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EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY
An Autonomous Institution Affiliated to Visvesvaraya Technological University (VTU) Belagavi

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25ES143/25ES243

First/Second Semester B.E. Degree Examination, June/July 2026
Introduction to Electronics & Communication Engineering

TIME:3 hrs. Max.Marks:100

Note: 1. Answer **any FIVE** full questions, choosing **ONE** question from **each MODULE.**
2. Formula Hand Books Permitted.
3. M: Marks, L: Bloom's level, C: Course outcomes.
4. Assume missing data suitably.

		Module-1	M	L	C
Q.1	**a**	Define the following with respect to amplifier: (i) Input resistance (ii) Amplifier gain (iii) Bandwidth (iv) Phase shift	**5**	**L1**	**CO1**
	b	What is a regulated power supply? With neat block diagram, explain the working of DC power supply. Also mention the principal components used in each block.	**10**	**L2**	**CO1**
	c	A mains transformer having a turn's ratio of 44: 1 is connected to a 220 V r.m.s. mains supply. If the secondary output is applied to a half-wave rectifier, determine the peak voltage that will appear across a load.	**5**	**L3**	**CO1**
		OR			
Q.2	**a**	List the advantages of negative feedback in amplifiers circuits. With relevant equations and diagram, explain the concept of negative feedback.	**5**	**L1**	**CO1**
	b	Explain the working of a half-wave rectifier with reservoir capacitor along with relevant waveforms.	**10**	**L2**	**CO1**
	c	A 5 V zener diode has a maximum rated power dissipation of 500 mW. If the diode is to be used in a simple regulator circuit to supply a regulated 5 V to a load having a resistance of 400 Ω, determine a suitable value of series resistor for operation in conjunction with a supply of 9 V	**5**	**L3**	**CO1**
		Module–2			
Q.3	**a**	What is oscillator? And mention the conditions for oscillation/ Barkhausens' criteria for oscillations.	**5**	**L1**	**CO2**
	b	List and explain the conditions for sustained oscillations. Determine the frequency of oscillation of a three-stage ladder network in which C = 10 nF and R = 10 kΩ.	**10**	**L2**	**CO2**
	c	With suitable circuit diagram, explain single stage astable multivibrator using operational amplifier.	**5**	**L2**	**CO2**
		OR			
Q.4	**a**	Explain the ideal characteristics of an op-amp	**5**	**L2**	**CO2**
	b	Wideband operational amplifier has a slew rate of 15 V/μs. If the amplifier is used in a circuit with a voltage gain of 20 and a perfect step input of 100 mV is applied to its input, determine the time taken for the output to change level.	**10**	**L3**	**CO2**
	c	With circuit diagram, explain the operation of a Wien bridge oscillator	**5**	**L2**	**CO2**

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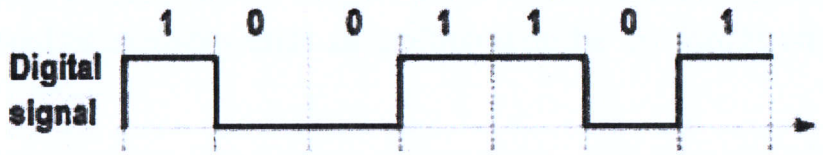
		Module–3			
Q.5	**a**	What is modulation? Explain amplitude modulation (AM) and frequency modulation (FM) with neat diagrams.	**5**	**L2**	**CO3**
	b	Consider the following binary data and sketch the ASK, FSK & PSK modulated waveforms 	**10**	**L2**	**CO3**
	c	Describe the classification of RF (Radio Frequency) spectrum with applications in communications systems.	**5**	**L2**	**CO3**
		OR			
Q.6	**a**	Explain the types of communication system.	**5**	**L2**	**CO3**
	b	With a neat block diagram of a basic communication system, explain modern communication system scheme.	**10**	**L2**	**CO3**
	c	Explain the concept of multiplexing with neat diagram	**5**	**L2**	**CO3**
		Module–4			
Q.7	**a**	Compare PROM, EPROM, and EEPROM	**5**	**L2**	**CO4**
	b	Compare embedded systems and general computing systems. Also provide major application areas of Embedded Systems.	**10**	**L2**	**CO4**
	c	Compare microprocessors and microcontrollers.	**5**	**L2**	**CO4**
		OR			
Q.8	**a**	Write a short note on 7-segment LED display	**5**	**L1**	**CO4**
	b	Bring out the differences between RISC and CISC, Harvard & Von-Neumann.	**10**	**L2**	**CO4**
	c	Write a note on transducers. Explain one type of sensor and actuator with its operation.	**5**	**L2**	**CO4**
		Module–5			
Q.9	**a**	Convert the following: i. $(1AD.\ E0)_{16} = (?)_{10}$ ii. (37.625)10 = (?)2	**5**	**L1**	**CO5**
	b	Explain any 3 theorems of Boolean algebra and prove each of them.	**10**	**L2**	**CO5**
	c	Perform the following: i) (1010100)2 − (1000100)2 using 1's complement and 2's complement method	**5**	**L3**	**CO5**
		OR			
Q.10	**a**	What are logic gates? Write the graphic symbol, algebraic function and truth table of all 8 logic gates	**5**	**L1**	**CO5**
	b	State and prove De Morgan's theorem with its truth table.	**10**	**L2**	**CO5**
	c	Express the Boolean function F = A + B'C in a sum of minterms form.	**5**	**L3**	**CO5**

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