Code: 19A522T

I B.Tech. II Semester Supplementary Examinations July/August 2022

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)

****

		Marks	CO	Blooms Level

UNIT–I

1.	a)	Describe and illustrate Boolean operators with examples.	7M	CO1	L2
	b)	Write a program using if statements in Python.	7M	CO1	L3

OR

2.		Difference between sequential, selection, and iterative control	14M	CO1	L4

UNIT–II

3.		Define set and illustrate set in Python with suitable example	14M	CO2	L2

OR

4.		Define dictionary data type in python? Illustrate dictionary with suitable example.	14M	CO2	L3

UNIT–III

5.	a)	Write a python program to write some text into a file.	7M	CO3	L2
	b)	Discuss about string traversal in python	7M	CO3	L2

OR

6.	a)	How to deal with text files in python?	7M	CO3	L3
	b)	Write a python program to read the lines of a file.	7M	CO3	L3

UNIT–IV

7.		Illustrate encapsulation with suitable example.	14M	CO4	L3

OR

8.	a)	Explain the difference between a reference and dereferenced value	7M	CO4	L3
	b)	Infer about constructors in Python	7M	CO4	L4

UNIT–V

9.		What is stack? Demonstrate stack operations with the example.	14M	CO5	L3

OR

10.		Outline the concept of queue implementation using python list.	14M	CO5	L4

***

R-19

Code: 19AC21T

I B.Tech. II Semester Supplementary Examinations July/August 2022

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)

****

		Marks	CO	Blooms Level

UNIT–I

1. Solve $\dfrac{d^2 y}{dx^2} + y = e^{-x} + e^x \sin x$ — 14M — CO1 — L3

OR

2. Solve $(D^2 + 1)x = t \cos t$ given $x = 0, \dfrac{dx}{dt} = 0$ at $t = 0$. — 14 M — 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 $(2x + 3)^2 \dfrac{d^2 y}{dx^2} - (2x + 3) \dfrac{dy}{dx} - 12y = 6x$ — 14M — CO2 — L3

UNIT–III

5. Solve $x^2(y - z)p + y^2(z - x)q = z^2(x - y)$ — 14M — CO3 — L3

OR

6. Using the method of separation of variables, solve

$\dfrac{\partial u}{\partial x} = 2\dfrac{\partial u}{\partial t} + u$ where $u(x,0) = 6e^{-3x}$ — 14M — CO3 — L3

UNIT–IV

7. Evaluate the line integral $\int_c [(x^2 + xy)dx + (x^2 + y^2)dy]$ where c is the square formed by the lines $x = \pm 1$ and $y = \pm 1$. — 14M — CO4 — L2

OR

8. 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) — 14M — CO4 — L2

UNIT–V

9. 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

OR

10. Verify Green's theorem in the plane for $\oint (3x^2 - 8y^2)dx + (4y - 6xy)dy$ where C is the region bounded by $x = 0, y = 0$ and $x + y = 1$. — 14M — CO5 — L3

***

Code: 19A421T

I B.Tech. II Semester Supplementary Examinations July/August 2022

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)

****

			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Summarize the different BJT configurations.	7M	1	2
	b)	Discuss how voltage divider bias is more advantageous than fixed bias.	7M	1	2
		OR			
2.	a)	Determine the stability factor of a fixed bias silicon transistor with the following specifications: V_{CC} = 9V, R_C = 3 K Ohms, R_B = 8 K Ohms, ß=50, and V_{BE}=0.7 V.	7M	1	3
	b)	Write short notes on Thermal Resistance and Thermal Stability.	7M	1	6
		UNIT–II			
3.	a)	Write the necessary steps for gate bias circuit design and voltage divider bias circuit design.	7M	2	6
	b)	What are the differences between Bipolar Junction Transistor & Field Effect Transistor?	7M	2	1
		OR			
4.		Explain the construction, working principle and characteristics of enhancement mode MOSFETS.	14M	2	2
		UNIT–III			
5.	a)	Draw and explain the amplifier equivalent circuit in detail	7M	3	3
	b)	Explain about Voltage gain, Current gain and Power gain of an amplifier when it is drawn in equivalent circuit form	7M	3	2
		OR			
6.		Derive the expressions for input resistance, output resistance and voltage gain of an emitter follower circuit.	14M	3	2
		UNIT–IV			
7.	a)	What is the importance of input impedance in amplifier circuit, Explain?	7M	4	2
	b)	What are the advantages of FET amplifier over BJT amplifier?	7M	4	2
		OR			
8.	a)	Draw and explain the notations of AC Equivalent circuit for MOSFETs	7M	4	2
	b)	Briefly explain about Common Source MOSFET Amplifier.	7M	4	1
		UNIT–V			
9.	a)	Discuss the principle of operation of UJT.	7M	5	1
	b)	Write a note on LED.	7M	5	2
		OR			
10.	a)	In what respect is an LED different from an ordinary PN junction diode? State applications of LED.	7M	5	3
	b)	Explain the working principle of UJT with neat diagram. Mention its applications.	7M	5	4

***

Code: 19AC24T

I B.Tech. II Semester Supplementary Examinations July/August 2022

Engineering Chemistry

(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)

****

			Marks	CO	Blooms Level

UNIT–I

1.	a)	List out the different types of ion selective electrodes.	10M	CO1	L1
	b)	Define electrode potentials with examples.	4M	CO1	L1

OR

2.	a)	Differentiate an electrochemical cell and galvanic cell.	7M	CO1	L4
	b)	Apply electrochemical convention methods to represent the cell.	7M	CO1	L4

UNIT–II

3.	a)	List out the Merits of fuel cell	8M	CO2	L1
	b)	Write short notes on i) electrode ii) electrolyte iii) salt bridge.	6M	CO2	L1

OR

4.		Discuss the construction and working principle of Zinc-air battery	14M	CO2	L3

UNIT–III

5.	a)	Write short notes on the preparation of multi-crystalline and amorphous Silicon.	8M	CO3	L1
	b)	List out the various applications of solar energy.	6M	CO3	L1

OR

6.		Illustrate the doping mechanism of n and -p-type Silicon Semiconductors	14M	CO3	L4

UNIT–IV

7.	a)	Write the preparation, properties and uses of urea-formaldehyde resin.	10M	CO4	L1
	b)	What is step growth polymerization? Explain with examples.	4M	CO4	L1

OR

8.	a)	Discuss the various steps of free radical polymerization with examples	10M	CO4	L2
	b)	Explain the various types of stereospecific polymers with examples.	4M	CO4	L2

UNIT–V

9.	a)	List out various application of TEM	10M	CO5	L1
	b)	What are rotaxanes and catenanes? Give examples.	4M	CO5	L1

OR

10.		Explain the function of cyclodextrin based switches,
		   i) in and out switching
		   ii) back and forth switching.
			14M	CO5	L3

***