Enrollment No: _____ Exam Seat No: _____

C.U. SHAH UNIVERSITY

Summer Examination-2019

Subject Name: Electrical Machine-II

Subject Code: 4TE04EMC1 **Branch: B.Tech (Electrical)**

Semester: 4 **Date: 26/04/2019** **Time: 02:30 To 05:30** **Marks: 70**

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a) The term 'Cogging' is associated with **(01)**
(a) Three phase transformers
(b) Compound generators
(c) D.C. series motors
(d) Induction motors.

b) The number of slip rings on a squirrel cage induction motor is usually **(01)**
(a) Two
(b) Three
(c) Four
(d) None.

c) Slip rings are usually made of **(01)**
(a) Copper
(b) Carbon
(c) Phospor bronze
(d) Aluminum.

d) Which of the following connections is best suited for 3-phase, 4-wire service? **(01)**
(a) $\Delta - \Delta$
(b) $Y - Y$
(c) $\Delta - Y$
(d) $Y - \Delta$.

e) In Ns is the synchronous speed and S the slip, then actual running speed of an induction motor will be **(01)**
(a) Ns
(b) s.N
(c) (l-s)Ns
(d) (Ns-l) s.

f) An electric motor in which both the rotor and stator fields rotate with the same speed is called a/an .....motor. **(01)**
(a) d.c.

(b) charge
(c) synchronous
(d) universal.

g) If three transformers in a $\Delta - \Delta$ are delivering their rated load and one transformer is removed, then overload on each of the remaining transformers is ..... percent. **(01)**
(a) 66.7
(b) 173.2
(c) 73.2
(d) 58.

h) Define Slip in induction motor. **(01)**

i) Write advantages of 3 phase transformer. **(01)**

j) Draw Dy11 Connection of 3 phase transformer. **(01)**

k) Write principle of synchronous motor. **(01)**

l) Draw equivalent circuit of induction motor. **(01)**

m) Write equation of synchronous speed. **(01)**

n) Define effect of armature reaction in alternator. **(01)**

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

a) Explain different methods of speed control of three phase induction motor from stator side and rotor side. **(07)**

b) Write the different step to draw circle diagram. **(07)**

Q-3 **Attempt all questions** **(14)**

a) Discuss the effect of Crawling and Cogging in three phase induction motor. **(07)**

b) Explain the Scott connection for three phase transformer. **(07)**

Q-4 **Attempt all questions** **(14)**

a) Draw different connection of transformer: **(07)**
(i) Dd0 (ii) Yy0 (iii) Dd6 (iv) Yy6.

b) Explain the open delta connection for three phase transformer. **(07)**

Q-5 **Attempt all questions** **(14)**

a) 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 the following test results(line values) **(07)**
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 half the total cu loss. From the diagram, find (a) line current (b) slip and power factor at full-load..

b) Draw and explain construction of three phase transformer. **(07)**

Q-6 **Attempt all questions** **(14)**

a) Explain double field revolving theory of single phase induction motor. **(07)**

b) Why the 1 phase induction motor is not self-starting motor? Explain making single phase induction motor self-starting. **(07)**

Q-7		**Attempt all questions**	**(14)**
	a)	Write Short note on universal motor.	**(07)**
	b)	Compare Induction motor and Synchronous motor.	**(07)**
Q-8		**Attempt all questions**	**(14)**
	a)	Explain the working of alternator and detail construction of stator and rotor of alternator.	**(07)**
	b)	Explain e.m.f equation of Alternator.	**(07)**