

CBCS SCHEME

USN

BESCK204C/ BESCKC204

Second Semester B.E./B.Tech. Degree Examination, Dec.2023/Jan.2024

Introduction to Electronics and Communication

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M : Marks , L: Bloom's level , C: Course outcomes.

| Module - 1 | | | M | L | C |
|-------------------|----|--|----------|----------|----------|
| Q.1 | a. | With a neat circuit diagram and waveforms, explain the working of full wave bridge rectifier. | 8 | L2 | CO1 |
| | b. | Draw the circuit diagram of Zener voltage regulator and explain its working. | 8 | L2 | CO1 |
| | c. | Explain the term frequency response of an amplifier. | 4 | L2 | CO1 |
| OR | | | | | |
| Q.2 | a. | With suitable block diagram, explain the regulated dc power supply. | 8 | L2 | CO1 |
| | b. | Draw the block diagram of negative feedback amplifier and derive the expression for overall voltage gain. | 8 | L2 | CO1 |
| | c. | An amplifier has power gain of 25 and identical input and output resistances of 600Ω . Determine input voltage required to produce output of 10V. | 4 | L2 | CO1 |
| Module - 2 | | | | | |
| Q.3 | a. | List the characteristics of Ideal Op-Amp. | 6 | L1 | CO2 |
| | b. | With a circuit diagram and input, output waveforms, explain the working of op-amp integrator and differentiator. | 10 | L2 | CO2 |
| | c. | Explain the term Slew Rate of op-amp. | 4 | L1 | CO2 |
| OR | | | | | |
| Q.4 | a. | State and explain Barkhausen Criterion of oscillation. | 6 | L1 | CO2 |
| | b. | With a neat circuit diagram and waveforms, explain the working of Astable Multivibrator. | 8 | L2 | CO2 |
| | c. | Explain Wein Bridge oscillator. | 6 | L2 | CO2 |
| Module - 3 | | | | | |
| Q.5 | a. | If $X = (11011.101)_2$ and $Y = (10101.010)_2$ find $X - Y$ and $Y - X$ using 1's and 2's complements. | 8 | L2 | CO3 |
| | b. | State and prove DeMorgan's Theorems for 3 variables. | 6 | L2 | CO3 |
| | c. | Represent $F = xy + \bar{x}z$ in Canonical POS form. | 6 | L2 | CO3 |

OR

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|------------|-----------|---|-----------|-----------|------------|
| Q.6 | a. | Convert i) $(456.78)_{10} = (?)_2$ ii) $(642.053)_8 = (?)_{16}$ | 6 | L2 | CO3 |
| | b. | Find the base - x if $(211)_x = (152)_8$ | 4 | L3 | CO3 |
| | c. | Explain the design procedure for combinational logic circuits and implement full adder using basic gates. | 10 | L2 | CO3 |

Module - 4

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|------------|-----------|---|----------|-----------|------------|
| Q.7 | a. | Define Embedded system and explain different elements of embedded system with neat block diagram. | 8 | L2 | CO4 |
| | b. | With block diagrams, explain Instrumentation and control systems. | 8 | L2 | CO4 |
| | c. | Compare microprocessors and microcontrollers. | 4 | L2 | CO4 |

OR

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| Q.8 | a. | Explain the classification of Embedded systems. | 8 | L1 | CO4 |
| | b. | Explain how 7-segment display can be used to display alphanumeric characters. | 8 | L2 | CO4 |
| | c. | Explain working of Light Emitting Diode. | 4 | L1 | CO4 |

Module - 5

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| Q.9 | a. | Define communication system, communication channel and explain different types of channels in communication systems. | 6 | L2 | CO51 |
| | b. | Define noise and explain different types on noise in communication system. | 6 | L2 | CO5 |
| | c. | Explain different modes of Radio Wave Propagation. | 8 | L2 | CO5 |

OR

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|-------------|-----------|---|----------|-----------|------------|
| Q.10 | a. | With a block diagram, explain Modern Communication System. | 7 | L2 | CO5 |
| | b. | What is Modulation, why it is needed? Explain Amplitude Modulation with suitable waveforms. | 7 | L2 | CO5 |
| | c. | With suitable waveforms, explain ASK and FSK modulation schemes. | 6 | L2 | CO5 |
