R-20

Code: 20A312T-A

I B.Tech. I Semester Regular & Supplementary Examinations February 2023
Engineering Drawing
(Common to CE, ECE)

Max. Marks: 70   Time: 3 Hours

Answer *five full* questions by choosing one question from each unit (5 x 14 = 70 Marks)

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			Marks	CO	BL

UNIT–I

1. Construct an ellipse, when the distance of the focus from the directrix is equal to 65mm and eccentricity is 2/3. Also draw tangent and normal to the curve at a point 40mm from the directrix.   14M   CO1   L1, L2

OR

2. Draw a hypocycloid of a circle of diameter 50 mm, which rolls inside a circle of dia180mm for one revolution. Also, draw a tangent and a normal to the hypocycloid at a point 50 mm from the center of the directing circle.   14M   CO1   L1, L2

UNIT–II

3. A 50 mm long line AB is perpendicular to the V.P and 40 mm above the H.P. one end of the line is 10 mm in front of the V.P. Draw its projections and locate the traces.   14M   CO2   L1, L2, L4

OR

4. Line AB, 65mm long has its end A 20mm above H.P. and 25mm in front of VP. The end B is 40mm above H.P. and 65mm in front of V.P. Draw the projections of AB and show its inclination with H.P. and V.P.   14M   CO2   L1, L2, L4

UNIT–III

5. A rectangle ABCD of 50×30 mm side has a corner on the H.P. and 20 mm in front of the V.P. The resting corner containing longest edge of the rectangle is inclined at 30° to H.P and parallels to V.P. Draw its projections.   14M   CO3   L2, L3

OR

6. A pentagonal plane of side 30 mm rests on an edge in the V.P. with its surface perpendicular to the H.P. The plane is inclined at 30^0 to V.P. Draw the projections of the plane.   14M   CO3   L2, L3

UNIT–IV

7. A hexagonal pyramid of base edge 30 mm and axis 60 mm, has a triangular face on the ground and the axis parallel to the V.P. Draw its projections.　14M　CO4　L2, L4

OR

8. Draw the projections of a cylinder of 40 mm diameter and axis 60 mm long when it is lying on H.P. on a point on its circumference with its axis inclined at 45^0 to H.P. and parallel to V.P.　14M　CO4　L2, L4
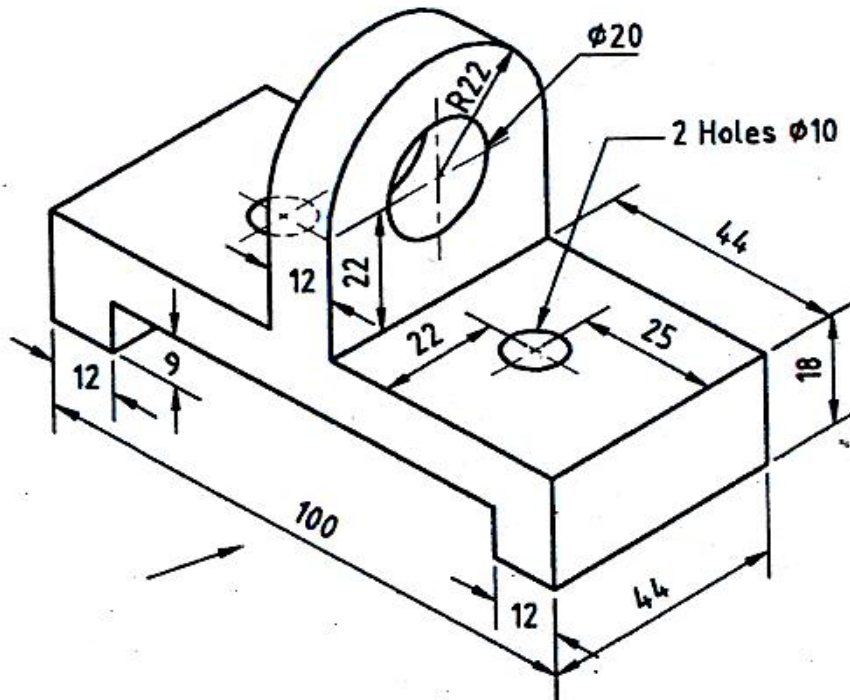
UNIT–V

