

First Semester B.E Preparatory Examination-2022
Basic Electronics & Communication Engineering (21ELN14)

Date: 28-04-2022

Time: 03 Hours

Max. Marks: 100

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**

Module-1		Marks
1	a With neat circuit diagram and waveforms explain the working of bridge rectifier.	8
	b List and describe the main types of amplifiers.	6
	c Explain the operation of a simple shunt Zener voltage regulator.	6
OR		
2	a With neat block diagram explain the working of a DC power supply. Also mention the principal components used in each block.	7
	b With circuit diagram and waveform show how operational amplifier can work as a comparator.	7
	c With circuit diagram explain the following: Voltage Doubler, Voltage Tripler .	6
Module-2		
3	a With a neat block diagram show how typical input and output blocks are connected to a microcontroller unit.	7
	b Design a full adder using two half adders and an OR-gate.	7
	c Explain Input and output states for a J-K bistable using clocked operation.	6
OR		
4	a With the help of a neat diagram explain the 4-bit shift register operation and types.	8
	b Define multiplexer. Show block diagram and logic diagram of a 8-to-1 multiplexer with truth table and logic expression.	7
	c Write a note on different data types mentioning the bit size and range of values supported.	5

Module-3

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| 5 | a | Define 'Actuator' and briefly describe the following actuators - relay, Piezo-buzzer. | 8 |
| | b | Write a note on classification of embedded systems. | 6 |
| | c | Describe the matrix keyboard interfacing and UART. | 6 |

OR

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| 6 | a | Explain the working, principle of operation and applications of stepper motor. | 7 |
| | b | Give the classification of transducers with examples. | 7 |
| | c | Explain the different configurations of 7-segment LED Display. | 6 |

Module-4

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|---|---|--|---|
| 7 | a | Define and explain SNR, Noise Figure, channel types, amplitude modulation. | 8 |
| | b | Explain different types of radio wave propagation with a neat diagram. | 6 |
| | c | Define an antenna and discuss different types of antennas. | 6 |

OR

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| 8 | a | Explain the following with the help of waveforms. (i) PAM (ii) PWM (iii) PPM (iv) PCM | 8 |
| | b | Describe the blocks of the basic communication system. | 6 |
| | c | Discuss the various Multiple Access Techniques used in cellular network. | 6 |

Module-5

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| 9 | a | Explain the optical fiber communication system with a block diagram. | 7 |
| | b | Based on orbits, discuss the different types of satellites. | 6 |
| | c | Explain GSM system architecture. | 7 |

OR

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|----|---|---|---|
| 10 | a | Explain cellular concept in wireless and mobile networks. Also, explain the concept of frequency reuse. | 8 |
| | b | Bring out the features of FM transmitter, FM receiver and repeaters in microwave communications. | 8 |
| | c | List the requirements identified for the 4G technology. | 4 |