Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE) (Sem.–6)

SYNCHRONOUS MACHINE

Subject Code : EE-302

Paper ID : [A0419]

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

Q1. Answer briefly :

a. What do you understand from power factor?

b. Define mmf and emf.

c. What is distribution factor?

d. What is synchronous reactance?

e. What is grid?

f. List starting methods of synchronous motor.

g. What are hunting and damper winding?

h. List applications of synchronous motor.

i. What is effect of unequal voltages in alternators?

j. What is salient pole machine?

SECTION-B

Q2 What is single phase synchronous motor? How reluctance and hysteresis motors work? List their some applications also.

Q3 What do you understand from winding? Classify types of winding and discuss them in detail.

Q4 Explain the method of Z.P.F. How it differs from EMF method and MMF method?

Q5 What are alternators? Explain the operating characteristics of alternators.

Q6 What are the transients? What is the need of transient analysis? What are transient reactance and time constants? Explain with the help of equivalent circuits.

SECTION-C

Q7 Explain in detail the operating characteristics and power angle characteristics of synchronous motor. What is the condition for maximum power developed in synchronous motor? Differentiate between V curve and V inverted curve.

Q8 What are the excitation systems? How the sinusoidal emf is produced in synchronous motor?

Q9 What is the condition for parallel operation of alternators? Discuss the parallel operation of alternators. What is the effect of increasing excitation of one of the alternators?