9. Draw the isometric view of a hexagonal prism, with side of base 25 mm and axis 60 mm long. The prism is resting on its base on H.P., with an edge of the base parallel to V.P.　14M　CO5　L2, L3

OR

10. Draw Front, top, and right-side views respectively of the given object.　14M　CO5　L2, L3

ISOMETRIC VIEW

*** End ***

Code: 20AC14T

R-20

I B.Tech. I Semester Regular & Supplementary Examinations February 2023
Engineering Chemistry
(Common to CE & ME)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

		CO	BL
1. Answer ALL the following short answer questions (5 X 2 = 10M)			
a)	Why do we express hardness of water in terms of calcium carbonate equivalent?	CO1	L1
b)	Define reference electrode.	CO2	L1
c)	What is meant by degree of polymerization?	CO3	L1
d)	What is meant by thermal spalling?	CO4	L1
e)	Mention any two uses of smart materials.	CO5	L1

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	BL

UNIT–I

		Marks	CO	BL
2. a)	What are Boiler troubles? Explain Scale and Sludge formation in boilers. How are they removed?	6M	CO1	L2
b)	What is meant by hardness of water and its units? What are the disadvantages of hard water?	6M	CO1	L2

OR

		Marks	CO	BL
3. a)	Describe the estimation of hardness of water by EDTA method.	6M	CO1	L2
b)	Explain the zeolite exchange process for softening of water.	6M	CO1	L2

UNIT–II

		Marks	CO	BL
4. a)	Write a short note on fuel cells.	6M	CO2	L1
b)	Write briefly about: (i)Primary cells (ii)Secondary Cells	6M	CO2	L1

OR

		Marks	CO	BL
5. a)	Describe about (i) Sacrificial anodic protection method (ii) impressed current method of cathodic protection.	6M	CO2	L2
b)	Define corrosion. Explain the factors which influence the corrosion.	6M	CO2	L2

UNIT–III

6. a) Distinguish between thermoplastics and thermosetting polymers or resins.   6M CO3 L4

   b) Discuss, with examples about the types of polymerization.   6M CO3 L4

OR

7. a) Describe the determination of calorific value of a fuel by using bomb calorimeter.   6M CO3 L2

   b) What is crude oil? Describe the refining Process of crude petroleum.   6M CO3 L2

UNIT–IV

8. a) Discuss the classification of composites with suitable examples in brief.   6M CO4 L4

   b) Define refractory. What are the properties of a good refractory?   6M CO4 L1

OR

9. a) Write notes on lubricants with special reference to their classification, mode of action, examples and applications.   6M CO4 L2

   b) What is Portland cement? Explain the different ingredients of Portland cement.   6M CO4 L2

UNIT–V

10. a) Describe the chemical synthesis of nanomaterials by Sol-gel method.   6M CO5 L2

    b) Discuss the applications of nanomaterials in wastewater treatment.   6M CO5 L4

OR

11. a) Discuss the classification of smart materials.   6M CO5 L4

    b) What are the applications of shape memory alloys? Explain.   6M CO5 L2

*** End ***

Code: 20A511T

I B.Tech. I Semester Regular & Supplementary Examinations February 2023

Problem Solving through C Programming

(Common to All Branches)

Max. Marks: 70   Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
      2. In Part-A, each question carries **Two mark.**
      3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

1. Answer the following (5 X 2 = 10M)   **CO**   **BL**

a) Differentiate an algorithm and a flowchart.   CO1   L2

b) Differentiate do-while and while statements.   CO2   L2

c) Describe the scope of variables in C program.   CO3   L2

d) Define predefined functions realloc() and free()   CO4   L2

e) Illustrate the use of enumerated data type in C programming. CO5   L3

PART-B

Answer five questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	BL

UNIT–I

2. a) Illustrate the use of ternary or conditional operator to find the maximum of three given integers — 6M 1 L4

   b) Describe the concept of Associativity and Precedence of operators. — 6M 1 L2

OR

3. Explain the structure of a C program — 12M 1 L2

UNIT–II

4. a) Develop a C program for Binary search. — 6M 2 L4

   b) Apply bubble sort on the following list of elements
      30, 60, 80, 10, 50, 90, 70, 20 — 6M 2 L3

