

EE-501 (GS)
B.E. V Semester Examination, June 2020
Grading System (GS)
Electrical Machine-II
Time : Three Hours

Maximum Marks : 70

Note: i) Answer any five questions.

ii) All questions carry equal marks.

1. Derive the emf equation of polyphase synchronous machine. Also explain the methods of harmonic elimination from emf waveform of alternator.
2. A 3-phase, 4-pole, star-connected turbo-alternator has a smooth cylindrical type rotor. The effective resistance and synchronous reactance per phase are 0.15Ω and 2.5Ω . Calculate the voltage regulation when delivering 250 A at 6.6 kV and at 0.6 p.f. lagging.
3. Explain how the induced emf in armature winding in alternators is affected by
 - i) Form factor
 - ii) Pitch factor and
 - iii) Distribution factor
4. Explain the two reaction theory pertaining to a salient pole synchronous machine and show how it can be used to predetermine the regulation of alternators.
5. What is synchronizing power? Derive equation for synchronizing power of cylindrical rotor and salient pole alternators.
6. Deduce Park's transformation relating the three phase currents of a synchronous machine to it corresponding d - q axes current.

OR

What is LIM? Obtain the expression of torque i.e. linear force for a single sided LIM.

7. Explain the following:
 - i) Switched reluctance motor
 - ii) PM brushless DC machine
- OR
- a) Describe synchronous condenser.
 - b) What do you understand by brush less generators?
8. Write short notes on any two of the following:
 - a) Linear machines
 - b) Park's and inverse Park's transformation
 - c) Testing of synchronous machine
 - d) V-curves