Hall Ticket Number :										

R-17

Code: 7GC24

I B.Tech. II Semester Supplementary Examinations June 2024

Engineering Mathematics-II

(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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UNIT–I

1. a) Change of order of integration and evaluate $\int_0^{\infty}\int_x^{\infty}\frac{e^{-y}}{y}dx\,dy$ 7M

   b) Evaluate $\int_0^{\infty}\int_0^{\infty}e^{-\left(x^2+y^2\right)}dx\,dy$ by changing to polar coordinates. 7M

OR

2. a) Trace the curve $r=a(1-\cos^{-})$. 7M

   b) Evaluate $\int_0^1\int_0^{1-z}\int_0^{1-x-y}x+y+z\,dx\,dy\,dz$ 7M

UNIT–II

3. a) Evaluate $\int_0^{\infty}t\,e^{-2t}\,\mathrm{Cos}\,t dt$ 7M

   b) Find the Laplace Transform of $\int_0^t\int_0^t\int_0^t\mathrm{Cos}\,a\,u\,du\,du\,du$ 7M

OR

4. a) Find the Laplace Transform of $\frac{\mathrm{Sin}\,3t\,\mathrm{Cos}\,t}{t}$ 7M

   b) Find the Laplace Transform of $t\,e^{-t}\,\mathrm{Sin}\,t$ 7M

UNIT–III

5. a) Find the inverse transform of $\frac{1}{s(s^2+a^2)}$. 7M

   b) Find the inverse transform of $\frac{s+2}{s^2-4s+13}$. 7M

OR

6. Find the inverse transform of $\log\left(\frac{s+1}{s-1}\right)$. 14M

UNIT–IV

7. Find the directional derivative of $f\left(x,y,z\right)=x\,y^2+y\,z^3$ at the point $\left(2,-1,1\right)$ in the direction of the vector $\bar{i}+2\,\bar{j}+3\bar{k}$ 7M

OR

8. a) Prove that $div\,curl\,\bar{F} = 0$ 7M

   b) Show that $\nabla^2\left(\frac{1}{r}\right) = 0$ 7M

UNIT–V

9. Verify Green's Theorem for $\int_c \left[\left(3x - 8y^2\right)dx + \left(4y - 6xy\right)dy\right]$ where 'c' is bounded by region bounded by $x = 0$, $y = 0$ and $x + y = 1$ 14M

OR

10. Verify stoke's theorem for a vector field $\bar{F} = \left(x^2 + y^2\right)\bar{i} - 2xy\,\bar{j}$ taken round the rectangle bounded by the lines $x = \pm a,\ y = 0,\ y = b$. 14M

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Hall Ticket Number :										

R-17

Code: 7GC23

I B.Tech. II Semester Supplementary Examinations June 2024

Engineering Physics

(Common to CE, ME and 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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UNIT–I

1.	a)	Differentiate Step-Index and Graded-Index optical fibers	9M
	b)	Distinguish Interference and Diffraction of light	5M
		OR	
2.	a)	Describe Newton's rings experiment for diameter of ring	9M
	b)	What is LASER and write characteristics of laser	5M

UNIT–II

3.	a)	Describe the production of ultrasonics by Inverse Peizo electric effect	8M
	b)	Estimate the packing fractions of SC and BCC	6M
		OR	
4.	a)	What is space lattice and draw Bravias lattices	10M
	b)	Formulate applications of Ultrasonics	4M

UNIT–III

5.		Analyze motion of electron in periodic potential of metal	14M
		OR	
6.	a)	How the solids are classified on the basis of energy band theory	7M
	b)	Describe Fermi-Dirac distribution function	7M

UNIT–IV

7.	a)	Derive Hall voltage and justify its importance	6M
	b)	Brief BCS theory and Flux quantization	8M
		OR	
8.	a)	Brief Joshepson's effect with types	6M
	b)	Explain the diamagnetic nature of superconductors by Meissner's effect	8M

UNIT–V

9.	a)	classify the ferromagnetics by hysteresis property	7M
	b)	Narrate the importance of nano materials by basic principles	7M
		OR	
10.	a)	What is CNT and explain it	7M
	b)	Derive magnetic moment of magnetic material through origin	7M

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Hall Ticket Number :										

R-17

Code: 7G121

I B.Tech. II Semester Supplementary Examinations June 2024

Data Structures

(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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UNIT–I

1. a) What is a pointer? What are the features of pointers? Write a C program to print address of a variable 8M

   b) Write a C program to swap two numbers using pointers. 6M

OR

2. Compare array and pointers in terms of memory efficiency and execution time efficiency. 14M

UNIT–II

3. a) Define union. List out the differences between unions and structures 7M

   b) Write a program for sorting given numbers using selection sort technique 7M

OR

4. a) Define Structures. Explain with an example how structure members are initialized and accessed 8M

   b) Write a C program to find the given element using linear searching. 6M

UNIT–III

5. Write a program to implement a linear queue using arrays. Take into account the exceptions like Queue Full and Queue Empty. 14M

OR

6. a) What is Data Structure? Explain in detail about different type of data structures. 7M

   b) Write applications of stack 7M

UNIT–IV

7. Write advantages of doubly linked list over singly linked list. Write C function that will insert a given integer value into an ordered doubly linked list. 14M

OR

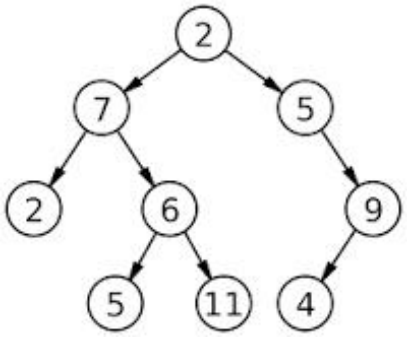
8. What is a Singly Linked List.? Explain different operations of a singly linked list with suitable examples. 14M

UNIT–V

9. Define binary search tree. Explain with example deletion of an element from a binary search tree. 14M

OR

10. Write the recursive algorithms for different binary tree traversal techniques. Find all the tree traversals for the following binary tree:



14M

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