OR

5. a) Model a C program for matrix multiplication — 8M 2 L3

   b) Discuss the loop control statements in C programming. — 4M 2 L2

UNIT–III

6. a) Differentiate call by value and call by reference with example.   8M   3   L3
   b) Illustrate the concept of recursion.   4M   3   L3

OR

7. a) Discuss the preprocessor directives.   8M   3   L2
   b) Develop a C program to find the LCM of two integers.   4M   3   L5

UNIT–IV

8. a) Define a pointer and list the advantages and disadvantages of pointers.   6M   4   L3
   b) Differentiate malloc() and calloc() with examples   6M   4   L2

OR

9. a) Develop a c program to swap two integer variables using swap function.   6M   4   L6
   b) Illustrate the concept of pointer arithmetic.   6M   4   L4

UNIT–V

10. a) Differentiate structure and union with examples.   4M   5   L3
    b) Develop a c program to display the content of unformatted text file.   8M   5   L5

OR

11. a) Outline the concept of self-referential structures.   6M   5   L3
    b) Demonstrate the passing of structures to functions as parameters.   6M   5   L3

END

Code: 20AC11T

I B.Tech. I Semester Regular & Supplementary Examinations February 2023

Algebra and Calculus

(Common to All Branches)

Max. Marks: 70   Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. In Part-A, each question carries **Two marks.**

3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

1. Answer ALL the following short answer questions   (5 X 2 = 10M)   CO   BL

a) Define the rank of the matrix.   1   2

b) State Caley Hamilton Theorem.   2   2

c) Expand $\cos x$ using by Maclaurin's series.   3   2

d) Evaluate

$$\int_0^2 \int_1^3 \int_1^2 x\,y^2 z\, dz\,dy\,dx$$ 4   3

e) Find the value of   (1,1/2)   5   3

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

                                                                      Marks   CO   BL

UNIT–I

2. a) Reduce the following matrix into the matrix

$$\begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$$ Echelon form and hence find its rank   6M   1   3

b) Test for consistency and solve

5x+3y+7z=4

3x+26y+2z=9

7x+2y+10z=5   6M   1   3

OR

3.   Find the eigenvalues and eigenvectors of matrix

$$\begin{bmatrix} 1 & -1 & 4 \\ 3 & 2 & -1 \\ 2 & 1 & -1 \end{bmatrix}$$ 12M   1   3

UNIT–II

4. Verify Cayley–Hamilton theorem for the matrix A and find its inverse.
$$A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$$

12M   2   3

OR

5. Reduce the quadratic form
$$2x_1x_2 + 2x_1x_3 - 2x_2x_3 \text{ to a canonical form by an orthogonal}$$
reduction and discuss its nature. Also, find the modal matrix.

12M   2   3

UNIT–III

6. If $x = u(1-v)$, $y = uv$ then prove that $JJ' = 1$ where
$$J = \frac{\partial(x,y)}{\partial(u,v)} \quad \& \quad J' = \frac{\partial(u,v)}{\partial(x,y)}$$

12M   3   3

OR

7. Examine the following function for extreme values:
$$f(x,y) = x^4 + y^4 - 2x^2 + 4xy - 2y^2$$

12M   3   3

UNIT–IV

8. Change the order of integration
$$I = \int_0^{4a} \int_{x^2/4a}^{2\sqrt{ax}} dy\,dx \text{ and hence evaluate}$$

12M   4   3

OR

9. Evaluate
$$\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} xyz\,dx\,dy\,dz$$

12M   4   3

UNIT–V

10. Show that
$$\beta(p,q) = \int_0^\infty \frac{y^{q-1}}{(1+y)^{p+q}}dy = \int_0^1 \left[\frac{x^{p-1}+x^{q-1}}{(1+x)^{p+q}}\right]dx$$

