

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2020**

**ELECTRICAL TECHNOLOGY**

[Maximum Marks: 75]

[Time: 2.15 Hours]

**PART-A**

(Answer *any three* questions in one or two sentences. Each question carries 2 marks)

- I. 1. State why earthing of equipments is important.  
2. What is meant by step up and step down transformer?  
3. Write the EMF equation of a DC generator.  
4. State Ohms law.  
5. Write some applications of servo motor. (3 x 2 = 6)

**PART-B**

(Answer *any four* of the following questions. Each question carries 6 marks)

- II 1. Explain the working of Megger with a neat diagram.  
2. With a neat diagram, explain the working principle of a transformer.  
3. With the help of neat circuit diagrams list different types of DC generators.  
4. Derive the EMF equation of an Alternator.  
5. Explain the working of an AC servo motor.  
6. Define the term – rms value of an AC current. Derive the rms value of a sine wave represented by  $i = I_m \sin(\omega t)$ .  
7. Explain the significance of Back EMF in DC motor. (4 x 6 = 24)

**PART-C**

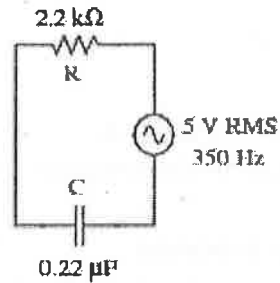
(Answer *any of the three units* from the following. Each full question carries 15 marks)

**UNIT – I**

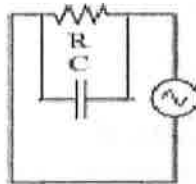
- III (a) Using neat diagrams explain the behavior of current and voltage in each elements and find the equation for resultant voltage. (10)  
(b) Draw the impedance triangle of a series RLC circuit and derive an equation for impedance and power factor. (5)

OR

- IV (a) Draw a phasor diagram showing the trigonometric relationship between resistance reactance and impedance in the series RC circuit shown below and find the total impedance. (8)



- (b) Find the impedance and current in the circuit given below, if  $V=5V$  rms,  $R=100$  ohms and  $X_c = 200$  ohms. (7)

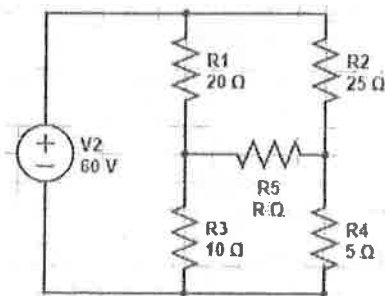


## UNIT – II

- V (a) State and explain krichoff's voltage law and current law. (8)
- (b) Derive the EMF equation of a transformer. (7)

OR

- VI (a) State the maximum power transfer theorem. Determine the maximum power that can be delivered to the variable resistor  $R$  in the circuit given below. (8)



- (b) Explain the types of losses in transformers. (7)

**UNIT- III**

- VII (a) Explain the function and necessity of starter in DC motor using relevant diagrams. (7)
- (b) With the help of neat diagrams explain the armature reaction in DC generator and state its adverse affects. (8)

**OR**

- VIII (a) Explain the working principle of DC motor using a neat diagram. (8)
- (b) Explain the working principle of DC Generator using a neat diagram. (7)

**UNIT - IV**

- IX (a) With the help of neat diagram explain the working principle of Alternator. (8)
- (b) What is a universal motor? With the help of a neat diagram explain its working principle. (7)

**OR**

- X (a) Explain the working principle of three phase induction motor. (7)
- (b) Explain the working of single phase induction motor. (8)

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