Hall Ticket Number :										

R-20

Code: 20A311T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

Engineering Graphics-I

(Mechanical Engineering)

Max. Marks: 70 Time: 3 Hours

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

		Marks	CO	Blooms Level
	UNIT–I			
1.	Construct an ellipse when the distance of the focus from the directrix is equal to 60 mm and eccentricity 2/3. Also, draw a normal and a tangent to the curve at a point 35 mm from the focus.	14M	CO1	L6
	OR			
2.	Draw the major axis of an ellipse is 110 mm long and the foci are at a distance of 15 mm from its ends. Draw the ellipse, One-half of it by concentric circles method and the other half by rectangle method.	14M	CO1	L4
	UNIT–II			
3.	Draw a cycloid for one complete revolution of a cycle having a 30 mm radius. Taking the top most point on the rolling circle as the initial position of the generating point. Draw a tangent and a normal to the curve at a point distant 40 mm above the base line	14M	CO2	L4
	OR			
4.	Draw an involute of a circle of 50 mm diameter. Also draw a tangent and a normal at a point 100 mm distant from the center of the circle.	14M	CO2	L4
	UNIT–III			
5.	The front view of a line AB is 80mm long and measures 55mm. while its top view measures 70mm. End A is in both HP and VP. Draw the projections of the line and find its inclinations with the reference planes. Also locate the traces.	14M	CO3	L4
	OR			

6.	A line PQ measures 70 mm. The projector through its VT and the end P are 40 mm apart. The point P is 30mm above the HP and 40 mm in front of the VP. The VP is 10 mm above the HP. Draw the projections of the line and determine its HT and inclinations with the HP and VP.	14M	CO3	L4

UNIT–IV

7.	A regular hexagonal plane of 45mm side has corner on HP and its surface is inclined at 45° to HP. Draw the projections when the diagonal through the corner, which is on HP makes 30° with VP.	14M	CO4	L4

OR

8.	A circular plate of negligible thickness and 50 mm diameter appears as an ellipse in the front view, having its major axis 50 mm long and minor axis 30 mm long. Draw its top view when the major axis of ellipse is horizontal.	14M	CO4	L4

UNIT–V

9.	A line AB, 50 mm long, is inclined at 30° to the H.P. and its top view makes an angle of 60° with the V.P. Draw its projections using auxiliary planes method.	14M	CO5	L4

OR

10.	A rectangular plane of edges 70 mm and 35 mm is resting on an edge in the H.P. The surface is inclined to the H.P. such that the top view appears as a square. Draw its projections using auxiliary planes method when the edge resting on the H.P. is inclined at 30° to the V.P.	14M	CO5	L4

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC14T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

Engineering Chemistry

(Common to CE and 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 mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	Blooms Level
1.	**Answer ALL the following short answer questions** (5 X 2 = 10M)		
a)	Define Brackish water.	CO1	L1
b)	What is principle involved in Cathodic protection method.	CO2	L1
c)	Define the functionality of monomer.	CO3	L1
d)	Define composite material.	CO4	L1
e)	Recall the uses of Sol-gel method.	CO5	L1

PART-B

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

		Marks	CO	Blooms Level
	UNIT–I			
2.	Discuss different types of boiler troubles and their removal methods.	12M	CO1	L4
	OR			
3. a)	Describe the reverse osmosis process for removal of salts from impure water.	6M	CO1	L2
b)	Explain briefly about sodium zeolite method with chemical reactions.	6M	CO1	L2
	UNIT–II			
4. a)	Discuss the various factors affecting the rate of corrosion.	6M	CO2	L4
b)	Explain the construction and working of Leclaunche cell.	6M	CO2	L2
	OR			
5. a)	What are electrochemical series? Write its applications.	6M	CO2	L4
b)	Describe the construction and working of Lead acid storage cell and also write the chemical reactions during discharging and recharging.	6M	CO2	L2

UNIT–III

6.	a)	Write note on i) classification of polymers ii) types of fuels	6M	CO3	L1
	b)	Explain the process of refining of petroleum with neat diagram.	6M	CO3	L2

OR

7.	a)	Distinguish between thermoplastics and thermosetting plastics.	6M	CO3	L4
	b)	Write note on Octane number.	6M	CO3	L1

UNIT–IV

8.	a)	Describe the classification of composites.	6M	CO4	L2
	b)	Explain the mechanism and properties of lubricating oils.	6M	CO4	L2

OR

9.	a)	Discuss the various factors affecting refractory materials.	6M	CO4	L2
	b)	Summarise fibre and structural reinforce composites.	6M	CO4	L2

UNIT–V

10.	a)	Describe the characterization of nano materials by SEM.	6M	CO5	L2
	b)	Write note on self-healing materials.	6M	CO5	L1

OR

11.	a)	Describe the chemical synthesis of nano materials by Sol-gel method.	6M	CO5	L2
	b)	Write the applications of nano materials in waste water treatment.	6M	CO5	L1

*** End ***

Hall Ticket Number :										

R-20

Code: 20A511T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

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)

