Reg. No. :

Question Paper Code : 323253

B.E./B.Tech. DEGREE EXAMINATIONS April/May 2024

Second Semester

Electronics and Communication Engineering

GE23211 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to : Computer and Communication Engineering / Computer Science and Engineering / Artificial Intelligence and Machine Learning / Artificial Intelligence and Data Science / Computer Science and Business System)

(Regulations 2023)

Time : Three Hours | Maximum : 100 Marks

Answer ALL Questions

PART A— (10x2=20 Marks)

1. State Ohm's law.
2. An Electric iron is rated 1000W, 240V. Determine the current & resistance of the heating element.
3. Write the emf equation for D.C. Generator.
4. Define voltage regulation of a transformer.
5. Why is single phase induction motor not self-starting?
6. List the applications of squirrel cage induction motor.
7. Convert the following numbers to decimals.

   i) 237_8

   ii) $23F_{16}$
8. List the application of Zener diode.
9. What is standard? What are the different types of standards?
10. Why instruments be calibrated?

PART B— (5x13= 65 Marks)

11. (a) Determine the currents in bridge circuit by using mesh analysis shown in Fig.11(a).

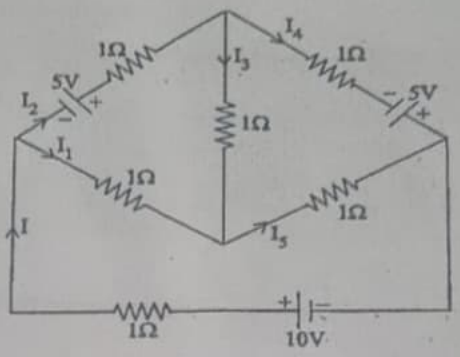

Fig.11(a)

Or

(b) A resistor of 20Ω, inductor of 0.2H and a capacitor of 150μF are connected in series and fed by 230V, 50Hz ac supply. Calculate (i) Inductive reactance (ii) Capacitive Reactance (iii) Impedance (iv) Current (v) Power factor (vi) Apparent power (vii) Active power (viii) Reactive power.

12. (a) With a neat sketch, explain the construction and working of DC Motor.

Or

(b) Brief about the construction and working of single phase transformer with a neat sketch.

13. (a) With a neat sketch, explain the Working of single phase Induction Motor.

Or

(b) Summarize the double revolving field theory as applied to single phase induction motor.

14. (a) i) Explain the operation of a PN Junction diode. (7)
ii) Draw the logic symbol and truth table of AND, OR and NAND gates. (6)

Or

(b) Examine the operation of half wave rectifier with neat sketch and derive the necessary expression.

15. (a) With neat sketch brief about the working principle of moving coil instruments.

Or

(b) i) Draw the block diagram of DSO and state the function of each block. (7)
ii) Write short notes on Data Acquisition. (6)

PART C — (1x15=15 Marks)

16. (a) Calculate the voltage across the 15Ω resister in the network shown in Fig. 16(a) using nodal analysis.

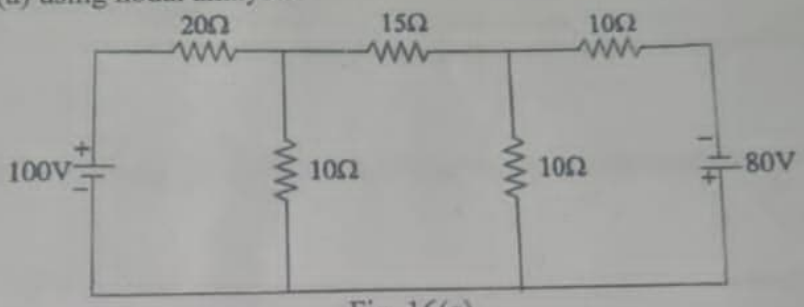

Fig. 16(a)

Or

(b) Explain the construction and operation of Moving Iron instruments.