DECEMBER 2017 / ENDSEM

F. Y. B. TECH. (COMMON) (SEMESTER - I)

COURSE NAME: Basic Electronics Engineering

(2017 PATTERN)

Marking Scheme

Q.NO	Sub Q.NO	Marking Scheme	Marks	Difficulty Level	Cognitive level	CO Mappe
Q1	a)	State Demorgan's theorems,: 2M Prove Demorgan's theorems,: 2M Draw the logical diagrams.: 2M	[6]	M	Knowledge / Comprehension	CO4
	b)	Develop half adder truth-table:2M Proper simplifies Boolean expressions: 2M Logic diagram suitable logic gates: 2M	[6]	M	Comprehension	CO4
	c)	Proper proof of (A+B)(A+C) = A+BC :2M Proper proof of $\overline{A\overline{B} + \overline{C}D + EF} = (\overline{A} + B)(C + \overline{D})(\overline{E} + \overline{F})$: 2M	[4]	L	Comprehension	CO4
		OR				
Q2	a)	Convert binary number 110110.1011 to decimal number 109.6875: 3M convert decimal number 82.625 to binary number1010010.101: 3M	[6]	M	Comprehension	CO4
	b)	With correct truth table: 4:1 MUX block diagram and working: 3M 1:4 De-MUX block diagram and working:3M	[6]	H	Comprehension /Application	CO4
	c)	D flip flop truth table: 2M D flip flop Diagram : 1 M Explanation: 1M	[4]	L	Knowledge	CO4

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Q3	a)	Block diagram of basic instrumentation system: 3M Explanation of the block diagram of basic instrumentation system: 3M	[6]	M	Knowledge	CO5
	b)	Compare active and passive transducer. Minimum four points: 4M	[4]	L	Knowledge	CO5
	c)	Explanation of four characteristics of transducer: 4M	[4]	L	Knowledge	CO5
		OR				
Q4	a)	RTD meaning:1M Construction and working principle:3M Correct Wheatstone bridge with RTD: 2M	[6]	M	Knowledge and Comprehension	CO5
	b)	Primary and secondary transducer explanation: 2M Two examples of each : 2M	[4]	L	Knowledge	CO5
	c)	Construction diagram of thermistor: 2M Working principle: 2M	[4]	L	Comprehension	CO5

Q.5

1.	Peak inverse voltage for a diode is the a) voltage corresponding to rated maximum voltage b) maximum voltage that can be applied across the diode in the conducting direction c) maximum voltage that can be applied across the diode in the non-conducting direction d) none of the above. Ans: **c**	[1]
2.	The output frequency of a full-wave rectifier is _____ the input frequency. a) one-half b) equal to	[1]

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	c) twice d) one-quarter Ans: **c**	
3.	In photodiode ---------- current is proportional to light incident.. a) forward current b) reverse current c) reverse leakage current d) dark current. Ans: **c**	[1]
4.	Which diode(s) has (have) a zero level current and voltage drop in the ideal model? a) Si b) Ge c) Neither Si nor Ge d) Both Si and Ge Ans: **d**	[1]
5.	In LED light is emitted because a) Diode gets heated up b) Light falling on gets amplified c) Light gets reflected due to lens action d) Recombination of charge carriers take place Ans: **d**	[1]
6.	A transistor has a β_{dc} of 250 and a base current, I_B of 20 mA. The collector current, I_c equals: (a) 500 mA b) 5 A c) 50 mA d) 5 mA Ans: **d**	[1]
7.	The phase difference between the input and output ac voltage signals of a common-emitter amplifier is _____.	[1]

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	a) 0° b) 180° c) 80° d) 360° Ans: **b**	
8.	V_{CE} approximately equals _____ when a transistor switch is cut off. a) V_B b) V_{CC} c) 0.2 V d) 0.7 V Ans: **b**	[1]
9.	In which region are both the collector-base and base-emitter junctions Revese-biased? a. Active b. Cutoff c. Saturation d. All of the above Ans: **b**	[1]
10.	When transistors are used in digital circuits they usually operate in the: a) active region b) breakdown region c) saturation and cutoff regions d) linear region Ans: **c**	[1]
11.	A BJT is a _____-controlled device. The MOSFET is a _____ -controlled device. a. voltage, voltage b. voltage, current c. current, voltage d. current, current Ans: **c**	[1]
12.	Which of the following devices does not have a cathode terminal?	[1]

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	a. SCR b. PN Junction Diode c. Triac d. Zener diode Ans: **c**	
13.	Which of the following transistors can an SCR be represented as? a. *npn, pnp* b. *npn, npn* c. *pnp, pnp* d. None of the above Ans: **a**	[1]
14.	In the forward-blocking region, the SCR is (a) in the *off* state (b) reverse-biased (c) in the *on* state (d) at the point of breakdown Ans: **a**	[1]
15.	In an E-MOSFET, there is no drain current until *V*GS (a) reaches *V*GS(th) (b) is positive (c) is negative (d) equals 0 V Ans: **a**	[1]
16.	How many terminals do the 78XX series fixed positive voltage regulators have? **a)** 2 **b)** 3 **c)** 4 **d)** 5 Ans: **b**	[1]

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17.	The 7912 regulator IC provides _____ . a. 5 V b.–12 V c. 12 V d. –5 V Ans: **b**	[1]
18.	With zero volts on both inputs, an op-amp ideally should have an output equal to (a) the positive supply voltage (b) zero (c) the negative supply voltage (d) the CMRR Ans: **b**	[1]
19.	For an op-amp with negative feedback, the output is (a) equal to the input (b) increased (c) fed back to the non-inverting input (d) fed back to the inverting input Ans: **d**	[1]
20.	A voltage-follower (a) has a gain of 1 (b) is non-inverting (c) has no feedback resistor (d) has all of these Ans: **d**	[1]