

Basavarajeswari Group of Institutions

2025 SCHEME

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code

1BESC104/204C

First/Second Semester B.E. Degree Examinations, July 2026

INTRODUCTION TO ELECTRONICS & COMMUNICATION ENGINEERING

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions choosing ONE Full Question from each Module

2. Formula Handbook is permitted

3. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBT:CO: PI)</u>
<u>Module-1</u>			
1.	a. With VI Characteristics, explain how Zener diode can be used as a voltage regulator.	06	(2:1:1.3.1)
	b. Define passive elements. Explain the role of R, L and C components in electronic circuit.	06	(2:1:1.3.1)
	c. Define rectifier. With a neat circuit diagram and waveforms, explain bridge rectifier without capacitor filter.	08	(2:1:1.3.1)
(OR)			
2.	a. With a neat circuit diagram and waveforms, explain half wave rectifier with capacitor filter.	06	(2:1:1.3.1)
	b. Explain the working of DC power supply with a neat block diagram.	06	(2:1:1.3.1)
	c. With the VI characteristics curve, explain the operation of PN junction under forward biased and reverse biased condition.	08	(2:1:1.3.1)
<u>Module-2</u>			
3.	a. Explain Wein bridge oscillator with circuit diagram and necessary equations.	06	(2:2:1.3.1)
	b. Define the following parameters of amplifiers: (i) Gain (ii) Input and output Resistance (iii) Phase shift	06	(2:2:1.3.1)
	c. Derive an expression for the output voltage of an OP-AMP integrator and differentiator.	08	(2 :2:1.3.1)
(OR)			
4.	a. Explain negative feedback amplifier. Derive the voltage gain equation for negative feedback amplifier.	06	(2:2:1.3.1)
	b. Define amplifier. Explain the different types of an amplifier.	06	(2:2:1.3.1)
	c. Derive the output voltage equation of an inverting amplifier and non-inverting amplifier.	08	(2:2:1.3.1)

Note: (RBT: - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI- Performance Indicator)

Module-3

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| 5. | a. | Define frequency modulation. With the help of waveforms, explain frequency modulation. | 06 | (2:3:1.3.1) |
| | b. | Describe the blocks of a basic communication system with neat block diagram. | 06 | (2:3:1.3.1) |
| | c. | Explain the concept of ASK, FSK and PSK with a waveform. | 08 | (2:3:1.3.1) |

(OR)

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| 6. | a. | List out the advantages of digital communication over analog communication. | 06 | (1:3:1.3.1) |
| | b. | Define amplitude modulation. With the help of waveforms, explain amplitude modulation. | 06 | (2:3:1.3.1) |
| | c. | Explain the different types of digital multiplexing techniques. | 08 | (2:3:1.3.1) |

Module-4

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| 7. | a. | Bring out the differences between RISC and CISC. | 06 | (2:4:1.3.1) |
| | b. | Explain the different configurations of the 7-segment LED display. | 06 | (2:4:1.3.1) |
| | c. | List and explain the different types of ROM and RAM. | 08 | (2:4:1.3.1) |

(OR)

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| 8. | a. | With a neat block diagram explain the elements of an embedded system. | 06 | (2:4:1.3.1) |
| | b. | Write a note on sensors and actuators. | 06 | (2:4:1.3.1) |
| | c. | Explain the classification of embedded systems. | 08 | (2:4:1.3.1) |

Module-5

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| 9. | a. | Define half adder. Explain half adder using logic gates. | 06 | (2:5:1.3.1) |
| | b. | Simplify the following Expression
(i) $Y = \overline{A}\overline{B}\overline{C} + \overline{A}B\overline{C}$ (ii) $Y = \overline{A}BC + A\overline{B}C + A\overline{B}\overline{C} + B\overline{C}$ | 06 | (2:5:1.3.1) |
| | c. | Subtract (i) $(78)_{10}$ from $(69)_{10}$ and (ii) $(1001)_2$ from $(1011)_2$ using 1's and 2's complement method. | 08 | (2:5:1.3.1) |

(OR)

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| 10. | a. | Convert the following:
(i) $(9421)_{10} = (?)_2 = (?)_{16} = (?)_8$
(ii) $(BCD)_{16} = (?)_2 = (?)_{10} = (?)_8$ | 06 | (2:5:1.3.1) |
| | b. | State and prove De-morgans theorem of 3 variables. | 06 | (2:5:1.3.1) |
| | c. | Explain full adder. Implement full adder using 2 half adder and an OR gate. | 08 | (2:5:1.3.1) |

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