U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

October 2024 Supplementary Examinations

Programme: B.E. **Semester: I / II**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 22EC1ESIEL / 22EC2ESIEL **Max Marks: 100**
Course: Introduction to Electronics Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

			CO	PO	Marks
		UNIT – I			
1	a)	Describe the operation of Half Wave Rectifier (HWR) and derive the expression for ripple factor and efficiency.	-	-	**10**
	b)	Explain the regions of NPN transistor working based on the external bias voltage and derive the relation between common base dc current gain (α) to common emitter dc current gain (β) of a transistor. Calculate β, collector current Ic, emitter current I_E, if α = 0.9 and base current I_B = 50 μA.	*CO1*	*PO1*	**10**
		OR			
2	a)	Compare Half wave and Full wave rectifier circuits. In a centre – tap full wave rectifier, forward resistance of each diode is 15Ω. The rms voltage across each half of the secondary of the transformer is 100V. If the load resistance is 1000Ω, find rms value of the load current. Also find dc load current.	*CO1*	*PO1*	**10**
	b)	What are Amplifiers? Explain the operation of BJT as a switch, with suitable circuit diagrams.	-	-	**10**
		UNIT – II			
3	a)	With neat circuit diagrams, show how Op-amp can be used as: i) Integrator ii) Subtractor	-	-	**10**
	b)	Explain the operation of a Wien Bridge Oscillator, with a neat circuit diagram and equation for frequency.	-	-	**10**
		UNIT - III			
4	a)	Simplify the following Boolean expression using Boolean Laws and Realize this expression with logic gates (i) $f(A,B,C) = A\bar{B}\,C + \bar{C} + BC$ (ii) $f(A,B,C) = \overline{\overline{AB} + \bar{B} + \overline{CA}}$	*CO1*	*PO1*	**10**

		b)	Convert i) $(ABCD)_{16} = (?)_8 = (?)_2$ ii) $(761.1)_8 = (\ )_2 = (\ )_{16}$ iii) $(96.85)_{10} = (\ )_2$	***CO1***	***PO1***	**10**
			OR			
	5	a)	i) Find the complement and simplify: $(AB + \bar{A}\bar{C})$ ii) Simplify and realize using basic gates: $Y = A(\overline{ABC} + A\bar{B}C)$	***CO1***	***PO1***	**10**
		b)	Implement the following combinational logic circuits: i) Half Adder using basic gates ii) full adder using Half adders	***CO1***	***PO1***	**10**
			UNIT – IV			
	6	a)	Differentiate between the following with reference to embedded systems: i) Microprocessors and Microcontrollers ii) RISC Vs CISC Processors/Controllers	-	-	**10**
		b)	i) List the various categories of the core of embedded systems ii)Explain the following output devices, with reference to embedded systems: Light emitting diodes and seven segment LED Displays	-	-	**10**
			UNIT – V			
	7	a)	With a neat schematic block diagram, briefly explain the main constituents of basic communication system.	-	-	**10**
		b)	Explain the types of modulation, Amplitude Modulation and Frequency modulation, with reference to communication systems.	-	-	**10**

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