Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 71645

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 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, Material Science and Engineering, Mechanical and Automation Engineering, Mechatronics Engineering, Petrochemical Engineering, Chemical and Electrochemical Engineering, Petrochemical Technology, Pharmaceutical Technology and Textile Chemistry)

(Regulation 2008/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define R.M.S. value of an alternating quantity.

2. Name the essential torques required for the proper operation of indicating instrument.

3. An 8 pole, lap wound armature rotated at 350 rpm is required to generate 260 V. The useful flux/pole is 0.05 Wb. If the armature has 120 slots, calculate the number of conductors per slot.

4. What is the significance of back emf?

5. Compare PN junction diode and Zener diode.

6. What is effect of saturation of a transistor?

7. Convert $7F8_H$ into decimal.

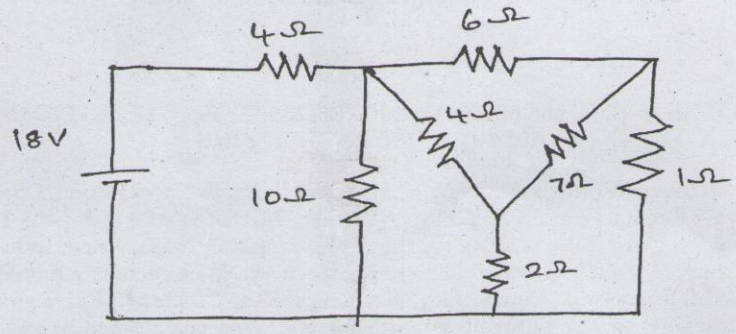
8. What is a flip flop?

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 below, determine the current through 6 Ω resistor



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) A 220-V D.C. series motor runs at 700 rpm when operating at its full-load current of 20 A. The motor resistance is 0.5 Ω and the magnetic circuit may be assumed unsaturated. What will be the speed if:

(i) Load torque is increased by 44%?

(ii) Motor current is 10 A?

(iii) Explain the operation and principle of a DC motor.

Or

(b) Explain the construction of single phase transformer.

13. (a) (i) Explain the operation of Full wave rectifier.

(ii) Derive the expression for RMS voltage, current, DC power, efficiency, PIV and TUF.

Or

(b) Explain the elementary treatment of small signal amplifier.

14. (a) (i) Realize and draw the logic diagram for the given function with minimum number of gates $\overline{A}B + ABC + A\overline{B}(B + C) + AB\overline{C}$.

(ii) Explain the operation and truth table of half adder with a neat diagram.

Or

(b) (i) Draw and explain operation of JK flip flop.

(ii) Describe the categorization and functioning of shift registers.

15. (a) Why modulation is necessary? Write in detail about frequency modulation.

Or

(b) Discuss the usage of satellite for long distance communication with a neat block diagram of basic satellite transponder.
