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[4757]-1037

S.E. (Electrical) (Second Semester) EXAMINATION, 2015

ELECTRICAL MACHINES-I

(2012 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :— (i) Answer *four* questions.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Use of electronic pocket calculator and steam tables is allowed.

(v) Assume suitable data, if necessary.

1. (a) With neat circuit diagrams, explain open circuit and short circuit tests on a single phase transformer for finding the voltage regulation and efficiency. [6]

(b) With neat circuit diagram, explain the V-V connection of transformers. State its merits and demerits. [6]

P.T.O.

Or

2. (a) Compare the two winding transformer with autotransformer. [3]
(b) Comment on various losses taking place in transformer. [3]
(c) With neat circuit diagram, explain the Scott connection of transformers to convert 3 phase supply into 2 phase supply. [6]
3. (a) Derive torque equation and speed equation in case of D.C. motor. [6]
(b) Explain the commutation process and its types in detail. [7]

Or

4. (a) Explain the role of commutator in D.C. motor along with the diagram. [7]
(b) Explain any *two* methods of speed control of d.c. shunt motor. [6]
5. (a) Explain the production of rotating mmf by 3-phase balanced voltage fed to a symmetrical 3-phase winding. [6]
(b) Explain power flow stages in case of three phase induction motor along with the diagram. [6]

Or

6. (a) A 14.71 kW, 4 pole, 50 Hz, 3-phase induction motor has friction and windage losses of 2% of the output power. The full load slip is 4%. Calculate rotor copper loss and output torque. [6]
- (b) Derive the condition for maximum starting torque in case of induction motor. [6]
7. (a) Draw the circuit diagram for conducting (i) No load test and (ii) Blocked rotor test on three phase induction motor. How are its equivalent circuit parameters computed using these tests ? [8]
- (b) Enlist various types of starters for three phase induction motor. With neat sketch, explain stator resistance starter along with its merits and demerits. [5]

Or

8. (a) Write step by step procedure to draw circle diagram from No Load test and blocked rotor test on three phase induction motor. [7]
- (b) Write a short note on soft starter for 3-ph induction motor. [6]