12M   5   3

OR

11. Prove that
$$(i) \; \beta\left(m, \tfrac{1}{2}\right) = 2^{2m-1}\beta(m,m)$$
$$(ii) \; \Gamma(m)\Gamma\left(m+\tfrac{1}{2}\right) = \frac{\sqrt{\pi}}{2^{2m-1}}\Gamma(2m)$$

*** End ***

12M   5   3

R-20

Code: 20AC15T

I B.Tech. I Semester Regular & Supplementary Examinations February 2023

Communicative English

(Common to CE, ME, CSE, CSE(AI), CSE(DS) and AI&DS)

Max. Marks: 70   Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. In Part-A, each question carries **Two mark.**

3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

1. **Answer ALL the following short answer questions**   (5 X 2 = 10M)   BL

a) What emotions did Hazlitt's son express when he was going to school?   L2

b) What is the poem " The Brook" about?   L2

c) Justify the title " The death trap.   L2

d) How did Mrinalini fight for change?   L2

e) Discuss the concept of Micro credit and Micro finance.   L2

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

	Marks	CO	BL

UNIT–I

2.   "Never conceive a prejudice against others". Substantiate it with reference to William Hazlitt's essay" on the conduct of life".   12M   L3

OR

3. a) **Change the following statements in to questions.**   L4

   i) I do not Know English.   1M

   ii) I will meet you tomorrow.   1M

   iii) I had never been to Bombay.   1M

   iv) I ate salad for my Breakfast.   1M

   v) She came here yesterday   1M

   vi) They are not Indians.   1M

   b) **Identify the parts of speech of the underlined words.**   L2

   vii) It being a <u>hot</u> day, We <u>stayed</u> Indoors.   2M

   viii) It is <u>too</u> hot today. <u>I</u> can't go out.   2M

   ix) It is an <u>irrevocable</u> change <u>and</u> cannot be revoked.   2M

UNIT–II

4.   Write a critical appreciation of 'The Brook' by Tennyson.   12M   L4

OR

5.   Write a paragraph on the importance of communication skills.   12M   L3

UNIT–III

6.   How does Dimitri defend himself from the death trap?   12M   L4

OR

7. a) **Rearrange the jumbled sentences to form a meaningful paragraph.** L3

   i) Although he had learned German at college, he soon realized that he did not remember much. 1M

   ii) His German has improved a lot. 1M

   iii) When Pradeep retuned to India after a one Month's stay in Germany, he started learning German again 1M

   iv) Now he is preparing to appear for an Exam. 1M

   v) He intends to work on a new project. 1M

   vi) Next year, he plans to enroll himself in an advance course. 1M

   vii) It is essential for him to make frequent visits. 1M

   b) **Fill in the blanks using appropriate form of the given verb.** L4

   viii) Sindhu _____(Win) the silver medal in Olympics. 1M

   ix) Suraj _____(wake) up early this morning. 1M

   x) She has just _____(arrive) 1M

   xi) They always _____(drink) coffee at breakfast. 1M

   xii) I _____ (be) happy to hear this news. 1M

   UNIT–IV

8. Explain how Muhammed Yunus makes a difference in the banking sector? 12M L3

OR

9. Write an Essay on the Topic," importance of world peace." 12M L4

   UNIT–V

10. How does Ranjana Deve convey the notion that being a performer was not an acceptable career choice for "Respectable Women?" 12M L3

OR

11. **Correct the following sentences:** L4

   i) He is elder than me. 1M

   ii) Let us discuss about the issue. 1M

   iii) He gave me a good advice. 1M

   iv) You went home yesterday. Isn't it? 1M

   v) If I went to Bombay next week, I will meet your Uncle. 1M

   vi) They have lived here from March 2020 1M

   vii) Bread and Butter are what we usually have for Breakfast. 1M

   viii) Walking along the Road, my hat was lost. 1M

   ix) My Father went to buy floor carpets and returned back. 1M

   x) You have to agree that I am cent percent right. 1M

   xi) I came on foot. 1M

   xii) Taj mahal is an unique Monument. 1M

*** End ***