Reg. No. :

Question Paper Code: 42306

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Second Semester

Civil Engineering

14UEE206 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering)

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

1. Ohm's law is applicable at
   (a) 20° C   (b) 37.5° C
   (c) constant temperature   (d) none of these

2. The moving Iron instruments are used to measure
   (a) AC only   (b) DC only
   (c) both AC and DC   (d) none of these

3. A transformer
   (a) changesAC to DC   (b) changes DC to AC
   (c) steps up or down DCvoltages   (d) steps up or down ACvoltages

4. A 4 point starter is used to start and control the speed of a

   (a) DC shunt motor with armature resistance control
   (b) DC shunt motor with field weakening control
   (c) DC series motor
   (d) DC compound motor

5. In an intrinsic semiconductor, the free electron concentration depends on

      (a) Effective mass of electrons only
      (b) Effective mass of holes only
      (c) Temperature of the semiconductor
      (d) Width of the forbidden energy band of the semiconductor

6. When both emitter and collector junctions are forward biased, the transistor is in which region?

      (a) Active   (b) Cut-off   (c) Break down   (d) Saturation

7. What is the binary equivalent $(16)_{10}$
      (a) $(10001)_2$ (b) $(10000)_2$ (c) $(11011)_2$ (d) $(11001)_2$

8. BJT is a
      (a) unipolar device   (b) bipolar device
      (c) tripolar device   (d) none of the above

9. In frequency modulation, which quantity of electrical signal is varied?
      (a) frequency   (b) phase   (c) amplitude   (d) all the above

10. Radio broadcasting is a familiar example of

      (a) space multiplexing   (b) time multiplexing
      (c) frequency multiplexing   (d) none of the above

PART - B (5 x 2 = 10 Marks)

11. State Kirchoff's laws.

12. What are the different types of DC generator?

13. Define doping in semiconductor theory.

14. What are shift registers?

15. Define the term modulation.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the terms power and power factor in connection with AC circuits.   (8)

      (ii) Explain about construction and working of induction type energy meter.   (8)

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Or

(b) Explain the construction and working principle of Electro Dynamometer type Watt meters in detail. (16)

17. (a) (i) Explain the principle of operation of a DC motor. (8)

(ii) Derive the EMF equation of a DC generator. (8)

Or

(b) Explain the working principle of transformer with its construction details. (16)

18. (a) Discuss the operation of single phase diode bridge rectifier with neat diagram. (16)

Or

(b) Explain the working of the CE configuration of a BJT. (16)

19. (a) Draw the logic diagram, truth table and logic equations for the following gates
(1) NOT   (2) OR   (3) NAND   (4) NOR   (16)

Or

(b) (i) Design a Full Adder, construct the truth table, simplify the output equations and draw the logic diagram. (8)

(ii) Explain the operation of JK flip flop with suitable logic diagram. (8)

20. (a) (i) Mention the need for modulation in the communication system. (4)

(ii) Explain in detail about the amplitude modulation techniques used in communication systems. (12)

Or

(b) (i) Draw the block diagram of an AM transmitter and explain its operation. (8)

(ii) Explain the operation of a FM transmitter. (8)

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