

Total No. of Questions: 6

Total No. of Printed Pages:3

Enrollment No.....



Faculty of Engineering / Science
End Sem Examination Dec 2024
EN3ES16 / BC3ES08 / SC3ES03
Basic Electronics Engineering

Programme: B.Tech./B.Sc.

Branch/Specialisation: All/
Computer Science

Maximum Marks: 60

Duration: 3 Hrs.

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

[2]

	(c) OR	(d) XOR		
ix.	By connecting a shunt resistance, a PMMC meter can be converted into-	1	1	1
	(a) Ammeter	(b) Voltmeter		
	(c) Ohmmeter	(d) CRO		
x.	Lissajous patterns are used to measure _____ of two signals.	1	1	1
	(a) Ripple factor	(b) Power		
	(c) Current	(d) Phase		
Q.2	i. Write diode current equation by defining each term used.	2	2	1
	ii. Discuss classification of semiconductors in detail.	3	2	1
	iii. What do you mean by rectifier? Give its types with circuit diagram. Define ripple factor of rectifier.	5	2	1
OR	iv. Discuss construction and working of-	5	2	1
	(a) Zener diode			
	(b) LED			
Q.3	i. Explain the Structure of BJT on the basis of size and doping level of various regions.	2	2	1
	ii. Discuss common base configuration of BJT with the help of circuit diagram and input, output VI characteristic graphs.	8	2	1
OR	iii. Explain the structure and operation of Enhancement type n-Channel MOSFET with circuit diagram and graphs.	8	2	1
Q.4	i. Discuss at-least three needs of modulation in communication system.	3	2	1,2
	ii. Explain amplitude modulation with the help of mathematical expressions and appropriate waveforms.	7	2	1,2
OR	iii. Draw block diagram and explain each component of communication system in detail.	7	2	1,2
				3

[3]

Q.5	i.	Perform following conversions-	4	3	1,2,	2
		(a) $(1011)_2 = (?)_{10}$				
		(b) $(2B)_{16} = (?)_{10}$				
		(c) $(25)_{10} = (?)_2$				
		(d) $(1000)_2$ = Gray code?				
	ii.	Derive minimal expression for following function using K-map-	6	3	1,2,	2
		$F(w,x,y,z) = \sum_m (0,1,2,3,5,7,11,15)$				
OR	iii.	Discuss half adder and full adder circuits in detail.	6	3	1,2,	2
Q.6		Attempt any two:				
	i.	Explain the construction and working of Cathode Ray Tube.	5	2	1	1
	ii.	Draw block diagram and explain the working of each component of CRO.	5	2	1	1
	iii.	Define following terms with example-	5	2	1	1
		(a) Accuracy				
		(b) Precision				
		(c) Sensitivity				
		(d) Hysteresis				

Marking Scheme
EN3ES16 Basic Electronics Engineering

Q.1	i) (c) 0.7 V	1	ii. Definition 3 marks, maths 2 marks, waveforms 2 marks	7
	ii) (d) Phosphorus	1	OR iii. Diagram 2 marks, explanation: 1 mark for each component	7
	iii) (a) Gate	1		
	iv) (b) Operating point	1		
	v) (a) 10 kHz	1		
	vi) (a) Microphone	1		
	vii) (c) x	1		
	viii) (b) NAND	1		
	ix) (a) Ammeter	1		
	x) (d) Phase	1		
Q.2	i. Equation 1 mark, defining terms 1 mark	2	Q.5 i. 1 mark for each operation	4
	ii. 1.5 mark for each type	3	ii. k-map 2 marks, grouping 2 marks, minimal expression 2 marks	6
	iii. Definition 1 mark, 2 mark for each type, ripple factor 2 mark	5	OR iii. Half adder: table 1 mark, circuit 1 mark, expression 1 mark Full adder: table 1 mark, circuit 1 mark, expression 1 mark	6
	OR iv. Zener diode 2.5 marks, LED 2.5 marks,	5		
Q.3	i. Size 1 mark, doping 1 mark	2	Q.6 i. Diagram 2 marks, working 3 marks	5
	ii. Circuit 2 marks, theory 2 marks, input characteristics 2 marks, output characteristics 2 marks.	8	ii. Block diagram 2 marks, theory 3 marks	5
	OR iii. Structure 2.5 marks, circuit 1 marks, operation 2.5 marks, graph 2 marks	8	iii. 2 marks for accuracy 1 mark for precision 1 mark for sensitivity 1 mark for hysteresis	5
Q.4	i. 1 mark for each need	3		