


SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

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QUESTION BANK (DESCRIPTIVE)
Subject with Code : EMT(15A01301)
Course & Branch: B.Tech-CE
Year & Sem: II-B.Tech & I-Sem
Regulation: R15
UNIT – III
AC Machines

- | | |
|---|-----|
| 1. a) Derive EMF equation of a transformer.[L4] | 5M |
| b) What are the various losses in the transformer? Explain briefly.[L1,L2] | 5M |
| 2. a) What is meant by slip speed and slip in an induction motor?[L1] | 5M |
| b) Explain constructional details of alternators?[L2] | 5M |
| 3. Explain OC and SC test of a single phase transformer?[L2] | 10M |
| 4. a) Define and explain efficiency, and losses in a transformer?[L1,L2] | 5M |
| b) A 2000/200 V, 20 KVA transformer has 66 turns in the secondary. Calculate the primary turns and secondary full load currents, neglecting losses.[L3] | 5M |
| 5. Explain the torque-slip characteristics of three phase induction motor?[L2] | 10M |
| 6. Describe the constructional details of transformer?[L2] | 10M |
| 7. a) Derive the torque equation for three phase induction motor?[L4] | 5M |
| b) A 3 phase, 4 pole 50Hz induction motor at standstill has 180V induced across its star connected terminals. The rotor resistance and standstill reactance per phase are 0.6Ω and 0.3Ω respectively. Calculate the speed when the rotor is drawing a current of 6A at a particular load. Also calculate the speed at which the torque is maximum and the corresponding value of the rotor.[L3] | 5M |
| 8. a) Explain the principle operation of transformer?[L2] | 5M |
| b) Obtain the condition for maximum efficiency of a transformer?[L4] | 5M |
| 9. a) Explain principle operation of alternator?[L2] | 5M |
| b) Derive EMF equation for an alternator?[L4] | 5M |
| 10. a) Why Dc-supply is not given to transformer?[L1] | 2M |
| b) What are the advantages of salient pole type of construction used for Synchronous machines?[L1] | 2M |
| c) Write down the equation for frequency of emf induced in an alternator.[L1] | 2M |

- d) What is meant by transformations ratio?[L1] 2M
- e) What is rotating magnetic field?[L1] 2M

Prepared by: **K.BHARGAVI**

9. A transformer has full-load copper loss of 400W. the copper loss at half full-load will be []
A) 50W B) 200W
C) 400W D) 100W
10. The efficiency of a power transformer can be determined indirectly by []
A) open-circuit test alone B) short circuit test alone
C) open circuit and short circuit test D) back-to-back test
11. A 12-pole, 3-phase induction motor runs at a speed of 485 rpm on a 50 Hz supply. The slip of the motor is []
A) 3% B) 0.3%
C) 4% D) 0.4%
12. When the stator supply voltage frequency is f , then the frequency of the rotor current is []
A) sf B) f
C) zero D) $2f$
13. The synchronous speed of a 3-phase induction motor having 6-poles and running at 970 rpm when connected to a 50Hz supply is []
A) 1500rpm B) 1000rpm
C) 1200rpm D) 3000rpm
14. The maximum torque developed by an induction motor depends upon the []
A) rotor reactance B) rotor resistance
C) length of the rotor D) size of the rotor
15. The 3-phase induction motor is so designed that the rotor should have.....under running conditions []
A) high resistance B) high reactance
C) low resistance D) large slip
16. The phase sequence of an alternator is RBY. The direction of its rotor rotation is reversed. The phase sequence will be []
A) RYB B) YRB
C) BRY D) both a & c
17. The type of rotor preferred for alternator driven by steam turbine is []
A) Cylindrical rotors B) slip ring rotor
C) Salient pole rotor D) squirrel cage rotor
18. For a P-pole machine, the relation between electrical degrees is []
A) $\theta_{elec} = 2/P \theta_{mech}$ B) $\theta_{elec} = 4/P \theta_{mech}$

will be []

A)120 B)110

C) 100 D) 50

40. Which winding in a transformer has more number of turns? []

A) Low voltage winding B) High voltage winding

C) Primary winding D) Secondary winding

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