

NAGARJUNA COLLEGE OF ENGINEERING AND TECHNOLOGY
Department of Electronics and Communication Engineering

Odd Semester 2023-24
 Internal Assessment Test – I

Course Name: Introduction to Electronics Engineering	Course Code: 23ESC143	Semester: I
Date: 18.11.2023	Time: 11.00am to 12.00pm	Max. Marks: 25

[Note: Answer any THREE full questions as indicated below]

Sl. No	QUESTIONS		COs	RBT Levels	Marks
1.	a)	Explain Multiplexer and De multiplexer	CO1	L2	04M
	b)	Convert Decimal number to Binary number for the following i. $(48)_{10}$ ii. $(96.73)_{10}$ iii. $(112.42)_{10}$	CO1	L3	06M
OR					
2.	a)	Design Full adder with its logic diagram and truth table.	CO1	L3	04M
	b)	Subtract $(10101)_2 - (10111)_2$ using 2's complement methods. Convert Hexadecimal number to Binary number for the following i. $(BAC1)_{16}$ ii. $(2CF.1B)_{16}$ iii. $(8A)_{16}$	CO1	L3	06M
3.	a)	Explain the bridge full wave rectifier with relevant waveforms	CO2	L2	04M
	b)	Compare Half wave, Full wave and Bridge rectifiers based on different parameters	CO2	L3	06M
OR					
4.	a)	Explain zener diode as a voltage regulator	CO2	L2	04M
	b)	In a Zener voltage regulator $V_{in} = 18V$, $R_s = 270 \text{ ohms}$, Zener Voltage = $10V$ and load resistance = 10 kilo ohm . Determine i) load current ii) Zener current iii) Power dissipated in resistor iv) Power dissipated in load resistor	CO2	L3	06M
5.a		Design Half adder with its logic diagram and truth table.	CO1	L3	05M
OR					
6.a		Explain full wave rectifier using reservoir filter with a neat circuit diagram and waveforms.	CO2	L2	05M

Note: Answer any one full questions from each module

Module - 1

- | | COs | M | BL |
|--|-----|----|----|
| 1a Convert Hexadecimal number to Binary number for the following | | | |
| i. $(ABC1)_{16} = ()_2$ | CO1 | 06 | L3 |
| ii. $(24F.1A)_{16} = ()_2$ | | | |
| iii. $(8C)_{16} = ()_2$ | | | |
| b Implement full adder using two half adders. | CO1 | 06 | L4 |
| c Explain Multiplexer and De multiplexer. | CO1 | 08 | L3 |

OR

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|--|-----|----|----|
| 2a Convert octal number to Binary number for the following | | | |
| i. $(724)_8 = ()_2$ | | | |
| ii. $(365.17)_8 = ()_2$ | | | |
| iii. $(773.667)_8 = ()_2$ | CO1 | 06 | L3 |
| b Explain with expression of De Morgan's Theorem | CO1 | 06 | L3 |
| c Discuss basic theorems of Boolean Algebra. | CO1 | 08 | L4 |

Module - 2

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|--|-----|----|----|
| 3a Describe the working principle of Bridge wave rectifier. | | | |
| b Discuss different types of amplifiers. | CO2 | 07 | L4 |
| c A mains transformer having turns ratio of 44:1 is connected to a 260 Vrms main supply. If the secondary output is applied to a HWR. Determine the peak voltage that will appear across the load. | CO2 | 07 | L2 |
| | CO2 | 06 | L3 |

OR

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|--|-----|----|----|
| 4a An amplifier produces an output voltage of 4V and input of 100mV. If the input and output currents in this condition are respectively 8mA, and 400mA determine i) voltage gain ii) Current gain iii) Power gain | CO2 | 07 | L3 |
| b Describe the full wave rectifier using Reservoir capacitor with circuit diagram and waveforms | CO2 | 07 | L2 |
| c Describe voltage regulator and determine the value of the Rs? | CO2 | 06 | L4 |

Module - 3

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|---|-----|----|----|
| 5a Define Op-amp and brief about OP-AMP with a neat diagram labelled pin diagram. | CO3 | 04 | L1 |
| b Derive and prove Barkhausen criteria with reference to Oscillator. | CO3 | 08 | L4 |
| c Explain i) Voltage follower ii) Summing Amplifier | CO3 | 08 | L3 |

OR

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|---|-----|----|----|
| 6a Differentiate between Ideal and Practical characteristics of OP-AMP. | CO3 | 04 | L1 |
| b Describe Wein bridge oscillator with a neat diagram. | CO3 | 08 | L4 |
| c Explain i) Differentiator ii) Integrator | CO3 | 08 | L3 |

Module - 4

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|---|-----|----|----|
| 7a Describe different types of embedded system of architecture. | CO4 | 06 | L3 |
| b List out the Applications of LED. | CO4 | 08 | L1 |
| c Write any four differences between microprocessor and microcontrollers. | CO4 | 06 | L2 |

OR

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|---|-----|----|----|
| 8a Compare General computing and Embedded systems. | CO4 | 06 | L3 |
| b Brief about actuators and explain LED with a symbol and the advantages of LEDs. | CO4 | 08 | L2 |
| c Explain the complexity and performance of the Embedded systems. | CO4 | 06 | L2 |

Module - 5

- a Explain the basic communication system with the help of the block diagram.
 b Write a short notes on i) ASK ii) FSK iii) PSK
 c Explain different types of communication systems.

CO5 06
 CO5 08
 CO5 06

OR

- a Describe the transmitter section of communication system with block diagram
 b Write a short notes on i) PWM ii) PAM iii) PPM
 Explain Multiplexing with a neat diagram and advantages

CO5 06 L
 CO5 08 L
 CO5 06 L