

# CBCS SCHEME

USN

BESCK104C/BESCKC104

## First Semester B.E./B.Tech. Degree Examination, Dec.2023/Jan.2024

### 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.*

<b>Module – 1</b>			M	L	C
<b>Q.1</b>	a.	What is Regulated power supply? With neat block diagram, explain the individual blocks.	8	L2	CO1
	b.	What is a rectifier? With neat circuit diagram and output waveforms, explain full wave bridge rectifier with capacitor filter.	8	L2	CO1
	c.	With circuit diagram brief out the operation of voltage doubler.	4	L2	CO1
<b>OR</b>					
<b>Q.2</b>	a.	Draw the circuit diagram of voltage regulator and explain the operation.	7	L2	CO1
	b.	Explain the concept of negative feedback amplifier with relevant equations and diagrams.	5	L2	CO1
	c.	Explain Frequency response of RC coupled amplifier.	8	L2	CO1
<b>Module – 2</b>					
<b>Q.3</b>	a.	Explain the Barkhausen criteria for oscillations. In wein bridge oscillator if $C_1 = C_2 = 200\text{nF}$ determine the frequency of oscillation when $R_1 = R_2 = 4\text{k}\Omega$ .	7	L3	CO2
	b.	With neat circuit diagram, explain the operation of ladder network oscillator.	7	L2	CO2
	c.	Explain the operation of single stage Astable multivibrator with its circuit diagram.	6	L2	CO2
<b>OR</b>					
<b>Q.4</b>	a.	List out the Ideal characteristics of an op-amp.	7	L2	CO2
	b.	Explain the following with respect to operational amplifier, i) Inverting amplifier ii) Integrator.	8	L2	CO2
	c.	An operational amplifier operating with negative feedback produces an output voltage of 2V when supplied with an input of $400\mu\text{V}$ . Determine the value of closed – loop voltage gain and express the answer in decibels.	5	L3	CO2
<b>Module – 3</b>					
<b>Q.5</b>	a.	Convert the following : i) $(\text{FACE})_{16} = (\ )_{10}$ ii) $(65.45)_{10} = (\ )_2$ iii) $(1111011011011.11011)_2 = (\ )_8$ iv) $(2604.10546875)_{10} = (\ )_{16}$	8	L3	CO3

	b.	Perform the following : i) $(1010100)_2 - (1000100)_2$ using 2's compliment. ii) $(4456)_{10} - (34324)_{10}$ using 10's compliment method.	6	L3	CO3
	c.	State and prove De – Morgan's theorems with its truth table.	6	L2	CO3

**OR**

Q.6	a.	Implement the Boolean functions using logic gates. i) $F_1 = x + y'z$ ii) $x'y'z + x'yz + xy'$	6	L3	CO3
	b.	Write the step by step procedure to design a combinational circuit.	6	L2	CO3
	c.	Implement full adder circuit with its truth table and draw the logic diagram of sum and carry.	8	L3	CO3

**Module – 4**

Q.7	a.	What is an embedded system? Compare embedded system and General computing systems.	7	L2	CO4
	b.	Explain classification of embedded systems.	7	L2	CO4
	c.	What is the difference between RISC and CISC processors?	6	L2	CO4

**OR**

Q.8	a.	Discuss major application areas of embedded systems with examples.	7	L2	CO4
	b.	Write short note on : i) Transducers ii) Sensors iii) Actuators.	6	L2	CO4
	c.	Write a short note on 7-segment LED display.	7	L2	CO4

**Module – 5**

Q.9	a.	With neat block diagram, explain modern communication system.	8	L2	CO5
	b.	Write a note on Hard wired channel and soft wired channel.	6	L2	CO5
	c.	Explain with a neat diagram, the concept of Radio wave propagation and its different types.	6	L2	CO5

**OR**

Q.10	a.	Explain Amplitude Modulation (AM) and Frequency Modulation (FM) with neat waveforms.	8	L2	CO5
	b.	List out the advantages of Digital communication over Analog communication.	6	L2	CO5
	c.	Explain different multiple Access Techniques.	6	L2	CO5

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