Hall Ticket Number :

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Code: 19A324T

I B.Tech. II Semester Supplementary Examinations December 2022
Engineering Graphics & Design
(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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		Marks	CO	BL

UNIT–I

1. Construct a parabola, when the distance of the focus from the directrix is 50mm. Also draw tangent on normal to the curve at a point 35mm from the directrix — 14M CO1 L2

OR

2. a) Divide a straight line AB of length 90 mm, into 9 equal parts — 7M CO1 L2
   b) Bisect a straight line AB of length 85 mm — 7M CO1 L2

UNIT–II

3. Construct a cycloid having a generating circle diameter as 50mm for one revolution clockwise. Draw a normal and tangent to a curve at a point 35mm above the base line — 14M CO2 L2

OR

4. Draw an involute for a circle of diameter 50 mm. Also draw a normal and tangent to the curve at a distance of 100mm from the center of circle — 14M CO2 L2

UNIT–III

5. Draw the projections of the following points on the same ground line, keeping the projections 30mm apart.
   a. A, in the H.P & 30mm, behind the V.P
   b. B, 30mm above the H.P & 15mm in front of the V.P.
   c. C, in the V.P & 50mm above the H.P.
   d. D, 30mm below the H.P & 35mm behind the V.P.
   e. E, 25mm above the H.P & 65mm behind the V.P.
   f. F, 45mm below the H.P & 35mm in front of the V.P.
   g. G, in both the H.P & the V.P. — 14M CO3 L3

OR

6. A point is 50mm from both the reference planes. Draw its projections in all possible positions — 14M CO3 L3

UNIT–IV

7. A regular hexagonal lamina of 22mm side, rests on one of its sides on HP. It is parallel to and 15mm away from the VP. The plane is vertical. Draw its projections — 14M CO4 L3

OR

8. Draw the isometric view of a pentagonal pyramid with side of base 25mm and axis 60mm long. The pyramid is resting on its base on HP with an edge of the base parallel to VP. — 14M CO4 L4
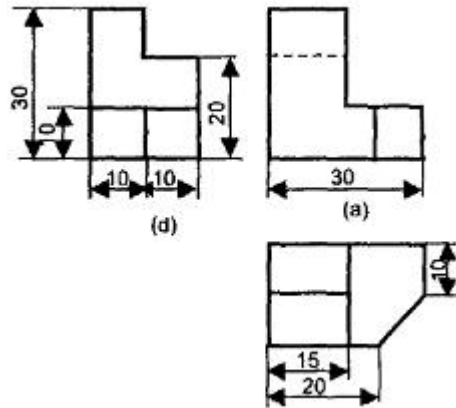
UNIT–V

9.   Draw the front view, top view and side view for the following figure.
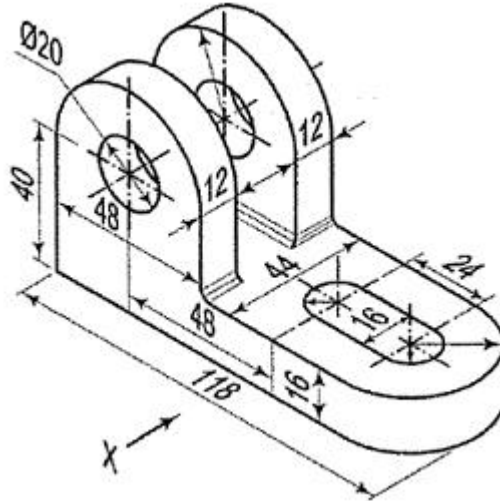
14M   CO5   L4

OR

10.   Draw the isometric view of the following figure.

14M   CO5   L4

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Code: 19A521T / 19A522T

I B.Tech. II Semester Supplementary Examinations December 2022

Python Programming / Programming through Python

(Common to CE, ME & CSE)   (Common to EEE & ECE)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL
		UNIT–I			
1.	a)	Write a python program to find weather a given number is odd or even.	7M	CO1	L3
	b)	Who invented python? Write what you know about python programming.	7M	CO1	L2
		OR			
2.		Write about operator precedence in detail	14M	CO1	L4
		UNIT–II			
3.		Define set and illustrate set in Python with suitable example	14M	CO2	L2
		OR			
4.		Write a python program for temperature conversion using functions	14M	CO2	L4
		UNIT–III			
5.		Write a python program to count the number of vowels in a string provided by the user.	14M	CO3	L3
		OR			
6.	a)	Explain the process of top-down design	7M	CO3	L2
	b)	Differentiate between a text file and a binary file	7M	CO3	L3
		UNIT–IV			
7.	a)	Define class and explain it with suitable example	7M	CO4	L2
	b)	Explain the concept of an object	7M	CO4	L2
		OR			
8.		Write in detail about special methods in python	14M	CO4	L3
		UNIT–V			
9.		Define queue. Illustrate queue operations with the examples.	14M	CO5	L3
		OR			
10.		Draw and explain the operations on stack using liked list.	14M	CO5	L3

