Hall Ticket Number :										

R-19

Code: 19A411T

I B.Tech. I Semester Supplementary Examinations February 2022

Essentials of Electrical & Electronics Engineering

(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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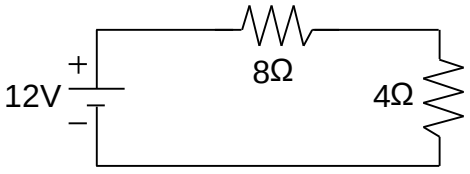
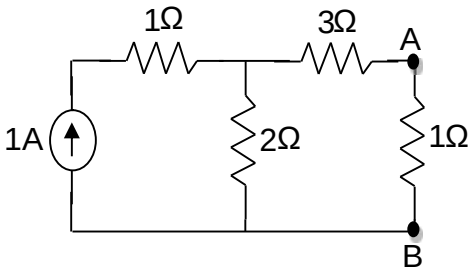
		Marks	CO	Blooms Level
	UNIT–I			
1.	Classify the types of sources and explain their properties with neat circuit diagrams.	14M	CO1	L4
	OR			
2. a)	What is tolerance? What are the color codes used to indicate the tolerance value and write their range?	9M	CO1	L2
b)	Find the resistor values for the color codes given below. i) Brown, Black, Orange ii) Orange, Red, Red iii) Yellow, Violet, Red iv) Green, Violet, Blue v) Red, Red, Red	5M	CO1	L3
	UNIT–II			
3. a)	Differentiate series and parallel circuit	6M	CO2	L2
b)	Find voltage across 8Ω, 4Ω resisters using voltage division rule for the circuit given below 	4M	CO2	L3
	OR			
4. a)	State and explain maximum power transfer theorem.	7M	CO2	L2
b)	Find current through 1Ω resistor using Norton's theorem for the circuit given below 	7M	CO2	L3
	UNIT–III			
5. a)	Write short notes on drift and diffusion currents of a semiconductor.	8M	CO3	L1

	b)	A semiconductor wafer is 0.5mm thick, a potetional of 100mv is applied across it. i) What is the electron drift velocity if μ_e=0.2m^2/V sec? ii) What is the time required for an electron to more across this thickness?	6M	CO3	L3
		OR			
6.	a)	Derive the expression for Diffusion Capacitance.	6M	CO3	L2
	b)	Explain the Current Components in P-N Diode.	8M	CO3	L2
		UNIT–IV			
7.		With neat waveforms explain the Full wave Rectifier with RC filter and also derive an expression for its ripple factor.	14M	CO4	L3
		OR			
8.	a)	Draw the circuit diagram of half-wave rectifier with inductor filter and explain it.	8M	CO4	L2
	b)	List the merits and demerits of LC filter	6M	CO4	L2
		UNIT–V			
9.		Draw and explain the input and output characteristics of transistor in CE configuration.	14M	CO5	L2
		OR			
10.		Write short notes on a) Multimeter b) DSO	14M	CO5	L2

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Hall Ticket Number :										

R-19

Code: 19A312T

I B.Tech. I Semester Supplementary Examinations February 2022

Engineering Graphics & Design

(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	Blooms Level
	UNIT–I			
1.	Construct a regular Hexagon by General Method, given the length of its side is 50mm	14M	CO1	L2
	OR			
2.	Construct a parabola with the length of base 60mm and axis 30mm long using tangent method	14M	CO1	L2
	UNIT–II			
3.	Draw a hypocycloid of a circle of 40mm diameter, which rolls inside another circle of 160mm diameter, for one revolution counter clockwise. Draw a tangent & a normal to it at a point 65mm from the centre of the directing circle	14M	CO2	L2
	OR			
4.	Construct a cycloid having a generating circle diameter as 50mm when the point P is exactly opposite to initial point for one revolution clockwise. Draw a normal and tangent to a curve at a point 35mm above the base line	14M	CO2	L2
	UNIT–III			
5.	A line PQ, 50mm long is perpendicular to H.P. and 15mm in front of V.P. The end P, nearer to H.P is 20mm above it. Draw the projections of a line	14M	CO3	L3
	OR			
6.	A line AB, 65mm long, has its end A 20mm above the H.P. and 25mm in front of the V.P. The end B is 40mm above the H.P. and 65mm in front of the V.P. Draw the projections of AB and show its inclinations with the H.P. and the V.P	14M	CO3	L3
	UNIT–IV			
7.	A circular plate of diameter 50mm is resting on HP on a point on the circumference with its surface inclined at 45^0 to HP and perpendicular to VP. Draw its projections	14M	CO4	L3
	OR			
8.	A regular hexagon of 40mm side has a corner in the HP. Its surface is inclined at 45^0 to the HP and the diagonal through the corner which is in the HP makes an angle of 30^0 with the VP. Draw its projections	14M	CO4	L3
	UNIT–V			
9. a)	Draw the projections of a cone of base 30mm diameter and axis 50mm long, when it is resting on HP on its base	07M	CO5	L3
b)	Draw the projections of a cylinder of base 30mm diameter and axis 50mm long, when it is resting on HP on its base	07M	CO5	L3
	OR			
10.	A square prism, base 40mm side and height 65mm has its axis inclined at 45^0 to the HP and has an edge of its base, on the HP and inclined at 30^0 to the VP. Draw its Projections	14M	CO5	L3

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Hall Ticket Number :										

