Basavarajeswari Group of Institutions   **2022 SCHEME**

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT
(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN | | | | | | | | | Course Code   2 2 E S C 2 4 3

Second Semester B.E. Degree Summer Semester Examinations, September/October 2025
INTRODUCTION TO ELECTRONICS ENGINEERING

Duration: 3 hrs   **Max. Marks: 100**

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Missing data, if any, may be suitably assumed.

Q. No		*Question*	*Marks*	*(RBTL:CO:PI)*
		MODULE – 1		
1.	a.	Explain how Zener diode can be used as a voltage regulator.	08	(2:1:1.1.1)
	b.	Explain the working of DC power supply with a neat block diagram.	08	(2:1:1.1.1)
	c.	Define rectifier. With a neat circuit diagram and waveform, explain half-wave rectifier with a filter.	04	(3:1:1.2.1)
		(OR)		
2.	a.	Explain the role of R, L and C components in electronic circuit.	08	(2:1:1.1.1)
	b.	Explain the operation of centre tapped full wave rectifier with neat circuit diagram, waveforms and mention its drawback.	08	(2:1:1.1.1)
	c.	With the VI characteristics curve, explain the operation of PN junction under no bias, forward biased and reverse biased condition.	04	(3:1:1.2.1)
		MODULE – 2		
3.	a.	Explain negative feedback amplifier. Derive the voltage gain equation for negative feedback amplifier.	08	(2:2:1.1.1)
	b.	With a circuit diagram and relevant equations, explain wein bridge oscillator.	08	(2:2:1.1.1)
	c.	List and explain the ideal characteristics of OPAMP.	04	(3:2:1.2.1)
		(OR)		
4.	a.	List and explain the different types of amplifiers.	08	(2:2:1.1.1)
	b.	Explain the Barkhausen's criteria for oscillations.	08	(2:2:1.1.1)
	c.	Derive an expression for output voltage of an OPAMP integrator and differentiator.	04	(3:2:1.2.1)
		MODULE – 3		
5.	a.	Convert the following	08	(2:3:1.1.1)

(i) $(FA876)_{16} = (?)_2 = (?)_{10} = (?)_8$

(ii) $(9734)_{10} = (?)_2 = (?)_{16} = (?)_8$

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

b.	Define shift register. Explain SIPO shift register.	08	(2:3:1.1.1)
c.	Explain full adder. Implement full adder using 2 half adder and an OR gate.	04	(3:3:1.2.1)

(OR)

6.	**a.** Simplify the following Expression	08	(2:3:1.1.1)

(i) $\overline{\overline{AB} + \bar{A} + AB}$

(ii) $AB + ABC + \bar{A}B + A\bar{B}C$

b.	State and prove De-morgans theorem of 2 variables.	08	(2:3:1.1.1)
c.	Define sequential logical circuit. Explain clocked SR flip-flop using neat circuit diagram and truth table.	04	(3:3:1.2.1)

MODULE – 4

7.	**a.** List the differences between microprocessor and microcontroller.	05	(2:4:1.1.1)
	b. List the differences between RISC and CISC.	05	(2:4:1.1.1)
	c. Explain the classification of embedded systems.	10	(3:5:1.2.1)

(OR)

8.	**a.** With a neat block diagram explain the elements of an embedded system.	05	(1:4:1.1.1)
	b. Explain the different configurations of the 7-segment LED display.	05	(2:4:1.1.1)
	c. Compare embedded systems and general computing systems. Also provide major application areas of embedded system.	10	(3:5: .1.3)

MODULE – 5

9.	**a.** Describe the blocks of basic communication system with neat block diagram.	05	(2:4:1.1.1)
	b. Define frequency modulation. With the help of wave forms, explain frequency modulation.	05	(2:4:1.1.1)
	c. With neat diagram, explain the concept of ground, space, sky radio wave propagation.	10	(3:5:2.1.3)

(OR)

10.	**a.** List out the advantages of digital communication over analog communication.	05	(3:4:1.1.1)
	b. Define amplitude modulation. With the help of waveforms, explain amplitude modulation.	05	(2:4:1.1.1)
	c. Explain the concept of ASK, FSK and PSK with wave forms.	10	(3:5:2.1.3)

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