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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(Electrical & Electronics Engg.) (2013 Onwards)/ B.Tech.(Electronics & Electrical Engg.) (2013 & Onwards)

(Sem.-4)

ELECTRICAL MACHINERY-II Subject Code : BTEEE-401 M.Code : 72385

Time: 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Answer briefly :

- 1. What are the advantages of cage type induction motor?
- 2. State the advantage of using capacitor start motor over a resistance split phase motor.
- 3. What is the necessity of computing voltage regulation of synchronous generator?
- 4. What are the various methods available for making single phase motor self starting?
- 5. Define distribution factor of the winding of the synchronous generator.
- 6. What are the different methods of finding out the voltage regulation of an alternator?
- 7. An alternator is used as synchronous condenser; under what conditions it should operate.
- 8. What is V curve of synchronous motor?
- 9. State the necessity of parallel operation of two alternators.
- 10. What is shaded pole motor?



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SECTION-B

- 11. Draw the equivalent circuit and phasor diagram to find out the Emf generated in synchronous generator for lagging power factor.
- 12. Explain the working principle of hysteresis motor.
- 13. Explain V curve and inverted V curve of synchronous motor with neat diagram.
- 14. A 3 phase induction motor runs at almost 1000 rpm at no load and 950 rpm at full load when supplied with power from a 50 Hz 3 phase line
 - a) How many poles have the motor?
 - b) What is the % slip at full load?
 - c) What is the corresponding frequency of rotor voltages?
 - d) What is the corresponding speed of rotor field with respect to rotor?
 - e) What is the corresponding speed of the rotor with respect to stator?
- 15. Explain the synchronoscope method for synchronising two alternators. Also give the conditions for synchronising the alternators.



- 16. A cage induction motor when started by means of a star-delta starter takes 180% of fullload line current and develops 35% of full-load torque at starting. Calculate the starting torque and current in terms of full-load values, if an auto-transformer with 75% tapping were employed.
- 17. The power input to a 6-pole, 50Hz. 3-phase induction motor is 700W at no-load and 10kW at full load. The no load copper losses may be assumed negligible, while the full load stator and rotor copper losses are 295 W and 310 W respectively. Find the full load speed, shaft torque and efficiency of the motor assuming rotational and core losses to be equal.
- 18. Explain the armature reaction in synchronous generator for :
 - a) Unity power factor,
 - b) Lagging power factor,
 - c) Leading power factor.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

2 | M-72385

(S2)-697