POLYTECHNIC, B.E/B.TECH, M.E/M.TECH, MBA, MCA & SCHOOL

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

Question Paper Code : 90204

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

Second Semester

Civil Engineering

BE 8251 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to : Agriculture Engineering/Environmental Engineering/ Chemical and Electrochemical Engineering/Fashion Technology/ Handloom and Textile Technology/Plastic Technology/Polymer Technology/ Textile Chemistry/Textile Technology)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Ohm' s law and its limitations.
2. Compare moving coil and moving iron instruments.
3. Why an induction motor is called as rotating transformer?
4. What is a transformer?
5. Define biasing.
6. What is meant by Avalanche breakdown?
7. State the De-morgan's theorem.
8. What are registers?
9. Draw the block diagram of a basic communication system.
10. List few advantages of optical fiber communication.

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PART B — (5 × 13 = 65 marks)

11. (a) Explain the construction and working of dynamometer type wattmeter. Mention its merits and demerits.

Or

(b) In Fig. Q. 11(b) calculate the equivalent resistance across terminals A-D and also find the source current.

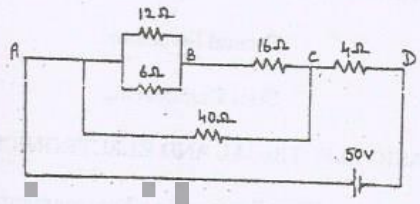

Fig. Q. 11(b)

12. (a) With a neat diagram, the construction and operation of DC generator.

Or

(b) Explain the operation and torque-speed, characteristics, any one type of single phase induction motor with suitable diagram.

13. (a) Explain the working common emitter configuration of BJT with input and output characteristics. Explain how the transistor parameters are obtained from the characteristics.

Or

(b) With a neat diagram explain the working of half wave rectifier with input and output wave forms. Also derive the ripple factor for the HWR.

14. (a) Draw a full adder circuit using logic gates. Explain the working with truth table. Also derive the expression for sum and carry.

Or

(b) Define flip flop. Draw and explain the operation of following flip-flops (i) SR flip-flop (ii) JK flip flop.

15. (a) Explain the working of satellite communication systems with the help of neat block diagram,.

Or

(b) Why modulation is necessary? Explain the types of analog modulation with neat diagrams.

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PART C — (1 × 15 = 15 marks)

In fig. Q. 16(a) determine current in the load resistor (10 Ω) using Thevenin's theorem.

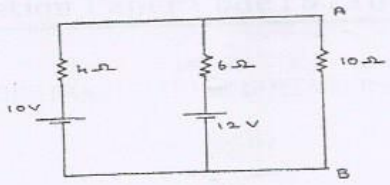

Fig. Q. 16(a)

Or

A 4-pole shunt DC generator is delivering 20A to a load of 10Ω. If the armature resistance is 0.5Ω and the shunt field resistance is 50Ω, calculate the induced emf and the efficiency of the machine. Allow a drop of 1V per brush.