* S F - 6 5 6 3 / 2 0 0 *

SF-6563

B. E. - II (Sem - IV) Examination

May / June – 2011

Electrical Technology (Mech.)

Time : Hours] [Total Marks :

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - II (Sem - IV)**

Name of the Subject :

☛ **Electrical Technology (Mech.)**

☛ Subject Code No. : **6 5 6 3** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Attempt all questions.

(3) Make suitable assumption wherever necessary.

(4) Figure to the right indicate full marks.

SECTION - I

1 (a) Give the folllowing answers : **15**

(1) Is Cu loss affected by power factor.

(2) Why does a d.c. motor sometimes spark on light load ?

(3) What will happen if field current and armature current are reversed ?

(4) How should a generator be started ?

(5) What is the standard direction of rotation of the d.c. generator ?

(6) A transformer work on the principle of _____.

(7) The _____ is a special transformer with only one winding.

(8) The area of hysteresis loop represents _____ loss.

(9) The voltage regulation of a transformer should be ideally _____ %.

(10) In the star-star connection of three phase transformer the phase shift between primary and secondary is _____.

(11) The armature conductor are made of _____.

(12) Pole produced the _____ when the field winding is excited.

(13) Brushes are made of _____.

(14) A motor converts _____ in to _____ energy.

(15) _____ method gives us the speed control below base speed.

(b) Derive the EMF equation of transformer. **5**

2 Explain and draw the load characteristics and magnetisation characteristics of generator. **15**

OR

2 (a) A 3-Φ, 1000 KVA, 6600/1100V transformer is delta connected on the primary and star connected on the secondary. The primary resitance per phase is 1.8 Ω and secondary resitance per phase is 0.025 Ω. Determine the efficiency when the secondary is supplying full load at 0.8 p.f. and the iron loss is 15 kW. **8**

(b) Explain diffferent types of D.C. machine and explain any one of them. **7**

3 Write short note : (any **three**) **15**

(1) Speed control of shunt motor

(2) Ward-Leonard system

(3) Speed control of series motor

(4) Parallel operation of transformer

(5) Four point starter

(6) Equivalent circuit of transformer.

SECTION - II

4 (a) Fill in the blanks : **5**

(1) _____ machines are known as asynchronous machines.

(2) The no. of poles required for a synchronous generator depends on the _____ and _____.

(3) _____ test is performed in synchronous impedance method.

(4) The torque in a D.C. series motor is given by T = _____.

(5) Stator is a _____ part of induction motor.

(b) Give the following answer : **15**

(1) Explain strating of synchronous motor.

(2) Explain blocked rotor test.

(3) Describe EMF equation of synchronous generation.

5 Attempt the following questions :

(a) Explain torque-slip characteristics of three phase induction motor. **8**

(b) An alternator has the following data : **7**

(1) No. of phases = 3.

(2) No. of slots on the armature = 90.

(3) No. of poles = 10.

(4) No. of conduction per slot = 8.

(5) Distribution factor = 0.965.

(6) Full pitch winding.

(7) Speed of alternator = 600 rpm.

(8) Flux per pole = 0.040 wb.

(9) Mode of connection of armature winding is star.

Determine the no load terminal voltage.

OR

5 Attempt the following questions :

(a) Describe torque equation of three-phase induction motor. **8**

(b) A six-pole synchronous generator has the following data :

(1) No. of slots = 30.

(2) No. of conductors per slot = 8.

(3) Speed = 1000 rpm.

(4) Flux per pole = 0.06 wb.

(5) Distribution factor = 0.965.

(6) All the conductors are in series determine the voltage generated in the synchronous generator.

6 Discuss briefly : (any **three**) **15**

(a) AC servo motor

(b) Hysterisis motor

(c) Reluctance motor

(d) Speed control of induction motor

(e) No load test.
