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Question Paper Code: 21007

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2014.

Second Semester

Civil Engineering

01UEE206- BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering)

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What are the limitations of ohm's law?
2. How an ammeter and voltmeter are connected in a circuit? Give the reason.
3. Why series motor cannot be started without any load?
4. Define transformation ratio.
5. What is doping of a semiconductor?
6. Why transistor is called as current controlled device?
7. Convert the decimal number 139_{10} into its equivalent binary number.
8. What is a counter?
9. What is meant by modulation?
10. Define numerical aperture.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) A line voltage of 400 V is applied to three phase star connected identical impedances each containing of a 4Ω resistance in series with 3Ω inductive reactance. Find (a) line current (b) total power supplied. (8)
- (ii) Explain the construction details and principle of operation of an attraction type moving iron instrument. (8)

Or

- (b) (i) Find the average value, rms value and form factor of a periodic wave having the following values for equal time intervals changing suddenly from one value to the next.
0, 5, 10, 20, 50, 60, 50, 20, 10, 5, 0, -5, -10, etc. (8)
- (ii) With a neat sketch explain the principle and operation of the instrument which is used to measure the electrical power consumed during a specific period. (8)
12. (a) Explain the principle, construction and working of a D.C motor. Also explain its types. (16)

Or

- (b) (i) A single phase, 25Hz transformer has 50 primary turns and 600 secondary turns. The cross sectional area of the core is 400sq.cm . If the primary of the transformer is connected to 230V supply, find (a) the secondary induced emf (b) the flux density (peak) in the core. (8)
- (ii) Explain the working of capacitor start single phase induction motor with suitable diagram. (8)
13. (a) (i) What is a Zener diode? Explain the operation of Zener diode and draw its characteristics. (8)
- (ii) Explain the operation of a full wave rectifier with neat diagram. (8)

Or

- (b) Draw and explain the input and output characteristics of CB, CE and CC configuration in Bipolar Junction Transistor. (16)

14. (a) (i) What are universal gates? Explain their principle of working with necessary truth table. (8)
- (ii) Write short notes on RS – flip flop and D – flip flop. (8)

Or

- (b) Write in detail about Analog to Digital converter and Full adder with necessary diagram. (16)
15. (a) (i) Write in detail about frequency modulated transmitter with neat block diagram. (8)
- (ii) With suitable diagram explain fibre optic communication system. (8)

Or

- (b) Draw the block diagram of a TV transmitter and TV receiver. Explain its working in detail. (16)
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