University of Engineering & Management, Kolkata

Term - II Examination, October - November, 2021

Programme Name: B.Tech in Computer Science   **Semester: 5th**

Paper Name: Analog Electronic Circuits

Paper Code: ESC 502

Full Marks:100   **Time: 3 hours**

GROUP A (20 Marks)

Answer the following questions. Each question is of 2 marks.

1.	i)	Relate the necessity of Amplifiers in Electronic devices	2
	ii)	Classify the types of series and shunt regulators.	2
	iii)	Sketch the importance of DC load line in Transistors	2
	iv)	Illustrate the four hybrid parameters of a two port network.	2
	v)	Point out the topologies for negative feedback amplifier.	2
	vi)	Explain Barkhausen Criterion.	2
	vii)	Explain the basic amplifiers in feedback topology	2
	viii)	Discuss about input biased current	2
	ix)	Illustrate Multivibrator	2
	x)	Show the working principle of a Scmitt Trigger	2

GROUP B (30 Marks)

Answer the following questions. Each question is of 5 marks.

2.		Sketch the diagram of a Series regulator and explain its operation	5
3.		Judge biasing of BJT and defend need for biasing.	5
4.		Discuss Barkhousen criterion and its function.	5
5.	A.	Illustrate CMRR in Op Amp	5

OR

	B.	Show the Virtual ground in Op -Amp	5

| 6. | A. | Analyze the significance of infinite input impedance in Op Amp | 5 |

<div align="center">OR</div>

| | B. | Demonstrate the function of Integrator Circuit in Op Amp | 5 |

| 7. | A. | Sketch the Square wave signal. | 5 |

<div align="center">OR</div>

| | B. | Sketch bistable multivibrator. | 5 |

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GROUP C (50 Marks)

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Answer the following questions. Each question is of 10 marks.

| 8. | i | Sketch and explain full wave center tapped rectifier circuit. | 5 |
| | ii) | Reframe mathematically the ripple factor of a half wave rectifier is 1.21. | 5 |

| 9. | i) | Sktch with suitable circuit diagram the input and output characteristics of a Transistor working in CB mode. | 5 |
| | ii) | Analyze the expression for current gain | 5 |

| 10. | A. | i) | Reframe Oscillator with respect to Barkhousen Criterion. | 5 |
| | | ii) | Sketch the function of tank circuit and explain its operation | 5 |

<div align="center">OR</div>

| | B. | i) | List the ideal characteristics of op-amp | 5 |
| | | ii) | Design a subtractor circuit using OPAMP | 5 |

| 11. | A. | i) | Sketch op-amp voltage follower circuit & explain it. | 5 |
| | | ii) | Construct and label an inverting amplifier circuit for a voltage gain of 10. | 5 |

<div align="center">OR</div>

| | B. | | For a non-inverting amplifier where RL=10 kΩ and V1=1 V. Determine (a) V0, (b) gain, (c) I1, (d) load current IL and (e)output current I0. take standard Op Amp Non inverting amplifier as example | 10 |

| 12. | A. | i) | Design a differential amplifier using Op Amp and explain its operation. | 5 |
| | | ii) | State the requirements of differential amplifier for making Op Amp. | 5 |

OR

B. **i)** Distinguish differences between astable and monostable multivibrators. 5

ii) State applications of Multivibrators. 5

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