Code: 19AC44T

II B.Tech. II Semester Supplementary Examinations November 2023
Life Sciences for Engineers
(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

		Marks	CO	BL
1. a)	Explain the hierarchy of classification?	7M	CO1	2
b)	Describe is Ribosomes? Write their structure and important functions and draw the labelled diagram?	7M	CO1	2

OR

2.	Describe meant by classification? Write the importance of Classification?	14M	CO1	2

UNIT–II

3.	Describe nucleic acids? Write the structure and functions of nucleic acids?	14M	CO2	2

OR

4.	Describe the Biomolecules and write functions and types of biomolecules?	14M	CO2	4

UNIT–III

5.	Explain the reaction of Krebs/TCA cycle?	14M	CO3	2

OR

6.	Describe the structure of neuron and types? Give an account of the Synaptic and neuromuscular junctions?	14M	CO3	4

UNIT–IV

7.	Describe the meiosis cell division process?	14M	C04	2

OR

8.	Explain the Process of DNA Replication in prokaryotic and eukaryotic animals?	14M	C04	2

UNIT–V

9.	Explain the Transgenic species and process in animals?	14M	CO5	2

OR

10.	Explain the various process of recombinant DNA technology?	14M	CO5	2

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Code: 19AC42T

II B.Tech. II Semester Supplementary Examinations November 2023
Numerical Methods and Transform Techniques
(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. Estimate the value of f(22) and f(42) from the following data.

x	20	25	30	35	40	45
f(x)	354	332	291	26-	231	204

14M CO1 L2

OR

2. a) Find the real root of $x \log_{10} x = 1.2$ using False position Method

7M CO1 L3

b) Using lagrange's interpolation formula find y at x=10 given that

x	5	6	9	11
y	12	13	14	16

7M CO1 L3

UNIT–II

3. a) Compute $\dfrac{dy}{dx}$ and $\dfrac{d^2 y}{dx^2}$ at x=1 from the following data.

x	1	2	3	4	5	6
y	1	8	27	64	125	216

7M CO2 L3

b) Solve $\dfrac{dy}{dx} = x + y^2$, $y(1) = 0$ to find y at x=0.2 by Runge-Kutta method of fourth order.

7M CO2 L3

OR

4. a) Estimate $\int_0^1 \dfrac{1}{1+x^2} dx$ by using Simpon's 1/3 rule

7M CO2 L2

b) Solve $y' = 3x + y^2$, $y(0) = 1$ using Taylor's series method and compute y(0.1)

7M CO2 L3

UNIT–III

5. a) Find the Laurent series expansion of the function

$f(z) = \dfrac{z^2 - 6z - 1}{(z-1)(z-3)(z+2)}$ in the region $3 < |z+2| < 5$

7M CO3 L4

b) Find the residues of $f(z) = \dfrac{z^2 - 2z}{(z+1)^2 (z^2 + 1)}$ at each pole

7M CO3 L1

OR

6. Find the Laurent series of $f(z) = \dfrac{z+3}{z(z^2 - z - 2)}$ in the region i) $|z| < 1$, ii)

$1 < |z| < 2$ iii) $|z| > 2$

14M CO3 L4

UNIT–IV

7. Find the Fourier transform of $e^{-a^2 x^2}, a < 0$.Hence deduce that $e^{\frac{-x^2}{2}}$ is self reciprocal in respect of Fourier transform.

14M CO4 L4

OR

8. a) Find the Fourier sine transform of $2e^{-5x} + 5e^{-2x}$ 7M CO4 L1

   b) Find the Fourier cosine transform of $f(x) = \begin{cases} x, 0 < x < 1 \\ 2 - x, 1 < x < 2 \\ 0, x \geq 2 \end{cases}$ 7M CO4 L1

