



**First Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026**  
**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.	Draw the block diagram of Regulated power supply and mention the function of each block.	8	L2	CO1	
	b.	An amplifier produces an output voltage of 4V from an input of 100mV. If the i/p and output current in this condition are 2mA and 100mA respectively. Find : i) Voltage gain ii) Current gain iii) Power gain.	6	L3	CO1	
	c.	What is a Rectifier? With neat circuit diagram and output waveforms, explain half wave rectifier with capacitor filter.	6	L2	CO1	
OR						
Q.2	a.	Explain the concept of Negative feedback amplifier with neat diagram and relevant equation.	5	L2	CO1	
	b.	5 V stabilized power supply is required to be produced from a 12 V DC power supply input source. The maximum power rating of the zener diode is 2W. Using zener regulator circuit shown in Fig Q2(b). Calculate : i) Maximum current flowing through zener diode ii) Minimum value of series resistor iii) Load current if a load resistor of 1kΩ connected across zener diode iv) Zener current I <sub>z</sub> at full load	8	L3	CO1	
<p>Fig Q2(b)</p>						
	c.	List and explain various types of amplifiers.	7	L2	CO1	
Module - 2						
Q.3	a.	With circuit diagram, explain the operation of an wien bridge oscillator.	8	L2	CO2	
	b.	Explain the following with respect to operational amplifier. i) Non inverting amplifier ii) Differentiator	8	L2	CO2	
	c.	List out the Ideal characteristics of op amp?	4	L1	CO2	

OR						
Q.4	a.	With a neat circuit diagram, explain the operation of RC phase shift oscillator.	8	L2	CO2	
	b.	Explain the operation of single stage Astable multi-vibrator with its circuit diagram.	8	L2	CO2	
	c.	Define the following parameter of op amp i) CMRR ii) Slew Rate.	4	L1	CO2	
Module - 3						
Q.5	a.	Convert the following : i) $5369_{(10)} = (?)_2 = (?)_8$ ii) $10110001101011.11110010_{(2)} = (?)_{16}$ iii) $1010.011_{(2)} = (?)_{10}$ iv) $5678_{(10)} = (?)_{16}$ v) $3FCD_{(16)} = (?)_2 = (?)_{10}$	10	L3	CO3	
	b.	Simplify the following Boolean functions : i) $Y = A\bar{B} + AB$ ii) $Y = (A + B)(A + C)$ iii) $F = Y[(X + \bar{Y})(Y + Z)]$ iv) $Z = B(A + C) + C$ v) $F = A + \bar{A}B$	10	L3	CO3	
OR						
Q.6	a.	Define Full Adder. Explain full adder using two half adders and one OR gate. Write the equation for sum and C <sub>out</sub> .	8	L2	CO3	
	b.	Write the step by step procedure to design a combinational circuit.	4	L2	CO3	
	c.	Subtract the following using 1's and 2's complement method : i) $(110010 - 11001)_2$ ii) $(1001 - 10000)_2$	8	L3	CO3	
Module - 4						
Q.7	a.	What is an embedded system? Compare embedded system with general purpose computer systems.	8	L1	CO4	
	b.	Explain 7 segment LED display.	6	L2	CO4	
	c.	Write a short notes on : i) Transducers ii) Sensors.	6	L2	CO4	
OR						
Q.8	a.	Write the difference between RISC and CISC processors.	6	L2	CO4	
	b.	List out the major applications areas of embedded systems.	6	L1	CO4	
	c.	Discuss the elements of typical embedded systems.	8	L2	CO4	
Module - 5						
Q.9	a.	What are the advantages of Digital communication over Analog communication?	5	L1	CO5	
	b.	With neat block diagram of basic communication system, explain the individual blocks.	8	L2	CO5	
	c.	Define Noise and explain the various kinds of noise.	7	L2	CO5	
OR						
Q.10	a.	Mention the need for modulation.	4	L1	CO5	
	b.	Write a short notes on : i) ASK ii) FSK.	6	L2	CO5	
	c.	Explain Amplitude and frequency modulation. Sketch AM and FM waveforms.	10	L2	CO5	