

Enrollment No.....



Faculty of Engineering / Science
End Sem (Odd) Examination Dec-2022
EN3ES16 / BC3ES08 / SC3ES05

Basic Electronics Engineering

Programme: B.Tech./ B. Sc. Branch/Specialisation: All / Computer Science

Duration: 3 Hrs.

Maximum Marks: 60

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.

- Q.1 i. Approximate value of silicon diode's forward barrier voltage is- **1**
(a) 0.3 V (b) 0.7 V (c) 1.1 V (d) 1.45 V
- ii. Zener diode is used in- **1**
(a) Rectifiers (b) Clippers
(c) Voltage regulators (d) Amplifiers
- iii. Which of these is not a terminal of BJT? **1**
(a) Gate (b) Collector (c) Base (d) Emitter
- iv. FET is also known as- **1**
(a) Bipolar device
(b) Current controlled device
(c) Voltage controlled device
(d) Linear device
- v. Walkie Talkie is an example of _____ mode of communication. **1**
(a) Simplex (b) Full duplex
(c) Half simplex (d) Half duplex
- vi. According to sampling theorem, if f_m is message signal frequency then sampling frequency should be at least- **1**
(a) $f_m/2$ (b) f_m (c) $2f_m$ (d) $10f_m$
- vii. 2's complement of 10110 is- **1**
(a) 01001 (b) 11000 (c) 10111 (d) 01010
- viii. Which equation is true regarding DeMorgan's law? **1**
(a) $(A+B)' = A*B$ (b) $(A+B)' = A'*B'$
(c) $A*B = A'+B'$ (d) $A*B = A + B$

P.T.O.

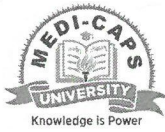
[2]

- ix. _____ is how close the measured values are to each other. **1**
 (a) Accuracy (b) Precision (c) Sensitivity (d) Hysteresis
- x. By connecting a shunt resistance, a PMMC meter can be converted **1**
 in-
 (a) Ammeter (b) Voltmeter
 (c) Multimeter (d) CRO
- Q.2 i. What do you mean by semiconducting material? Give any two **2**
 examples.
 ii. Draw and explain VI characteristics of PN junction diode. **3**
 iii. Explain the working of half wave rectifier with schematic diagram, **5**
 input-output voltage waveforms. Also derive expression for its
 ripple factor.
- OR iv. Discuss diode clipper circuit with appropriate example. **5**
- Q.3 i. Explain the structure of BJT with respect to doping and size of **2**
 various regions.
 ii. What are the factors which affect the stability of Q point of BJT? **3**
 Enlist various biasing techniques of BJT.
 iii. Discuss common emitter configuration of BJT with the help of **5**
 circuit diagram and input output VI characteristics.
- OR iv. With a neat sketch, describe the structure and working of n-channel **5**
 JFET. Also draw drain characteristics curves.
- Q.4 i. Draw the schematic block diagram of communication system. Also **4**
 discuss working of each block.
 ii. Discuss at least four needs of modulation in detail. **6**
- OR iii. Explain amplitude modulation with the help of mathematical **6**
 expressions and appropriate diagrams.
- Q.5 i. Convert $(57)_{10}$ into equivalent binary number. **2**
 ii. Derive minimal expression for following function using K-map **3**
 $F(x,y,z) = \sum_m (0,1,2,4,6)$
 iii. Explain half adder and full adder with circuit diagram, truth table **5**
 and boolean expressions.
- OR iv. Discuss Von Neumann architecture of computer in detail. **5**

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- Q.6 Attempt any two: **5**
- i. Write a detailed note on function generator. **5**
 ii. Explain the working of voltmeter and ammeter. **5**
 iii. Explain the construction and working of Cathode Ray Tube. **5**

Scheme of Marking

	<p style="text-align: center;">Faculty of Engineering End Sem (Odd) Examination Dec-2022 EN3ES16 Basic Electronics Engineering</p>	
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Note: The Paper Setter should provide the answer wise splitting of the marks in the scheme below.

Q.1	i)	b	1
	ii)	c	1
	iii)	a	1
	iv)	c	1
	v)	d	1
	vi)	c	1
	vii)	d	1
	viii)	b	1
	ix)	b	1
	x)	a	1
Q.2	i.	Definition 1 mark, 0.5 mark for each example	
	ii.	Diagram 1 mark, explanation 2 marks	
	iii.	2 marks circuit, 1 mark waveforms, 2 marks derivation	
OR	iv.	1 mark definition, 1 mark diagram, 1 mark working , 2 marks waveforms	
Q.3	i.	1 mark each for doping and size of regions	
	ii.	2 marks factors, 1 mark list	
	iii.	Circuit 2 marks, 1 mark theory, 2 marks VI characteristics	
OR	iv.	Structure 1 mark, working 2 marks, Characteristics 2 marks	
Q.4	i.	Diagram 2 marks, working 2 marks	
	ii.	1.5 mark for each need	
OR	iii.	2 marks for definition(theory), expression, waveforms each	

Q.5	i.	1 mark procedure, 1 mark correct result	
	ii.	2 marks for k map, 1 for minimal expression	
	iii.	Half adder: 2marks for circuit, 2 mark for expression, 1 marks for truth table. Same marking for full adder	
OR	iv	2 marks block diagram, 3 for explanation	
Q.6	i.	2 marks block diagram, 3 for explanation	
	ii.	2 mark diagram, 1 mark component explanation, 2 marks working	
	iii.	3 marks diagram, 2 for explanation	
