Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 80505

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Second Semester

Civil Engineering

GE 6252 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering (Sandwich)/Aeronautical Engineering/ Agriculture Engineering/Automobile Engineering/Civil Engineering/Environmental Engineering/Geoinformatics Engineering/Industrial Engineering/Industrial Engineering and Management/Manufacturing Engineering/Marine Engineering/Materials Science and Engineering/Mechanical Engineering/ Mechanical and Automation Engineering/Mechatronics Engineering/Petrochemical Engineering/Production Engineering/Robotics and Automation Engineering/Chemical Engineering /Chemical and Electrochemical Engineering/Fashion Technology/Food Technology/Handloom Technology/Petrochemical Technology/Petroleum Engineering/Plastic Technology/Polymer Technology/Textile Chemistry/Textile Technology/Textile Technology (Fashion Technology)

(Regulations 2013)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   State Ohm's Law.

2.   Compare the Moving Coil and Moving Iron instruments.

3.   Draw the circuit for various types of D.C. Motor.

4.   Define voltage regulation of a transformer.

5.   What is the difference between zener and avalanche breakdown?

6.   Define ripple factor.

7.   Explain universal gates.

8.   Convert $(63)_8$ to hexadecimal.

9.   Compare analog and digital signals.

10. Mention few applications of fiber optic communication systems.

PART B — (5 × 16 = 80 marks)

11. (a) For the give circuit, determine the current in 5 Ω resistor. (16)
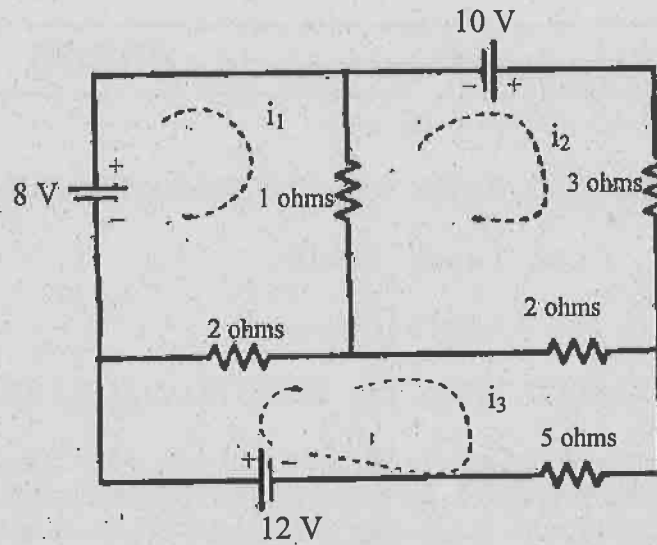
Or

(b) (i) Explain the construction and working of an Energy Meter. (12)

(ii) How do you extend the range of an ammeter and a voltmeter? (4)

12. (a) (i) With a neat diagram explain the construction and working of D.C. Motor. (12)

(ii) Derive the torque equation. (4)

Or

(b) Explain the construction and working of single phase Induction Motor. (16)

13. (a) (i) Explain the working of Zener diode and mention its applications. (8)

(ii) Draw the circuit diagram for half wave rectifier and explain its working. (8)

Or

(b) Explain the operation of NPN and PNP transistors. (16)

14. (a) (i) Prove the following Boolean identity

$$ABC + AB\overline{C} + \overline{A}B\overline{C} = B\left(A + \overline{C}\right)$$ (4)

(ii) Draw the full adder circuit. Explain with Truth Table and expression. (12)

Or

(b) With a neat diagram explain the working of binary ladder network for digital to analog conversion. (16)

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15. (a) Describe the principle of Amplitude and Frequency Modulation. (8+8)

Or

(b) (i) Draw the block diagram and explain the working of Satellite Communication Systems. (12)

(ii) Mention it merits and demerits. (4)

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