R-19

Code: 19A511T

I B.Tech. I Semester Supplementary Examinations February 2022

Problem Solving and C Programming

(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	Blooms Level
		UNIT–I			
1.	a)	What is an algorithm? Describe the characteristics of an Algorithm	6M		
	b)	What is flowchart? Describe various symbols used in flowcharts.	8M		
		OR			
2.	a)	What is data type? Explain basic data types and their sizes used in a C Language	7M		
	b)	What are the relational operators? Explain with example.	7M		
		UNIT–II			
3.	a)	Describe Conditional Statements used in C Language	7M		
	b)	Compare While and do.. While statements with suitable example code.	7M		
		OR			
4.	a)	Define an array. Explain how to declare and initialize arrays.	7M		
	b)	Write a c program to sort the list of numbers using bubble sort. Explain with an example.	7M		
		UNIT–III			
5.	a)	What is a string with respect to C? How is it declared, initialized and manipulated?	7M		
	b)	Describe parameter passing techniques for functions.	7M		
		OR			
6.	a)	Illustrate the storage classes extern, static and auto with an example to each.	7M		
	b)	Write a C program to perform multiplication of two matrices	7M		
		UNIT–IV			
7.	a)	What is a pointer? What are the features of pointers? Write a C program to print address of a variable	7M		
	b)	Write a c program to swap two numbers using call by reference.	7M		
		OR			
8.		Differentiate static and dynamic memory allocation. How to allocate and freeing dynamic memory allocation. Explain with an example.	14M		
		UNIT–V			
9.	a)	Define Structures. Explain with an example how structure members are initialized and accessed	7M		
	b)	Explain different modes to open a file	7M		
		OR			
10.	a)	Write a program to copy content of existing file to another file.	7M		
	b)	Differentiate between a structure and union with respective allocation of memory by the compiler. Given an example of each.	7M		

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Hall Ticket Number :										

R-19

Code: 19AC11T

I B.Tech. I Semester Supplementary Examinations February 2022

Algebra and 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	Blooms Level
		UNIT–I			
1.	a)	Find the rank of $A=\begin{bmatrix}1 & 2 & 3\\ 3 & 4 & 4\\ 7 & 10 & 12\end{bmatrix}$	7M	CO1	L3
	b)	Solve $x+y+z=4, 2x+5y-2z=3, x+7y-7z=5$	7M	CO1	L3
		OR			
2.		Show that the system of equations $2x_1-2x_2+x_3={}^{a}x_1, 2x_1-3x_2+2x_3={}^{a}x_2, -x_1+2x_2={}^{a}x_3$ can possess a non-trivial solution only if ^{a}=1, ^{a}=-3. Obtain the general solution in each case.	14M	CO1	L2
		UNIT–II			
3.		Verify Cayley-Hamilton theorem for the matrix $A=\begin{bmatrix}1 & -1 & 0\\ 0 & 1 & 1\\ 2 & 1 & 2\end{bmatrix}$ and hence find A^{-1} using Cayley-Hamilton theorem.	14M	CO2	L2
		OR			
4.		Reduce the quadratic form $3x^2+2y^2+3z^2-2xy-2yz$ to canonical form by using orthogonal transformation.	14M	CO2	L3
		UNIT–III			
5.		If $u=x+3y^2-z^3, v=4x^2yz, w=2z^2-xy$, then evaluate $\frac{\partial(u,v,w)}{\partial(x,y,z)}$ at (1,-1,0)	14M	CO3	L3
		OR			
6.		Find the minimum value of $x^2+y^2+z^2$ given $x+y+z=3a$	14M	CO3	L3
		UNIT–IV			
7.	a)	Using Taylor's theorem, express the polynomial $2x^3+7x^2+x-6$ in powers of $(x-1)$.	7M	CO4	L3
	b)	Using Maclaurin's series , expand e^x in powers of x.	7M	CO4	L3
		OR			
8.		Trace the curve $y^2(2a-x)=x^3$	14M	CO4	L4
		UNIT–V			
9.		Evaluate $\int_0^1\int_0^1\int_0^1 xyz\,dxdydz$	7M	CO5	L3
		OR			
10.		Define Gamma Function, Beta Function and Evaluate $\int_0^1 x^4\left(\log\frac{1}{x}\right)^3 dx$ using β-Γ function.	14M	CO5	L1

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Hall Ticket Number :										

R-19

Code: 19AC12T

I B.Tech. I Semester Supplementary Examinations February 2022

Applied Physics

(Common to EEE and 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	Blooms Level
		UNIT–I			
1.	a)	Define interference of light	4M	CO1	L1
	b)	Explain the constructive and destructive interference of light.	10M	CO1	L2
		OR			
2.	a)	What are the engineering applications of interference?	5M	CO1	L1
	b)	Distinguish between the Fraunhofer and Fresnel's diffraction of light.	9M	CO1	L4
		UNIT–II			
3.		Derive the expression for internal or local filed in dielectric materials.	14M	CO2	L2
		OR			
4.		Classify the magnetic materials based on their magnetic property.	14M	CO2	L4
		UNIT–III			
5.	a)	State the Gauss's theorem for divergence.	4M	CO3	L1
	b)	Discuss about importance of the Poynting theorem.	10M	CO3	L3
		OR			
6.	a)	Discuss various applications of optical fibers in sensors.	6M	CO3	L3
	b)	Explain signal propagation in multimode graded index optical fiber	8M	CO3	L2
		UNIT–IV			
7.	a)	Explain direct and indirect band gap semiconductors.	8M	CO4	L2
	b)	Deduce Einstein's relation in semiconductors.	6M	CO4	L3
		OR			
8.	a)	What are the two types of charge carriers in semiconductors? Define intrinsic and extrinsic semiconductors.	6M	CO4	L1
	b)	Analyze the characteristic features to distinguish between n-type and p-type semiconductors.	8M	CO4	L4
		UNIT–V			
9.	a)	Discuss about ac and dc Josephson effect in superconductors.	8M	CO5	L3
	b)	Write the general properties of superconductors.	6M	CO5	L1
		OR			
10.		Explain any two methods to preparation of nanomaterials.	14M	CO5	L2

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