			CO	Blooms Level
1.	**Answer ALL the following short answer questions**	(5 X 2 = 10M)		
a)	What is the difference between a pseudo code and flow chart? Show both notations for adding two natural numbers.		1	L2
b)	What is the difference between while and do-while?		2	L2
c)	Write the syntax of strlen( ) and strcat( ) functions.		3	L1
d)	What is pointer and declare pointer array?		4	L1
e)	What is the difference between structure and union?		5	L1

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

			Marks	CO	Blooms Level
		UNIT–I			
2.	a)	What are the various steps to solve a problem? Explain them by taking an example.	6M	1	L2
	b)	Draw a flow chart to find the largest of three numbers in C.	6M	1,5	L2
		OR			
3.	a)	What are the various kinds of operators in C. Explain any four types with examples?	6M	1	L2
	b)	How can we classify different data types in C. Explain them.	6M	1	L2
		UNIT–II			
4.	a)	Explain selection sort algorithm with an example.	6M	2,5	L2
	b)	What is an Array? How to declare and initialize an Array. Explain with an example.	6M	2,5	L3
		OR			
5.	a)	Explain Binary Search Algorithm with an example.	6M	2,5	L2

	b)	You are given the height H (in metres) and mass M (in kilograms) of your friend. The Body Mass Index (BMI) of a person is computed as M/H^2. Report the category into which your friend falls, based on his BMI: Category 1: Underweight if BMI ≤18 Category 2: Normal weight if BMI ∈{19, 20,…, 24} Category 3: Overweight if BMI ∈{25, 26,…, 29} Category 4: Obesity if BMI ≥30	6M	2,5	L3

UNIT–III

6.	a)	What are the advantages of using Functions? How do we declare Functions in C.	6M	3	L2
	b)	Write a program to find the factorial of a given number using recursion.	6M	3,5	L3
		OR			
7.	a)	Explain various storage classes in C with an example.	6M	4	L2
	b)	What is the role of Preprocessor in the Compilation process and explain two preprocessor directives.	6M	4	L2

UNIT–IV

8.	a)	Define void pointer. Where we use this concept? Give an example for it.	6M	4	L2
	b)	Write a program to exchange two values using pointers.	6M	4	L3
		OR			
9.	a)	Distinguish between array of pointers and pointer to array with examples.	6M	4	L2
	b)	List the functions used in the dynamic memory allocation. Explain each function with an example.	6M	4	L2

UNIT–V

10.	a)	Describe about various file opening modes in C.	6M	4	L2
	b)	Write a program to compare two files, printing the first line where they differ.	6M	4,5	L3
		OR			
11.	a)	What are the different ways to access the members of structure elements in C. Give example for each case?	6M	4	L2
	b)	Write a C program to perform average of three number using files. Assume input numbers are existing in a file with name input.txt and result need to be saved in another file with the name output.txt	6M	4,5	L3

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC11T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

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

PART-A

(Compulsory question)

		CO	Blooms Level
1.	**Answer ALL the following short answer questions** (5X2= 10M)		
a)	Find the rank of $A=\begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 0 & 4 & -8 \end{bmatrix}$	CO1	L3
b)	Define index and signature of a quadratic form.	CO2	L2
c)	Define total derivative in partial differentiation	CO3	L2
d)	Evaluate $\int_{x=0}^{1}\int_{y=0}^{2}\int_{z=0}^{2} x^2 yz\, dx\, dy\, dz$	CO4	L3
e)	Define beta function and explain two properties	CO5	L2

PART-B

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

		Marks	CO	Blooms Level
	UNIT–I			
2. a)	Find the value of 'a' such that the system $2x+y+2z=0,\ x+y+3z=0,\ 4x+3y+^{a}z=0$ has non trivial solutions	6M	CO1	L3
b)	Find the Eigen values and Eigen vectors of the matrix $A=\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$	6M	CO1	L2
	OR			
3. a)	Reduce the matrix $\begin{bmatrix} 1 & 3 & 4 & 3 \\ 3 & 9 & 12 & 3 \\ 1 & 3 & 4 & 1 \end{bmatrix}$ to normal form and find its rank.	6M	CO1	L3

b) Find the Eigen values and the corresponding Eigen vectors of $A=\begin{bmatrix}3 & 1 & 4\\ 0 & 2 & 6\\ 0 & 0 & 5\end{bmatrix}$ — 6M CO1 L2

UNIT–II

4. Verify Cayley – Hamilton theorem for $A=\begin{bmatrix}2 & 1 & 1\\ 0 & 1 & 0\\ 1 & 1 & 2\end{bmatrix}$ and hence find A^{-1} and A^{6} — 12M CO2 L3

OR

5. Reduce the quadratic form $Q=6x_1^2+3x_2^2+3x_3^2-4x_1x_2-2x_2x_3+4x_3x_1$ into canonical form and find its nature. — 12M CO2 L3

UNIT–III

6. a) Expand the Taylor's series expansion of $Sinx$ in powers of $(x-\frac{®}{4})$ — 6M CO3 L3

b) If $U=f(2x-3y,3y-4z,4z-2x)$ then find the value of $\frac{1}{2}\frac{\partial U}{\partial x}+\frac{1}{3}\frac{\partial U}{\partial y}+\frac{1}{3}\frac{\partial U}{\partial z}$ — 6M CO3 L2

