Hall Ticket Number :										

R-19

Code: 19AC21T

I B.Tech. II Semester Supplementary Examinations June 2024

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 $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = xe^{3x} + \sin 2x$	14M	CO1	L3
		OR			
2.	a)	Solve $(D^2 + 4)y = \cos x$	7M	CO1	L3
	b)	Solve $(D^2 + 6D + 9)y = e^{-3x}$	7M	CO1	L3
		UNIT–II			
3.		Solve $x^2\frac{d^2y}{dx^2} - 4x\frac{dy}{dx} + 6y = x^2$	14M	CO2	L3
		OR			
4.		Solve the simultaneous equations $\frac{dx}{dt} + 2y + \sin t = 0, \frac{dy}{dt} - 2x - \cos t = 0$ given that $x = 0$ and $y = 0$ when $t = 0$.	14M	CO2	L3
		UNIT–III			
5.		Solve $(p^2 + q^{2)})y = qz$ by using Charpits method.	14M	CO3	L3
		OR			
6.	a)	Form the partial differential equation by eliminating arbitrary function from $z = f(x^2 + y^2)$	7M	CO3	L3
	b)	Solve $pyz + qzx = xy$	7M	CO3	L3
		UNIT–IV			
7.		If $\bar{F} = 4xz\bar{i} - y^2\bar{j} + yz\bar{k}$, evaluate $\int_c \bar{F}.\bar{n}ds$, where S is the surface of the cube bounded by x=0,x=a ,y=0,y=a, z=0,z=a.	14M	CO4	L2
		OR			
8.	a)	Find $div\ \bar{f}$ *where* $\bar{f} = grad(x^3 + y^3 + z^3 - 3xyz)$	7M	CO4	L2
	b)	Find the angle between the surfaces $x^2 + y^2 + z^2 = 9$ *and* $z = x^2 + y^2 - 3$ at the point (2,-1,2)	7M	CO4	L2
		UNIT–V			
9.		Verify stokes theorem for the function $\bar{F} = x^2\bar{i} + xy\,\bar{j}$ integrated around the square in the plane z=0 whose sides are along the lines x=0,y=0,x=a,y=a.	14M	CO5	L3
		OR			
10.		Verify Gauss divergence theorem for $\bar{F} = x^2\,\bar{i} + y^2\,\bar{j} + z^2\,\bar{k}$, over the cube formed by the planes x=0, x=a, y=0,y=b, z=0,z=c.	14M	CO5	L3

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Hall Ticket Number :										

R-19

Code: 19A521T

I B.Tech. II Semester Supplementary Examinations June 2024

Python Programming

(Common to CE, ME & CSE)

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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Important Note: 1. On completing your answers. Compulsorily draw diagonal cross line on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 32+8=40, will be treated as malpractice.

			Marks	CO	BL
		UNIT–I			
1.	a)	Write about the process of computational problem solving	7M	CO1	L2
	b)	Who invented python? Write what you know about python programming.	7M	CO1	L2
		OR			
2.	a)	Illustrate infinite loop with an example	7M	CO1	L2
	b)	Write a program using while statements in Python	7M	CO1	L3
		UNIT–II			
3.	a)	Describe the typical operations performed on lists	7M	CO2	L3
	b)	Write a Python program using programmer-defined functions	7M	CO2	L3
		OR			
4.		Write a python program for temperature conversion using functions	14M	CO2	L4
		UNIT–III			
5.	a)	Discuss about string traversal in python	8M	CO3	L2
	b)	What is exception handling?	6M	CO3	L2
		OR			
6.	a)	Differentiate between a text file and a binary file	7M	CO3	L3
	b)	How to deal with text files in python?	7M	CO3	L3
		UNIT–IV			
7.	a)	Describe the use of object references	7M	CO4	L2
	b)	Define class and explain it with suitable example	7M	CO4	L2
		OR			
8.	a)	Infer about constructors in Python	7M	CO4	L4
	b)	Summarize the concept of memory allocation and deallocation.	7M	CO4	L5
		UNIT–V			
9.		What is stack? Demonstrate stack operations with the example.	14M	CO5	L3
		OR			
10.		Write an algorithm for Single Linked List-traversing and explain it with an example.	14M	CO5	L5

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Hall Ticket Number :										

R-19

Code: 19AC22T

I B.Tech. II Semester Supplementary Examinations June 2024

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	BL
		UNIT–I			
1.	a)	Describe the Fraunhofer diffraction due to double slit and derive the conditions to get maximum and minimum intensity positions.	10M	CO1	L1
	b)	Write the engineering applications of Interference	4M	CO1	L1
		OR			
2.	a)	Write the engineering applications of diffraction	7M	CO1	L1
	b)	Distinguish Fraunhofer and Fresnel's diffraction	7M	CO1	L4
		UNIT–II			
3.	a)	Describe the origin of magnetic moment in magnetic materials	7M	CO2	L1
	b)	Explain the hysteresis loss of ferromagnetic material	7M	CO2	L2
		OR			
4.	a)	Explain Clausius-Mossotti relation in dielectrics.	5M	CO2	L2
	b)	Define and derive local field in dielectrics.	9M	CO2	L6
		UNIT–III			
5.	a)	State and prove the Stoke's theorem for curl	8M	CO3	L3
	b)	Calculate the acceptance angle of given optical fiber if the refractive indices of core and cladding are 1.563 and 1.498 respectively.	6M	CO3	L3
		OR			
6.	a)	Mention the applications of optical fiber in medicine.	5M	CO3	L3
	b)	Define Attenuation and explain any three attenuation losses in optical fibers	9M	CO3	L2
		UNIT–IV			
7.	a)	Explain the Fermi energy on charge carrier concentration in intrinsic semiconductor	6M	CO4	L2
	b)	Explain Hall effect in semiconductors and derive expression for hall voltage	8M	CO4	L2
		OR			
8.	a)	Write the applications of hall effect	4M	CO4	L2
	b)	Describe the drift and diffusion process in a semiconductor with relevant expressions	10M	CO4	L1
		UNIT–V			
9.	a)	Explain XRD for characterization of Nanomaterials	8M	CO5	L2
	b)	Mention the applications of Nanomaterials	6M	CO5	L3
		OR			
10.	a)	Mention the properties of superconductors	7M	CO5	L3
	b)	Explain the working principle of SEM with neat diagram	7M	CO5	L2

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