CBCS SCHEME

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BESCK104C/BESCKC104

First Semester B.E/B.Tech. Degree Examination, June/July 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.

		Module – 1	**M**	**L**	**C**
1	a.	Explain the working of Bi-phase full wave rectifier circuit with a neat diagram and waveform.	7	L2	CO1
	b.	A zener diode has a breakdown voltage of 10V. It is supplied from a voltage source varying between 20 – 40V in series with a resistance of 820Ω. Using an ideal zener model obtain the minimum and maximum zener currents.	7	L2	CO1
	c.	Summarize the advantages of negative feedback in amplifier circuits. With relevant equations and diagram, explain the concept of negative feedback.	6	L2	CO1
		OR			
2	a.	Describe the need of capacitor filter. For a FWR, explain the operation of C-filter.	7	L2	CO1
	b.	Discuss the load and line regulation using zener diode with neat circuit diagram and appropriate expressions.	7	L2	CO1
	c.	Describe with relevant frequency response curve of RC coupled amplifier. Explain the reason for the fall of voltage gain at low and high frequencies.	6	L2	CO1
		Module – 2			
3	a.	What is Barkhousan criteria for sustained oscillations? How it is used in oscillator?	7	L1	CO2
	b.	Explain with the help of circuit diagram the operation of a crystal oscillator. Why these oscillators give highly stable oscillations. Mention applications of crystal oscillators.	7	L2	CO2
	c.	Sketch the circuit of each of the following and briefly explain them based on the use of operational amplifiers. i) Differentiator ii) Integrator.	6	L2	CO2
		OR			
4	a.	Explain the operation of single stage Astable oscillator with its circuit diagram.	7	L2	CO2
	b.	A sinusoidal signal with peak value 6mv and 2KHz frequency is applied to the i/p of an ideal op-amp integrator with R_1 = 100KΩ and C_f = 1μf. Find the o/p voltage.	7	L2	CO2
	c.	List the various ideal op-amp characteristics.	6	L1	CO2

		Module – 3			
5	a.	Covert : i) $(725.25)_8$ to its decimal and binary equivalent ii) Determine the value of x if $(211)_x = (152)_8$ iii) Realize an OR logic gate using diodes.	**7**	**L2**	**CO3**
	b.	Illustrate how NAND gate can be used to realize the following gates : i) NOR ii) EX – OR.	**7**	**L2**	**CO3**
	c.	Simplify and realize the following expressions using only NAND and NOR. i) $Y = (A + \overline{B})(B + C)(\overline{C} + B)$ ii) Y = AB + AC + BD + CD.	**6**	**L2**	**CO3**
		OR			
6	a.	Prove NAND and NOR is not associative.	**6**	**L2**	**CO3**
	b.	Enumerate the ruler of Boolean algebra and prove each of them with truth table.	**7**	**L2**	**CO3**
	c.	Explain full adder circuit with truth table. Realize the circuit for sum and carry using basic gates. Also write diagram showing FA using two HA.	**7**	**L2**	**CO3**
		Module – 4			
7	a.	Outline on transducers, sensors and actuators with examples for each.	**7**	**L1**	**CO4**
	b.	Explain the classification of embedded system based on generation.	**7**	**L1**	**CO4**
	c.	Identify the difference between microprocessor and microcontroller.	**6**	**L1**	**CO4**
		OR			
8	a.	Explain instrumentation system with relevant diagram.	**7**	**L2**	**CO4**
	b.	Explain the working operation of LED with a suitable diagram.	**7**	**L2**	**CO4**
	c.	Construct the block diagram for control system and explain it.	**6**	**L2**	**CO4**
		Module – 5			
9	a.	Outline on different types of modulation and briefly describe each in detail.	**7**	**L1**	**CO5**
	b.	Explain the concept of radio wave propagation and briefly describe each in detail.	**7**	**L1**	**CO5**
	c.	Construct ASK, FSK and PSK waveform by considering the following binary data : (Refer Fig.Q9(c)).  Fig.Q9(c)	**6**	**L2**	**CO5**
		OR			
10	a.	Define frequency deviation and sketch the FM wave with illustration.	**7**	**L2**	**CO5**
	b.	Classify the advantages of analog over digital communication.	**7**	**L1**	**CO5**
	c.	Model the architecture of a wireless communication transmitter and its modulators scheme QPSK with waveform and constellation diagram.	**6**	**L2**	**CO5**

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