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R-19

Code: 19AC22T

I B.Tech. II Semester Supplementary Examinations December 2022

Applied Physics

(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Distinguish Fraunhofer and Fresnel's diffraction	6M	1	2,4
	b)	Explain the function of quarter and half wave plates	8M	1	1
		OR			
2.	a)	Explain the double refraction.	5M	1	2
	b)	Describe the construction and working of Nicol's prism	9M	1	1
		UNIT–II			
3.	a)	Explain the hysteresis loss of ferromagnetic material	7M	2	2
	b)	Distinguish the soft and hard magnetic materials	7M	2	2,4
		OR			
4.		Describe the classification of magnetic materials	14M	2	1
		UNIT–III			
5.	a)	Describe construction and working principle of optical fiber	9M	3	1
	b)	Mention the applications of optical fiber in medicine.	5M	3	3
		OR			
6.		Explain the Maxwell's equations for electromagnetic waves.	14M	3	2
		UNIT–IV			
7.	a)	Explain the optical communication system with the help of block diagram and discuss the function of each block	9M	3	2,3
	b)	Write the applications of optical fibers in communication	5M	3	1,2
		OR			
8.	a)	Mention the applications of optical fiber in medicine.	5M	3	3
	b)	Define Attenuation and explain any three attenuation losses in optical fibers	9M	3	1,2
		UNIT–V			
9.	a)	Explain the conductivity of intrinsic semiconductor with relevant expressions	7M	4	2
	b)	Distinguish the P-type and N-type semiconductors	7M	4	2,4
		OR			
10.	a)	Derive the Einstein's relation for a semiconductor	7M	4	6
	b)	Distinguish the direct and indirect band gap semiconductors	7M	4	2.4

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Code: 19A221T

I B.Tech. II Semester Supplementary Examinations December 2022
Basic Electrical and Electronics Engineering
(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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			Marks	CO	BL

UNIT–I

1. a) Three resistors of 3 , 4 & 5 respectively, are connected in parallel. What potential difference must be applied to the group in order that total power of 100 W may be absorbed? — 7M 1 3

   b) State the Kirchhoff laws and explain. — 7M 1 1

OR

2. a) Define the following
   i) Resistance   ii) Inductance   iii) capacitance — 6M 1 1

   b) State the Ohm's law and explain with example. — 8M 1 1

UNIT–II

3. a) Derive the EMF equation of DC generator. — 7M 2 3

   b) Classify and explain the different types of self-excited DC generators? — 7M 2 2

OR

4. a) Explain the operation & principle of dc motors. — 7M 2 2

   b) A 4-pole lap wound d.c generator is running at 1500 rpm, flux is 7 mwb, number of slots is 52, conductors per slot is 20. Calculate the generated voltage. — 7M 2 3

UNIT–III

5. Describe the tests that can be performed on a single-phase transformer in detail. — 14M 3 1

OR

6. a) Derive the EMF equation of single-phase transformer. — 7M 3 3

   b) Discuss the principle of operation of 3 Induction motor. — 7M 3 2

UNIT–IV

7. a) Explain about the principle of operation of PNP transistor? Discuss how it is operated as an amplifier? — 7M 4 2

   b) Discuss the operation of P-N junction diode with applications. — 7M 4 2

OR

8. a) Draw the Bridge rectifier and discuss the operation of circuit. — 7M 4 3

   b) Classify the diodes and draw the V-I characteristics of diode. — 7M 4 3

UNIT–V

9. a) Give a comparison between induction heating and dielectric heating — 7M 5 3

   b) Mention the industrial applications of induction heating? — 7M 5

OR

10. Enumerate the applications of dielectric heating and induction heating. — 14M 5 3

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I B.Tech. II Semester Supplementary Examinations December 2022

Differential Equations and Vector Calculus

(Common to All Branches)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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Marks	CO	BL

UNIT–I

1. Solve $(D^2 + 3D + 2)y = e^{-x} + x^2 + \cos x$ — 14M CO1 L3

OR

2. Solve $\dfrac{d^2 y}{dx^2} + 4y = \sec 2x$ by using method of variation of parameters. — 14M CO1 L3

UNIT–II

3. An uncharged condenser of capacity C is charged by applying an e.m.f

$E \sin\left(\dfrac{t}{\sqrt{LC}}\right)$, through leads of self-inductance L and negligible resistance ,

prove that for any time t , the charge on one the plate is

$\dfrac{EC}{2}\left[\sin\left(\dfrac{t}{\sqrt{LC}}\right) - \dfrac{t}{\sqrt{LC}}\cos(\dfrac{t}{\sqrt{LC}})\right]$. — 14M CO2 L3

OR

4. Solve $x^2 \dfrac{d^2 y}{dx^2} - x\dfrac{dy}{dx} + y = \log x$. — 14M CO2 L3

UNIT–III

5. Solve $(p^2 + q^{2)})y = qz$ by using Charpits method. — 14M CO3 L3

OR

6. Form the partial differential equation by eliminating arbitrary constants a and b from

$(x - a)^2 + (y - b)^2 = z^2 \cot^2 r$ — 14M CO3 L3

Form the partial differential equation by eliminating arbitrary function from

$z = f(x^2 + y^2)$ — 14M CO3 L3

UNIT–IV

7. Find the work done by a force $\overline{F} = (x^2 - y^2 + x)\overline{i} - (2xy + y)\overline{j}$

which moves a particle in xy- plane from (0,0) to (1,1) along the parabola $y^2 = x$. — 14M CO4 L2

OR

8. Show that the vector $(x^2 - yz)\overline{i} + (y^2 - zx)\overline{j} + (z^2 - xy)\overline{k}$ is irrotational and find its scalar potential. — 14M CO4 L2

UNIT–V

9. Verify Green's theorem in the plane for $\displaystyle\int (xy + y^2)dx + x^2 dy$ where C is

the region bounded by $y = x \, and \, y = x^2$ — 14M CO5 L3

OR

10. Use Divergence theorem to evaluate $\displaystyle\iint (x\overline{i} + y\overline{j} + z\overline{k}).\overline{n}.ds,$ where s

is the surface bounded by the cone $x^2 + y^2 = z^2 \, in \, the \, plane \, z = 4.$ — 14M CO5 L3

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