



**Second Semester B.E./B.Tech. Degree Examination, Dec.2023/Jan.2024**  
**Introduction to Electronics and Communication**

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
<b>Q.1</b>	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
<b>OR</b>					
<b>Q.2</b>	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
<b>Module – 2</b>					
<b>Q.3</b>	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
<b>OR</b>					
<b>Q.4</b>	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
<b>Module – 3</b>					
<b>Q.5</b>	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			
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			
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			
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			
Q.9	a.	Define communication system, communication channel and explain different types of channels in communication systems.	6 L2 CO5
	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			
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

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