Basic Electrical Drives & Controls
(124114 / 214114)

P. Pages : 2

Time : Three Hours   **Max. Marks : 80**

Instructions to Candidates :
1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Figures to the right indicate full marks.
5. All questions are compulsory.
6. Assume suitable data, if necessary.
7. Use of non-programmable calculator is allowed.

1.   Attempt **any two.**

    a) Explain the effect of P. F. on Wattmeter Readings in Details.   **8**

    b) Explain the construction and working of single phase energy meters with neat lable diagram   **8**

    c) What is illumination ? Explain low of Inverse square law.   **8**

2.   Attempt **any two.**

    a) In a long - shunt compound generator, the terminal voltage is 230V when generator delivers 150 A. Determine :   **8**
       i)   Induced emf
       ii)   Total power generated &
       iii) Distribution of this power. Given that shunt field, series field, diverter and armature resistance are 92Ω, 0.015Ω, 0.03Ω and 0.032 respectively.

    b) Explain the characteristics of shunt, series and compount motors. Give the application of each.   **8**

    c) Explain the necessity of starter and type explain four point starter in details.   **8**

3.   Attempt **any two.**

   a) What is principle of transformer. Derive emf equation of transformer.   **8**

   b) Derive the torque equation of three phase induction motor and also derive the condition for maximum torque.   **8**

   c) Explain different type of starkers and application of induction motor.   **8**

4.   Attempt **any two.**

   a) Explain the construction and principle of operation of an alternator and also explain difference between salient pole type and non salient pole type rotors.   **8**

   b) Explain in details of voltage regulation of alternator by synchronous impedance method.   **8**

   c) Describe :   **8**
      i)   Emf equation.
      ii) Pitch factor
      iii) Distribution factor.

5.   Attempt **any two.**

   a) Explain with neat figure the major component of data acquisition system.   **8**

   b) Write short note on.   **8**
      i)   Proximity sensors.
      ii) Light sensors.

   c) i)   What is relay ? Explain any one electromechanical relay.   **5**
      ii) What are the advantages of solid state relay.   **3**

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