



# GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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Name of Examination : **Winter 2020** - (Preview)

Course Code & Course Name : **EE231U - Electrical Machines**

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Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

- 1) Solve any three questions from the following:
  - a) A 5 KVA, 500/250 V, 50 Hz, single phase transformer gave the following readings, [6]
 

O.C. Test : 500 V, 1 A, 50 W (L.V. side open)

S.C. Test : 25 V, 10 A, 60 W (L.V. side shorted)

Determine : i) The efficiency on full load, 0.8 lagging p.f., ii) The voltage regulation on full load, 0.8 leading p. f. and iii) Draw the equivalent circuit referred to primary and insert all the values in it.
  - b) Compare CT and PT. [6]
  - c) Which is the best suited DC Motor for constant speed operation? [6]
  - d) Give the significance of back emf in dc motors. [6]
- 2) Solve any three questions from the following:
  - a) A 4 pole dc shunt generator having a field and armature resistance of 100  $\Omega$  and 0.2  $\Omega$  respectively; supplies a load of 200 V and 20 A current. Find the emf induced armature winding. Allow 1 V per brush as brush contact drop. [6]
  - b) Give the advantages and dis-advantages of armature controlled speed control method of dc motors. [6]
  - c) Give working principle of 3- $\Phi$  induction motor. [6]
  - d) Describe DOL starting method of 3- $\Phi$  induction motor. [6]
- 3) Solve any three questions from the following:
  - a) Give the working principle and applications of split phase type of single phase inductions motors. [6]
  - b) Give the different methods of starting 3- $\Phi$  synchronous motor. [6]
  - c) Draw a neat diagram of three phase transformer connection and state its angular displacement. [6]
  - d) A three phase, 50 Hz synchronous generator has 200 conductors per phase. The flux per pole is 30 mWb and the winding factor is 0.96. What is the value of the line voltage if the stator winding is connected in i) delta and ii) star? [6]
- 4) Solve the following question:
  - a) How polarity tests are conducted on single phase transformer? [6]

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