R-19

Code: 19A421T

I B.Tech. II Semester Supplementary Examinations June 2024
Electronic Devices and Circuits
(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) | Discuss Heat Sinks with neat sketches. | 7M | 1 | 2 |
| | b) | Summarize the different BJT configurations. | 7M | 1 | 2 |

OR

| 2. | a) | Write short notes on Thermal Resistance and Thermal Stability. | 7M | 1 | 6 |
| | b) | Explain with the circuit diagram the procedure for analysis of a collector to base bias circuit. | 7M | 1 | 2 |

UNIT–II

| 3. | a) | Distinguish between Gate bias & voltage divider bias for basic J-FET. | 7M | 2 | 3 |
| | b) | Write the necessary steps for gate bias circuit design and voltage divider bias circuit design. | 7M | 2 | 6 |

OR

| 4. | a) | Find out Trans conductance of Common Source Configuration having its drain resistance r_d = 20 K Ohms and Amplification factor is 40. | 7M | 2 | 3 |
| | b) | Define various FET parameters and Obtain relation among them. | 7M | 2 | 1 |

UNIT–III

| 5. | a) | Explain in detail about the classification of amplifiers according to the different criterions | 7M | 3 | 2 |
| | b) | Draw and explain the amplifier equivalent circuit in detail | 7M | 3 | 3 |

OR

| 6. | a) | Briefly explain about the practical circuit Transistor amplifier | 7M | 3 | 2 |
| | b) | Explain the steps to be followed for drawing DC and AC equivalent circuits for transistor amplifier and sketch them | 7M | 3 | 2 |

UNIT–IV

| 7. | | Draw the circuit of a practical single stage transistor amplifier. Explain the function of each component? | 14M | 4 | 4 |

OR

| 8. | a) | Write a short note on AC Equivalent circuit for JFET. | 7M | 4 | 2 |
| | b) | Elaborate the analysis of Common source Amplifier by using JFET with necessary calculations. | 7M | 4 | 3 |

UNIT–V

| 9. | a) | Write a note on LED. | 7M | 5 | 2 |
| | b) | Write short notes on Schottky Barrier Diode. | 7M | 5 | 2 |

OR

| 10. | a) | Explain the working principle of UJT with neat diagram. Mention its applications. | 7M | 5 | 4 |
| | b) | Write short notes on
 (i) PIN diode   (ii) Photo diode | 7M | 5 | 2 |

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R-19

Code: 19A522T

I B.Tech. II Semester Supplementary Examinations June 2024
Programming through Python
(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 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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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 $\dfrac{d^2 y}{dx^2} - 3\dfrac{dy}{dx} + 2y = xe^{3x} + \sin 2x$ 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 $x^2 \dfrac{d^2 y}{dx^2} - 4x\dfrac{dy}{dx} + 6y = x^2$ 14M   CO2   L3

OR

4. Solve the simultaneous equations $\dfrac{dx}{dt} + 2y + \sin t = 0, \dfrac{dy}{dt} - 2x - \cos t = 0$ 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 $\overline{F} = 4xz\bar{i} - y^2 \bar{j} + yz\bar{k}$, evaluate $\displaystyle\int_c \overline{F}.\overline{n}ds$, 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 $\overline{F} = x^2\bar{i} + xy\,\bar{j}$ 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 $\overline{F} = x^2\,\bar{i} + y^2\,\bar{j} + z^2\,\bar{k}$, 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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