UNIT–V

9. Find inverse Z transform of $\dfrac{2z^2 + 3z}{(z+2)(z-4)}$ 14M CO5 L1

OR

10. a) Find $Z(n^2 a^n)$ 7M CO5 L1

    b) Find $Z(e^t \sin 2t)$ 7M CO5 L1

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II B.Tech. II Semester Supplementary Examinations November 2023
Analog Communication Systems
(Electronics and Communication 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) | Explain the principle of envelope detection of an amplitude modulated wave. | 7M | 1 | 2 |
| | b) | Explain the principle of operation of Costas loop with a neat diagram? | 7M | 1 | 2 |

OR

| 2. | | Describe the working principle of Generation and Detection methods of VSB. | 14M | 1 | 2 |

UNIT–II

| 3. | a) | Explain the Armstrong method of FM generation. | 8M | 2 | 2 |
| | b) | Compare between NBFM and WBFM. | 6M | 2 | 5 |

OR

| 4. | a) | Explain the generation of Narrow band Frequency Modulation with suitable block diagram. | 8M | 2 | 2 |
| | b) | Determine the expression for Transmission bandwidth of FM Wave. | 6M | 2 | 3 |

UNIT–III

| 5. | a) | Show that both AM-DSB-SC and AM-SSB-SC are of same noise performance | 7M | 3 | 3 |
| | b) | Discuss the role of pre-emphasis and de-emphasis. Derive the transfer functions of these two circuits. | 7M | 3 | 2 |

OR

| 6. | a) | The noise performance of a conventional AM with envelope detector is always inferior to that of a DSB-SC receiver. Justify in-terms of figure of merit. | 8M | 3 | 5 |
| | b) | Describe the filtering process of pre-emphasis and de-emphasis circuits. | 6M | 3 | 2 |

UNIT–IV

| 7. | a) | Explain the principle of operation of super heterodyne receiver. | 8M | 4 | 2 |
| | b) | List out the performance parameters of radio receivers in detail. | 6M | 4 | 1 |

OR

| 8. | a) | Classify the radio Receivers based on type of modulation and service involved. | 7M | 4 | 4 |
| | b) | Explain the effect of Image frequency on voice communication. | 7M | 4 | 2 |

UNIT–V

| 9. | a) | Describe with suitable circuit, the scheme of generation of PPM signals. | 7M | 5 | 2 |
| | b) | Discuss about the concept of Time Division Multiplexing? | 7M | 5 | 2 |

OR

| 10. | a) | Describe with suitable method of generation of PWM and PPM signal. | 8M | 5 | 2 |
| | b) | Classify various types of sampling schemes with neat sketches. | 6M | 5 | 4 |

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Code: 19A444T

II B.Tech. II Semester Supplementary Examinations November 2023

Field Theory and Transmission Lines

(Electronics and Communication 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)	Summarize the advantages and applications of Gauss law?	7M	CO1	L2
	b)	Analyze the relation between E and V	7M	CO1	L4

OR

2.		Contrast following with expression.			
		a) Coulomb's law. b) Gauss law.	14M	CO1	L2

UNIT–II

3.		Derive the capacitance in Parallel Plate Capacitors	14M	CO2	L4

OR

4.	a)	Identify the convection and conduction currents	7M	CO2	L1
	b)	Explain the properties of materials and Dielectric Constant & strength	7M	CO2	L2

UNIT–III

5.	a)	Explain the Forces due to Magnetic Fields	7M	CO3	L2
	b)	Elaborate magnetic flux density	7M	CO3	L2

OR

6.	a)	Differentiate between electric and magnetic fields	7M	CO3	L4
	b)	List the applications of amperes law and explain any one of it	7M	CO3	L1

UNIT–IV

7.		Summarize waves in general with neat wave diagrams	14M	CO4	L2

OR

8.		With a neat diagram illustrate the concept of Poynting theorem and Poynting vector	14M	CO4	L4

UNIT–V

9.		Derive Condition for Distortion less ness and Minimum Attenuation	14M	CO5	L3

OR

10.	a)	Discuss on Short Circuit (SC) and Open circuit (OC) Lines	7M	CO5	L2
	b)	Define Standing wave and how it produces in transmission lines	7M	CO5	L2

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