C U SHAH UNIVERSITY

WADHWAN CITY

Subject :Advance Electrical Machine Sub Code:4TE04AEM1
Semester:4th EEE B.Tech, Regular Summer Examination 2015

SECTION-I

Q-1		07
(A)	Define :(1) Slip (2) voltage regulation	02
(B)	Draw the equivalent circuit of 3-phase induction motor.	02
(C)	Draw the figure of open delta connection.	02
(D)	Which is the usual cause of blow-outs in induction motors?	01
Q-2		14
(A)	Write the different steps to draw circle diagram.	04
(B)	Explain the Scott Connection of Three Phase Transformer.	05
(C)	Explain the starting of Induction motor with (i) Primary Resistors (ii) Autotransformer.	05

OR

Q-2		14
(A)	Write short note on Shaded pole induction motor.	04
(B)	Why the Single Phase induction motor is not self-starting? Explain the making of single phase induction motor self-starting.	05
(C)	Explain the Parallel operation of Three Phase Transformer.	05
Q-3		14
(A)	Explain the Double Field revolving theory of 1- Phase induction Motor.	07
(B)	Draw the circle diagram from no-load and short-circuit test of a 3-phase, 14.92 kW, 400 V, 6-pole induction motor from following test results(line values) No-load : 400 V, 11 A, p.f.= 0.2 Short circuit : 100 V, 25 A, p.f.= 0.4 Rotor cu loss at standstill is same as stator cu loss. From the circle diagram, find (i) line current, slip, efficiency and p.f. at full load (ii) the maximum torque	07

OR

Q-3		14
(A)	Draw the circle diagram for a 3-phase, 6-pole, 50 Hz, 400 V star connected induction motor from the following data (line values) No-load : 400 V, 10 A, 1400 W Short-circuit : 200 V, 55 A, 7000 W The stator cu loss at standstill is 60 % of the total cu loss and full load current is 30 A. From the circle diagram determine (i) slip, efficiency, p.f. Torque and output at full load (ii) the maximum torque.	07
(B)	Explain the Speed Control of Squirrel Cage Induction Motor.	07

SECTION-II

Q-4		07
(A)	Write applications of synchronous motor.	02
(B)	What are the different methods to measure voltage regulation of alternator?	02

(C)	Explain hunting in synchronous motor.	02
(D)	A stepping motor is a ……. device.(Fill the blank)	01
Q-5		14
(A)	Describe basic concept of alternator. Define and explain (i) Distribution factor (ii) Pitch factor	05
(B)	Explain MMF method to measure voltage regulation of alternator.	05
(C)	Explain the emf equation of alternator.	04

OR

Q-5		14
(A)	Give comparison between synchronous motor and inductance motor.	05
(B)	Explain the construction and working principle of Repulsion motor.	05
(C)	Explain the working of brushless DC motor.	04
Q-6		14
(A)	A 120 V, 60 Hz, ¼ hp universal motor runs at 2000 rpm and takes 0.6 amp when connected to a 120 V dc source. Determine speed, toque and power factor of the motor, when it is connected to a 120V, 60 Hz supply, and is loaded to take 0.6 amp(rms). The resistance and inductance measured at terminals of the machine are 20 ohm and 0.25 H respectively.	07
(B)	Explain the power developed by a synchronous motor.	07

OR

Q-6		14
(A)	Draw the Connection Three phase transformer (Dd0,Yy0,Dy1,Yd11,Yy6).	07
(B)	Explain effects of varying excitation on armature current and power factor in a synchronous motor. Draw "V" curves.	07