Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 80036

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Second Semester

Agriculture Engineering

BE 8251 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Civil Engineering, Environmental Engineering, Chemical and Electrochemical Engineering, Fashion Technology, Handloom and Textile Technology, Plastic Technology, Polymer Technology, Textile Chemistry, Textile Technology)

(Regulation 2017)

Time : Three hours   Maximum : 100 marks
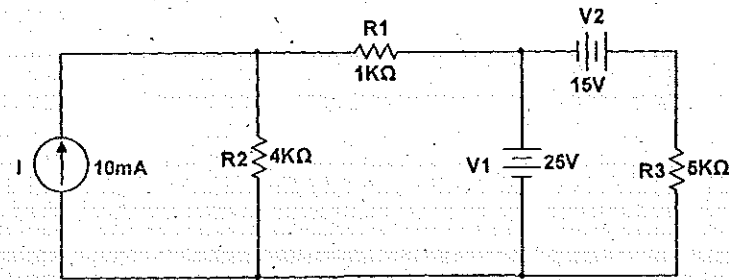
Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   State Thevenin's Theorem.

2.   List out the advantages and disadvantages of moving iron instruments.

3.   What is the use of commutator in DC generator?

4.   Why single phase induction motor is not a self starting motor.

5.   Define the term doping.

6.   Write a short note on CB characteristics of NPN transistor.

7.   Simplify the given equation and write how many minimum number of gates are required $F = A \cdot \bar{B} + A \cdot B + B \cdot C$.

8.   Distinguish between combinational and sequential logic circuits.

9.   Write a brief note on elements of communication system with a relevant diagram.

10.   State the principle of demodulation.

PART B — (5 × 13 = 65 marks)

11. (a) Find the voltage across 1 kΩ resistor using superposition theorem.

Or

(b) Explain the construction and working of Permanent Magnet Moving Coil (PMMC) instrument with neat diagram.

12. (a) Discuss the construction and working of DC generator with a relevant diagram and derive the EMF equation.

Or

(b) Explain any two different methods adopted to start a single phase induction motor with neat diagrams.

13. (a) Illustrate the operation and characteristics of Half and full wave rectifiers with neat circuit diagrams.

Or

(b) Elucidate the operation and characteristics of NPN transistors with CE Configuration with its characteristics diagram.

14. (a) Elaborate any three types of flip-flops with their logic diagrams and respective truth tables.

Or

(b) Discuss the working of any three types of A/D converters with neat diagrams.

15. (a) Explain in detail the principle of amplitude and Frequency Modulation with neat diagrams.

Or

(b) Discuss the operation and characteristics of the following communication systems with their block diagrams

    (i)   Antenna

    (ii) Microwave

    (iii) Satellite

PART C — (1 × 15 = 15 marks)

16. (a) Coil of resistance of 10 Ω and an inductance of 0.1 H is connected in series with a condenser of capacitance 150 μF across a 200 V, 50 Hz supply. Calculate (i) Inductive reactance of the coil (ii) Capacitive reactance (iii) net reactance (iv) Current and (v) power factor of the circuit.

Or

(b) List and analyze the basic laws and theorems of Boolean Algebra with appropriate expressions.