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

CSE

Question Paper Code : 70037

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

Second Semester

Computer Science and Engineering

BE 3251 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to: B.E. Aeronautical Engineering/B.E. Aerospace Engineering/ B.E. Automobile Engineering/B.E. Biomedical Engineering/B.E. Computer and Communication Engineering/B.E. Industrial Engineering/B.E. Industrial Engineering and management/B.E. Manufacturing Engineering/B.E. Marine Engineering/B.E. Material Science and Engineering/B.E. Mechanical Engineering/B.E. Mechanical Engineering(Sandwich)/B.E. Medical Electronics/B.e. Production Engineering/B.E. Safety and Fire Engineering/B.Tech. Artificial Intelligence and Data Science/B.Tech. Computer Science and Business Systems/B.Tech. Information Technology)

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Parallel combination of three 3 Ω resistors, connected in series with parallel combination of two 2Ω resistors. Find the equivalent resistance of the circuit.

2. Write the equation for 25 cycles sine wave current having rms value of 30 A.

3. A 4 pole lap wound dc shunt generator rotates at the speed of 1500 rpm, has a flux of 0.4 mWb and the total number of conductors are 1000. Find the value of emf generated.

4. Differentiate step-up transformer and step-down transformer.

5. Draw the circuit for Zener voltage regulator.

6. JFET is a voltage operated device. Justify.

7. What do you mean by weighted binary code? Give an example.

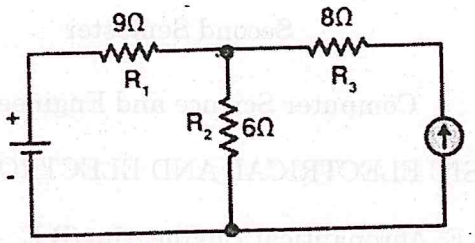
8. What is meant by combinational logic circuits? Give examples.

9. Mention the functional elements of a measuring system.

10. What do mean by resolution of a data acquisition system?

PART B — (5 × 13 = 65 marks)

11. (a) Using mesh analysis, determine the current and potential difference across each resistor in the given circuit. The battery has 90 V and the current source 5A.



Or

(b) Discuss about the working of RLC series circuit and derive the relationships. Give the necessary phasor Diagrams.

12. (a) Describe the principle of working of DC motor.

Or

(b) Describe about the construction of core type and shell type single phase transformers.

13. (a) Explain the operation of BJT in common emitter mode with its characteristics.

Or

(b) Describe the working of bridge rectifier. Derive its ripple factor.

14. (a) Explain about the error detection and correction codes.

Or

(b) Simplify the Boolean function, f(W,X,Y,Z)=WX'Y'+WY+W'YZ' using K-map.

15. (a) Describe the construction, working principle of PMMC instruments. Also derive the torque equation.

Or

(b) Describe the method to measure three phase power by two wattmeter method.

PART C — (1 × 15 = 15 marks)

16. (a) An AC circuit is composed of a serial connection of a resistor with resistance 50 Ω, a coil with inductance 0.3 H and a capacitor with capacitance 15 μF. The circuit is connected to an AC voltage source with amplitude 25 V and frequency 50 Hz. Determine the amplitude of electric current in the circuit and a phase difference between the voltage and the current. Draw the Phasor diagram of voltages and current in the circuit.

Or

(b) Design and explain the operation of full adder from its truth table.