OR

7. a) If $x=r\,Sin^{-}\,Cos¤, y=r\,Sin^{-}\,Sin¤, z=r\,Cos^{-}$ then find $\frac{\partial(x,y,z)}{\partial(r,^{-},¤)}$ — 6M CO3 L3

b) A rectangular open box of capacity 32 cubic units is to be prepared. Find the dimensions of the box, to minimize the cost of painting outside. — 6M CO3 L2

UNIT–IV

8. a) Evaluate $\int\int\left(x^2+y^2\right)dx\,dy$ in the positive quadrant for which $x+y\le 1$ — 6M CO4 L3

b) Evaluate $\int_{y=1}^{e}\int_{x=1}^{\log y}\int_{z=1}^{e^x} \log z \; dz\, dx\, dy$ 6M CO4 L2

OR

9. Evaluate $\int_{0}^{4a}\int_{\frac{x^2}{4a}}^{2\sqrt{ax}} dy\, dx$ by changing the order of the integration 12M CO4 L2

UNIT–V

10. a) Derive the relation between Beta and Gamma functions 6M CO5 L3

b) Evaluate $\int_{0}^{\infty} \sqrt{x}e^{-x^2} dx$ 6M CO5 L4

OR

11. a) Prove that $\Gamma\left(\frac{1}{2}\right) = \sqrt{®}$ 6M CO5 L3

b) Evaluate $\int_{0}^{\frac{®}{2}} \sqrt{\cot^{-}}\, d^{-}$ 6M CO5 L4

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC15T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

Communicative English

(Common to CE, ME, CSE 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)

		CO	Blooms Level
1.	**Answer ALL the following short answer questions** (5 X 2 = 10M)		
a)	Why does Hazlitt advise his son not to bend almost double ones his book?		L2
b)	Who is the speaker of the poem, "The Brook"?		L2
c)	How many characters are there in 'The Death Trap' by Saki?		L2
d)	What do you know about Mrinalini Sarabhai?		L2
e)	Why did Muhammad Yunus get the Nobel Prize?		L2

PART-B

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

		Marks	CO	Blooms Level
	UNIT–I			
2.	Describe how William Hazlitt advises the school boy to conduct himself in life?	12M		L3
	OR			
3.	**Change the following statements in to questions**	6M		L4
i)	I went home at 9.00p.m			
ii)	You will have to write an exam.			
iii)	I can do that.			
iv)	I will meet you today.			
v)	I am fine. Thank you.			
vi)	I am seven years old.			
	Identify the parts of speech of the underlined words.	6M		L2
vi)	She is <u>severely</u> suffering <u>from</u> fever			
viii)	The <u>valley</u> is very steep. it is <u>deadly</u> dangerous.			
ix)	Nalini sings well. <u>She</u> is a <u>great</u> singer			

UNIT–II

4.	How does Tennyson portray the beauty of “The Brook”	12M	L3
	OR		
5.	**Develop the following hints into a meaningful paragraph** India____unity in diversity_____many races, religions, castes, creeds, Multi-cultural_____cultural differences ___back grounds_____opinions _____ different ways of life. Ability to understand __ mutual respect ____ tolerance _____ units and Integrity.	12M	L4

UNIT–III

6.	How does Munro reveal the conspiracy involved in The Death Trap	12M	L3
	OR		
7.	**Rearrange the jumbled sentences to form a meaningful paragraph**	7M	L4
	i) Invest your time wisely in learning to appreciate other’s strengths		
	ii) Embracing diversity helps one enhance the social abilities that contribute to success.		
	iii) Earning a degree with good grades is considered the primary goal of education		
	iv) Nurture relationship to ensure happiness,		
	v) Healthy socializing maximization learning		
	vi) Social skills are also equally important		
	vii) This would certainly enable us to attain success		
	Fill in the blanks using appropriate verb forms.	5M	L4
	viii) Ramesh _____(suffer) from fever since last Monday		
	ix) Meera _____(practice) the violin every day.		
	x) The Sun _____(rise) in the East.		
	xi) I never _____(try) skiing.		
	xii) We _____ (Watch) a line theatre performance the previous night.		

UNIT–IV

8.	Describe how Yunus strived for eradication of poverty.	12M	L3

OR

9.	Write an analytical essay on the topic " Role of People in the Conservation of Environment".	12M	L4

UNIT–V

10.	Explain how Mrinalini Sarabhai is a role model to the future generations.	12M	L3

OR

11.	**Correct the following sentences and rewrite the correct sentences.**	12M	L4

i) She is my cousin sister
ii) The United States have the largest share of the world's gold reserves.
iii) I prefer coffee than tea.
iv) She teaches English. Isn't it?
v) What is your good name?
vi) One must do his work.
vii) The sun is rising in the East.
viii) I am suffering with fever.
ix) Neither Usma nor Mohan are coming
x) My sister-in-laws are coming.
xi) The new section comprises of 20 students.
xii) It is a honest attempt.

*** End ***