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**Question Paper Code : 21645**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Second Semester

Civil Engineering

GE 2151/EE 26/EE 1153/080280011/10133 EE 206 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Aeronautical, Automobile, Marine, Mechanical, Production, Chemical, Petroleum Engineering, Biotechnology, Polymer, Textile, Textile (Fashion), Plastic Technology, Environmental Engineering, Geoinformatics Engineering, Industrial Engineering, Industrial Engineering and Management, Manufacturing Engineering, Materials Science and Engineering, Mechanical and Automation Engineering, Mechatronics Engineering, Petrochemical Engineering, Chemical and Electrochemical Engineering, Petrochemical Technology, Pharmaceutical Technology and Textile Chemistry)

(Regulations 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the advantages of sinusoidal alternating quantity.
2. What do you mean by balanced load in a 3-phase circuit?
3. Write the principle of DC motor.
4. What is meant by Transformation Ratio?
5. What is cut-off region and saturation region?
6. Define operating point.
7. Find the following binary difference :

1011010 – 0101110

8. An active high S-R latch has a '1' on the S-input and '0' on the 'R' input. What state is the latch in?
9. Differentiate analog and digital signals.
10. Define Total internal reflection.

PART B — (5 × 16 = 80 marks)

11. (a) Describe Kirchoff's laws. For the circuit shown in the Figure Q.11.(a) determine the current through  $6\Omega$  resistor.

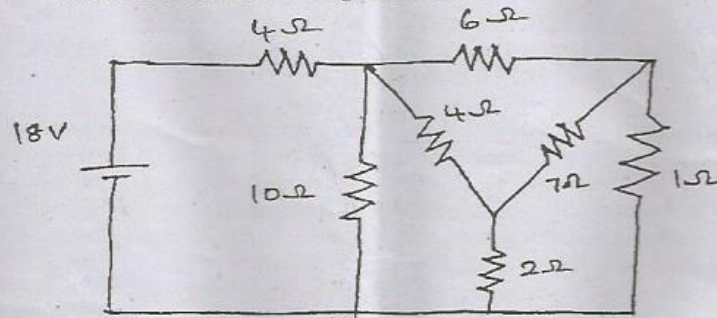


Figure Q.11. (a)

Or

- (b) (i) With the help of diagrams, explain the construction and working principle of permanent magnet moving coil instruments. Obtain an expression for its deflecting torque.
  - (ii) Explain the working principle of dynamometer type of wattmeter. Mention its disadvantages also.
12. (a) (i) Write short notes on-the types of DC machines. (8)
  - (ii) With neat diagrams explain the construction and principle of operation of a single phase transformer. What are the characteristics of an ideal transformer? (8)

Or

- (b) (i) (1) Explain the basic nature of the emf induced in the armature of a d.c. machine. (4)
- (2) How can the alternating current waveform in the armature be converted into a dc waveform? (4)
- (ii) A 200 V dc shunt motor takes a total current of 100 A and runs at 750 rpm. The resistance of the armature winding and of shunt field winding is 0.1 and  $40\Omega$  respectively. Find the torque developed by the armature. (8)

13. (a) Explain the working principle of Half wave and Full wave rectifier with neat waveform. (16)

Or

- (b) Explain the various characteristics of BJT in Common Emitter configuration with neat diagram. (16)
14. (a) Explain with neat diagram the JK and D Flip-Flops. (16)

Or

- (b) Write short notes on:
- (i) Registers and Counters (8)
  - (ii) A/D Conversion. (8)
15. (a) Explain the principle of Amplitude and Frequency modulation. (16)

Or

- (b) Draw and explain the functional block diagram of Monochrome TV transmitter and receiver. (16)