

13

TE Sem-VI - Electrical - CBSE - EMTII

28/11/17

QP CODE : 25664

(3 Hours)

Marks : 80

N.B. :

- 1: Q No 1 is compulsory;
- 2: Attempt any three from the remaining questions.
- 3: Figure to the right indicate full marks
- 4: Assume any suitable data if necessary & justify,
- 5: Answer to the questions should be grouped and written together

- Q1, a: Explain hunting of synchronous machine. What is the purpose of damper winding in synchronous machine? 20
- b. Compare salient pole and non salient pole synchronous machine.
- c. State advantages and disadvantages of short pitch winding, distributed winding in alternator and derive an expression for distribution factor.
- d. Describe the difference in construction of rotors of alternators used in hydroelectric plants and steam plants
- Q2, a: Explain steady state analysis of synchronous machine. 08
- b: Explain how armature reaction influences the field distribution of alternator for lagging & leading load power factor . 06
- c: Explain the method of finding regulation of alternator by synchronous impedance method. 06
- Q3, a: A three phase synchronous generator has per phase direct axis synch. Reactance of 1.0 pu and quadrature axis synchronous reactance of 0.65 pu .Draw the phasor diagram of the machine when operating at full load of 0.8 pf lagging and estimate (a) Load angle (b) pu no load emf, neglect armature resistance 08
- b. Explain V and inverted V curve of synchronous motor. 06
- c: What do you mean by synchronizing of alternator? Describe any one method of synchronizing 06

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- Q4, a: Derive the expression for armature to field mutual inductance and armature self inductance of salient pole synchronous machine. 08
- b: Calculate the speed and no load induced emf of a 4 pole 3 phase 50 Hz star connected alternator with 36 slot and 30 conductor per slot .the flux per pole is 0.05 wb sinusoidal distributed 06
- c: Explain slip test to measure x_d and x_q of salient pole synchronous machine 06
- Q5, a: Derive the commonly used expression for the power developed by salient pole synch. Motor 08
- b: The synch. reactance per phase of a three phase 6000 v star connected synch motor is 20Ω for a certain load the input power is 900 kw at normal voltage and induced line emf is 8500 volt determine the line current and pf of motor. 06
- c. Explain starting methods of synchronous motor 06
- Q6. Write Notes on (any two) 20
- (a) Effect of varying excitation on alternator connected to infinite bus bar
- (b) Power angle characteristics of alternator
- (c) Synchronizing power and synchronizing torque of synchronous machine
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