Total No. of Questions – [05] Total No. of Printed Pages 04

G.R. No.	17U415

Paper Code - U117-104A (BE-FSF)

MARCH / APRIL 2018 – Backlog Exam

F.Y.B.TECH. (COMMON) (SEMESTER – I)

COURSE NAME: Basic Electronics Engineering

COURSE CODE: ET10174A

(2017 PATTERN)

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

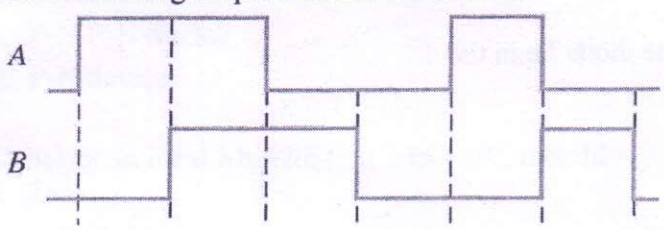
(*) Instructions to candidates:

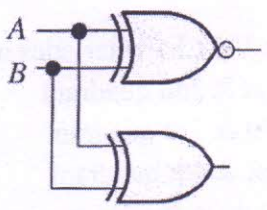
1) **Answer Q.1 OR Q.2, Q.3 OR Q.4 and Q.5**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data wherever required**

Q1 **a)** Draw the block diagram of full Adder using two half adders. Explain its working with proper expression along with sum and carry. **[6]**

b) Explain working of gated S-R flip flop with block diagram and truth table. **[6]**

c) Following two waveforms A and B are applied to the inputs of XOR and XNOR gates. Find is resulting output waveforms of both. **[4]**





OR

Q2 **a)** Apply Demorgans theorems to each of the following expression. **[6]**

1) $\overline{ABC + DEF}$ 2) $\overline{A\bar{B} + \bar{C}D + EF}$

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

c) Convert the following decimal number into binary. **[4]**

1) 82 2) 45

Q3 **a)** Explain construction and working of LVDT using circuit diagram. **[6]**

b) Compare active and passive transducers. **[4]**

c) Explain strain gauge and define gauge factor. **[4]**

OR

Q4 **a)** Explain working principle of themistor with diagram. State materials used in its construction. **[6]**

b) What is RTD? Explain its construction and working principle. **[4]**

c) Define passive transducer. Give its detailed classification. **[4]**

Q.5) Attempt following multiple choice questions: [1x20=20 marks]

1. Color of light emitted by LED depends on [1]

   a. its forward bias
   b. its reverse bias
   c. forward current
   d. semiconductor material

2. The p-region has a greater concentration of _____ as compared to the n-region in a P-N junction. [1]

   a. holes
   b. electrons
   c. both holes & electrons
   d. phonons

3. Which of the following is true in case of an unbiased p-n junction diode? [1]

   a) Diffusion does not take place
   b) Diffusion of electrons & holes goes on infinitely
   c) There is zero electrical potential across the junctions
   d) Charges establish an electric field across the junctions

4. The V-I Characteristics of the diode lie in the [1]

   a) 1st & 2nd quadrant
   b) 1st & 3rd quadrant
   c) 1st & 4th quadrant
   d) Only in the 1st quadrant

5. A diode is said to be reversed biased when the [1]

   a) cathode is positive with respect to the anode
   b) anode is positive with respect to the cathode
   c) cathode is negative with respect to the anode
   d) both cathode & anode are negative

6. A power transistor is a [1]

   a) three layer, three junction device
   b) three layer, two junction device
   c) two layer, one junction device
   d) four layer, three junction device

7. The value of β is given by the expression [1]
   a) I_C/I_B
   b) I_C/I_E
   c) I_E/I_C
   d) I_E/I_B

8. The base of a transistor is …….. doped [1]
   a. heavily
   b. moderately
   c. lightly
   d. none of the above

9. In a transistor …….. [1]
   a. $I_C = I_E + I_B$
   b. $I_B = I_C + I_E$
   c. $I_E = I_C - I_B$
   d. $I_E = I_C + I_B$

10. The power gain in a transistor connected in …….. arrangement is the highest [1]
    a. common emitter
    b. common base
    c. common collector
    d. none of the above

11. A thyristor (SCR) is a [1]
    a. P-N-P device
    b. N-P-N device
    c. P-N-P-N device
    d. P-N device

12. Consider an ideal MOSFET. If Vgs = 0V, then Id = ? [1]
    a. Zero
    b. Maximum
    c. Id(on)
    d. Idd

13. Among the following, the most suitable method to turn on the SCR device is the [1]
    a. gate triggering method
    b. dv/dt triggering method
    c. forward voltage triggering method
    d. temperature triggering method

14. The value of anode current required to maintain the conduction of an SCR even though the gate signal is removed is called as the [1]
    a. holding current
    b. latching current
    c. switching current
    d. peak anode current

15. Which terminal does not belong to the SCR? [1]
a. Anode
b. Gate
c. Base
d. Cathode

16. The gain of an amplifier with feedback is known as …….. gain [1]
a. Resonant
b. Open loop
c. Closed loop
d. None of the above

17. When a negative voltage feedback is applied to an amplifier, its bandwidth……. [1]
a. Is increased
b. Is decreased
c. Remains the same
d. Insufficient data

18. The purpose of level shifter in Op-amp internal circuit is to [1]
a. Adjust DC voltage
b. Increase impedance
c. Provide high gain
d. Decrease input resistance

19. A 741 OPAMP has [1]

a. 10 pins
b. 8 pins
c. 14 pins
d. 3 pins

20. The 7905 regulator IC provides _____ . [1]

a. 5 V b.-12V c. 12V d. -5V