SECTION – D

6. Define voltage regulation. Derive the equation for voltage regulation of 1-φ transformer at inductive load. **20**

7. Derive the equation for power in 3-φ star connected system. **20**

SECTION – E

8. Draw and explain the constructional features of 3 φ induction motors. **20**

9. Explain the construction and working principle of electrodynamometer type Wattmeter. **20**

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Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : (i) Attempt *five* questions in total.

(ii) Question No. 1 is *compulsory*.

(iii) Attempt *four* more questions from remaining four Sections (B, C, D & E) by selecting at least *one* question from each Section.

SECTION – A

1. (a) Describe how the direction of induced e. m. f. can be determined. **5**

(b) **Define :**

   (i) periodic function

   (ii) cycle

   (iii) time period of a sinusoidal signal   5

(c) Derive e.m.f. equation of 1-φ transformer.   5

(d) Derive e.m.f. equation of D. C. generator.   5

SECTION – B

2. Solve the circuit given below by using Nodal analysis :
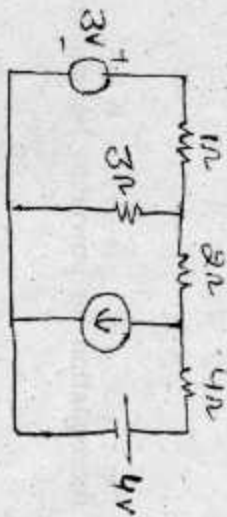

and find the value of current flowing through 4Ω resistance.   20

3. State and explain super position theorem. Find the value of current flowing through 3Ω resistance in the given circuit by using Norton's theorem :   20

SECTION – C

4. A 10Ω resistor is connected in series with a 100 μF capacitor to a 230 V, 50 Hz supply. Find :   20

   (a) Impedance

   (b) Current

   (c) Power factor

   (d) Phase angle

   (e) Voltage across the resistor and capacitor

5. State and explain Resonance in RLC series circuit. Differentiate between Acceptor and Rejector circuits.   20

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