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Question Paper Code: 42306

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

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. If 750 μA is flowing through 11 k Ω of resistance, what is the voltage drop across the resistor?
(a) 8.25 V (b) 82.5 V (c) 14.6 V (d) 146 V
2. Which of the following are integrating instruments?
(a) Ammeters (b) Voltmeters
(c) Wattmeters (d) Ampere-hour and watt-hour meters
3. 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
4. The brushes in the DC motor is made up of
(a) Carbon (b) Aluminium (c) Nichrome (d) Copper

5. The barrier potential for a silicon diode at 25°C is approximately
(a) 0.4V (b) 0.3V (c) 0.7V (d) 0.5V
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. Convert $(11110111)_2$ to Octal
(a) 267 (b) 367 (c) 376 (d) 276
8. What is the binary equivalent $(16)_{10}$
(a) $(10001)_2$ (b) $(10000)_2$ (c) $(11011)_2$ (d) $(11001)_2$
9. In transistor radio receivers the number of IF amplifier stages are
(a) 1 (b) 2 (c) 4 (d) 6
10. Video signals are transmitted through
(a) amplitude modulation
(b) frequency modulation
(c) Both amplitude and frequency modulation
(d) neither amplitude nor frequency modulation

PART - B (5 x 2 = 10 Marks)

11. A 120Ω resistor has a specified maximum power dissipation of 1W. Calculate the maximum current level.
12. What is back emf?
13. What is early effect?
14. Convert $7F8_H$ into Decimal.
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)

Or

- (b) Explain the construction and working principle of Electro Dynamometer type Watt meters in detail. (16)
17. (a) A 4 pole, wave wound generator having 40 slots and 10 conductors placed per slot. The flux per pole is 0.02 *wb*. Calculate the generated emf when the generator is drive at 1200 *rpm*. (16)

Or

- (b) Explain the construction and working principle of single phase transformer in detail. (16)
18. (a) Draw and explain Zener diode shunt voltage regulator with its line and load regulations. (16)

Or

- (b) Describe the construction and working principle of split phase and shaded pole single phase induction motor. (16)
19. (a) Briefly explain the working of JK flip flop. (16)

Or

- (b) Draw the logic diagram, truth table and logic equations for the following gates
(i) NOT (ii) OR (iii) NAND (iv) NOR. (16)

20. (a) With the help of block diagram describe the working of

(i) a typical TV transmitter (8)

(ii) a typical TV receiver. (8)

Or

(b) With block diagram, discuss about the satellite communication systems. Also specify its merits and demerits. (16)
