Total No. of Questions – [5] Total No. of Printed Pages 02

G.R. No.	

UH8-104A (BE-FF)

DEC. '2018 / ENDSEM

F. Y. B. TECH. (COMMON) (SEMESTER – I/II)

COURSE NAME: Basic Electronics Engineering [ET 10174A]

(2017 PATTERN)

Time: [**2 Hours**] [Max. Marks: **50**]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4 and Q.5**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data wherever required**

Q1 a) Draw the block diagram of half adder. Explain its working with the help of truth table. **[6]**

b) Explain working of D flip flop with block diagram and truth table. **[6]**

c) Prove the following **[4]**

i) (A+B)(A+C) = A+BC

ii) $\overline{A\overline{B} + \overline{C}D + EF} = (\overline{A} + B)(C + \overline{D})(\overline{E} + \overline{F})$

OR

Q2 a) Construct basic gates such as NOT, OR and AND gate using only NOR gate **[6]**

b) Explain the working of 4:1 MUX and 1:4 De-MUX with block diagram and write output expression for the same. **[6]**

c) Define and draw AND gate and OR gate. For both gates develop the truth table for two inputs based on their logical expression. **[4]**

Q3 a) Explain the working of LVDT using circuit diagram. State any two advantages and disadvantages of LVDT. **[6]**

b) What are the different types of pressure transducer? Draw construction diagram of any two pressure transducer. **[4]**

c) Define and explain any four characteristics of transducer. **[4]**

OR

Q4 a) Draw the construction diagram of strain gauge and explain working principle of it. **[6]**

b) Explain working of ultrasonic flow meter. **[4]**

c) What is transducer? Give its classification based on its output quantity measured. **[4]**

Q.5) Attempt following multiple choice questions: **[2x10=20 marks]**

a) When voltage is applied to a diode more than its PIV, it is likely to result in [2]

a) More distortion on output side b) Poor regulation

b) Conduction in both direction d) Breakdown at the junction.

b) In photodiode ---------- current is proportional to light incident.. [2]

a) forward current b) reverse current

c) reverse leakage current d) dark current.

c) A transistor has a β_{dc} of 250 and a base current, I_B of 20 mA . The collector current, I_c equals: [2]

(a) 500 mA b) 5 A c) 50 mA d) 5 mA

d) The phase difference between the input and output ac voltage signals of a common-emitter amplifier is _____, [2]

a) 0° b) 180° c) 80° d) 360°

e) V_{CE} approximately equals _____ when a transistor switch is saturation region. [2]

a) V_B b) V_{CC} c) 0.2 V d) 5 V

f) A BJT is a _____-controlled device. The MOSFET is a _____ - controlled device. [2]

a. voltage, voltage b. voltage, current

c. current, voltage d. current, current

g) In an E-MOSFET, there is no drain current until *V*GS [2]

(a) reaches *V*GS(th) (b) is positive

(c) is negative (d) equals 0 V

h) The 7912 regulator IC provides _____ [2]

a. 5 V b.–12 V c. 12 V d. –5 V

i) For an op-amp with negative feedback, the output is [2]

(a) equal to the input (b) increased

(c) fed back to the non-inverting input (d) fed back to the inverting input

j) The maximum slew rate of IC 741 is [2]

a) 0.1 V/ns b) 0.8 V/ns c) 1 V/ns d) 0.5 V/ns