Total No. of Printed Pages:2

SUBJECT CODE NO: E-104
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(EEP/EE/EEE) Examination Nov/Dec 2017
A.C. Machines
(OLD)

[Time: 3:00 Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
i. Q. No. 1 & Q. No. 6 are compulsory
ii. Solve any two question from Q. No. 2 to Q. No. 5
iii. Solve any two questions from Q. No. 7 to Q. No. 10
iv. Assume suitable data is required

Section A

Q.1 Attempt any five 10
a) A-3ph, 4 pole, 50Hz induction motor runs at 1000 rpm. Determine its percentage slip
b) What is plugging?
c) What are the factors affecting the speed of 3-ph induction motor?
d) Draw torque slip characteristics of 3-ph indication motor.
e) How would you reverse the direction of rotation of a capacitor start induction run motor?
f) Define the tern crawing
g) Why does slip vary with load?
h) What are the types of starters?

Q.2 a) A 3-ph, 44ov, 6-pole, 50Hz, induction motor mechanical of develops mechanical power of 20kw at 985 rpm calculate 05
i) the rotor copper loss
ii) the total input power &
iii) rotor frequency (f_2)

b) Derive the approximate equivalent circuit of 3-phase induction motor 05
c) Explain the working of double cage indication motor. 05

Q.3 a) Describe the operating principles of FHP synchronous motor, 05
b) Describe the construction & operating principles of servo motors 05
c) Draw equivalent circuit of 1-ph induction motor describing all parameters. 05

Q.4 a) Explain construction and working principles of repulsion motor. 05
b) What are the losses occur in 3-phase induction motor & state the factors on which that losses depends 05
c) Explain double field revolving theory. 05

Q.5 Write shorts notes on :
a) Capacitor start and capacitor run induction motor 05
b) Induction generator 05
c) Speed control methods of induction motors 05

Section B 10

Q.6 Attempt any five

a) Write the application synchronous motor
b) Draw the equivalent circuit of synchronous motor
c) What is phase swinging in synchrony motor
d) State the different methods of synchronizing the alternator
e) Define loked-rotor torque in synchronous motor
f) Why a 3-phase synchrony motor will always run at synchrony speed
g) What is the use of synchronous condenser
h) Draw vector diagram of loaded alternator for leading power factor.

Q.7
a) Derive the expression for power developed by synchronous motor 05
b) Explain working principles of synchronous motor 05
c) A synchronous motor absorbing 50kw is connected in parallel with a factory load 240 kw having a lagging p.f. of 0.8 of the combined load has a p.f. of 0.9 what is the value of leading KVAR supplied by motor and what p.f. it is working. 05

Q.8
a) Explain armature reaction in synchronous generator 05
b) Explain with neat sketch construction and working of 3-ph synchronous generator 05
c) Explain zero-power factor method for obtaining voltage regulation of alternator 05

Q.9
a) Explain different torque in synchrony motor 05
b) Explain the effect of harmonics on pitch and distribution factor of an alternator 05
c) Explain the effect of varying excitation on armature current and power factor 05

Q.10 Write shorts notes
a) Hunting and damping in synchronous motor 05
b) Starting methods of synchronous motor 05
c) E.M.F equation of Alternator. 05