1500, Electricity- Rs.110, Phone- Rs. 160, and Cable TV-Rs. 300. Prepare a worksheet with the Monthly Income, the Monthly Expenditures listed and summed, monthly savings amount (what's left over each month) calculated, and the amount saved per day (assuming 30 days in a month).
3. Create a worksheet containing the pay details(containing Basic pay, DA, HRA ,Other Allowance , Deductions- PF,PT, Insurance, Gross and Net salary) of the employees using formulas.
4. Create a Simple Bar Chart to highlight the sales of a company for three different periods.
5. Create a Pie Chart for a sample data and give legends.

Presentation

1. Using presentation tool, Create a simple Presentation consisting of 4-5 slides about Input and Output Devices.
2. Create a presentation about a book containing Title, Author, Publisher and Contents.
3. Create an automated (with timings & animation) Presentation with five slides about different Models of Computers. Use Presentation tool.

Mini-project [CIE- 05 Marks]

Prepare a mini project using the above concepts of Unit-I and/or Unit-II.

- Repair and Overhauling of PC of laboratory
- Formatting of PC
- Servicing of UPS
- Prepare a report using the learned skills on Unit 1 to Unit II

Course Delivery:

The course will be delivered through tutorials of two hours and four hours of hands on practice per week.

References:

1. Computer Fundamentals Concepts, Systems, Application, D.P.Nagapal, S.Chand Publication, RP-2014, ISBN: 81-219-2388-3
2. http://www.tutorialsforopenoffice.org/
3. http://www.libreoffice.org/get-help/documentation/
4. http:// www.kingsoftstore.com/

S/w Tools: Any open source tool or equivalent proprietary tools

Course Assessment and Evaluation Scheme:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
DIRECT ASSESSMENT	CIE (Continuous Internal Evaluation)	IA Tests	Students	Two Tests (Average of two tests)	10	Blue books	1,2,3,4,5,6
				Record Writing (Average marks of each exercise to be computed)	10	Record Book	1,2,3,4,5,6
				Mini Project	05	Report	1,2,3,4,5,6
				TOTAL	25		
	SEE (Semester End Examination)	End Exam		End of the course	50	Answer scripts at BTE	1,2,3,4,5,6
INDIRECT ASSESSMENT	Student Feedback on course		Students	Middle of the course		Feedback forms	1, 2,3 Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2,3, 4,5,6 Effectiveness of Delivery of instructions & Assessment Methods

***CIE** – Continuous Internal Evaluation ***SEE** – Semester End Examination

Note:

1. I.A. test shall be conducted as per SEE scheme of valuation. However obtained marks shall be reduced to 10 marks. Average marks of two tests shall be rounded off to the next higher digit.
2. Rubrics to be devised appropriately by the concerned faculty to assess Mini project/Student activities.

MODEL OF RUBRICS FOR ASSESSING STUDENT ACTIVITY/MINI PROJECT:

Note: The dimensions and scales have to be decided by the teacher based on the type of activity.

Dimension	Scale					Students Score				
	Unsatisfactory (1 marks)	Developing (2marks)	Satisfactory (3marks)	Good(4 marks)	Exemplary (5marks)	1	2	3	4	5
1. Research and gather information	Does not collect information relate to topic	Collects very limited information ,some relate to topic	Collects basic information, most refer to the topic	Collects more information, most refer to the topic	Collects a great deals of information, all refer to the topic	2				
2.Full fills teams roles and duties	Does not perform any duties assigned to the team role	Performs very little duties	Performs nearly all duties	Performs almost all duties	Performs all duties of assigned team roles	3				
3.Shares work equally	Always relies on others to do the work	Rarely does the assigned work, often needs reminding	Usually does the assigned work, rarely needs reminding	Always does the assigned work, rarely needs reminding.	Always does the assigned work, without needing reminding	4				
4. listen to other team mates	Is always talking, never allows anyone to else to speak	Usually does most of the talking, rarely allows others to speak	Listens, but sometimes talk too much,	Listens and talks a little more than needed.	Listens and talks a fare amount	5				
Grand Average/Total= (2+3+4+5)/4=14/4=3.5=4						4				

Scheme of Evaluation for End Exam

SN	Scheme	Max. Marks
2	Testing skills/ abilities from Unit - I	10
3	Writing steps on any one from Unit -II	10
4	Execution with result	15
5	Presentation of result	05
6	Viva voce	10
	Total	**50**
Note: 1. Candidate shall submit Lab Record for the Examination. 2. Student shall be allowed to execute directly even if he/she unable to write the procedure 3. In case of change in experiment or no write up, marks will not be awarded for writing procedure/steps.		

Resource requirements for Basic Computer Skills Lab

(For an Intake of 60 Students [3 Batches])

Hardware requirement

Sl. No.	Equipment	Quantity
1	PC systems (latest configurations with speakers)	20
2	Laser Printers	03
3	Networking (Structured) with cat 6e / wireless 24 Port switches / Wireless Router I/O Boxes for networking(as required)	03
4	Broad Band Connection	01

Software Requirement:

Linux, Libre Office / Open Office / King soft Office / any equivalent software.

Note: Students: Computers ratio in the Lab should be strictly 1:1 for a batch of twenty Students.

MODEL QUESTION BANK

Note: *One Question from Unit-I and Unit-II*

UNIT-I

1. Identify Physical components of a Computer System.
2. Demonstrate Internal and External DOS Commands and differentiate between them.
3. Create and rename the file using DOS Commands.
4. Create a directory and copy a file inside the directory using DOS Commands.
5. Demonstrate the basic formatting features in Text Editors.
6. Create two file in a folder and place the shortcut of these files on the desktop.
7. Demonstrate how search engine may be used in browsing Internet.
8. Create an email account
9. Create and Send an email with a picture attachment.
10. Demonstrate how documents can be downloaded using Internet.

UNIT-II

1. Using Word Processor Application create a Business Letter.
2. Using Word Processor Application create a Personal Letter.
3. Using Word Processor Application create a letter head for company.
4. Using Word Processor Application create a Simple Newsletter with minimum of three columns. Insert a Clip art in the newsletter.
5. Using Word Processor Application create a Resume for a Job application.
6. Using Word Processor Application create the cover page of a Project Report (use Word Art, insert Picture Image).
7. Prepare the class time table for your class using Word Processor Application.
8. Using Spreadsheet Application, create a worksheet with five columns. Enter ten records and find the sum of all columns using auto sum feature.
9. You have a monthly income of Rs.11000. Your monthly expenditures are Rent- Rs 3500, Food- Rs. 1500, Electricity- Rs.110, Phone- Rs. 160, and Cable TV-Rs. 300. Prepare a worksheet with the Monthly Income, the Monthly Expenditures listed and summed, monthly savings amount (what's left over each month) calculated, and the amount saved per day (assuming 30 days in a month).Use Spreadsheet Application.

10. Using Spreadsheet Application, create a worksheet containing the pay details(containing Basic pay, DA, HRA ,Other Allowance , Deductions- PF,PT, Insurance, Gross and Net salary) of the employees using formulas.
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14. Create a presentation about a book or other content containing Title, Author, Publisher and Contents.
15. Create an automated (timings & animation) Presentation with five slides about different Models of Computers or other content. Use Presentation tool.