Enrollment No: _____ Exam Seat No: _____

C.U. SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Electrical Machine-II

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

Semester :4 Date: 18/05/2016 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) Slip rings are usually made of
(a) copper
(b) carbon
(c) phospor bronze
(d) aluminium

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

c) A double squirrel-cage induction motor has
(a) two rotors moving in oppsite direction
(b) two parallel windings in stator
(c) two parallel windings in rotor
(d) two series windings in stator

d) The term 'cogging' is associated with
(a) three phase transformers
(b) compound generators
(c) D.C. series motors
(d) induction motors

e) The injected e.m.f. in the rotor of induction motor must have
(a) zero frequency
(b) the same frequency as the slip frequency
(c) the same phase as the rotor e.m.f.
(d) high value for the satisfactory speed control

f) It is advisable to avoid line-starting of induction motor and use starter because
(a) motor takes five to seven times its full load current
(b) it will pick-up very high speed and may go out of step

(c) it will run in reverse direction
(d) starting torque is very high

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.
(a) 66.7
(b) 173.2
(c) 73.2
(d) 58

h) When a closed $-\Delta$ bank is converted into an open $-\Delta$ bank, each of the two remaining transformers supplies ..... percent of the original load.
(a) 66.7
(b) 57.7
(c) 50
(d) 73.2

i) The biggest advantage of T - T connection over the V - V connection for 3-phase power transformation is that it provides
(a) a set of balanced voltages under load
(b) a true 3-phase, 4-wire system
(c) a higher ratio of utilization
(d) more voltages.

j) If the load p.f. is 0.866, then the average p.f. of the V – V bank is
(a) 0.886
(b) 0.75
(c) 0.51
(d) 0.65

k) A $T - T$ transformer cannot be paralleled with ..... transformer.
(a) $V - V$

(b) $Y - \Delta$
(c) $Y - Y$
(d) $\Delta - \Delta$

l) The main disadvantage of using short-pitch winding in alternators is that it
(a) reduces harmonics in the generated voltage
(b) reduces the total voltage around the armature coils
(c) produces asymmetry in the three phase windings
(d) increases Cu of end connections.

m) The winding of a 4-pole alternator having 36 slots and a coil span of 1 to 8 is short-pitched by ..... degrees.
(a) 140
(b) 80
(c) 20
(d) 40

n) The capacitor in a capacitor-start induction- run ac motor is connected in series with ..... winding.

(a) starting (b) running
(c) squirrel-cage (d) compensating.

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.	**7**
	b)	Explain Crawling and Cogging in three phase induction motor.	**7**
Q-3		**Attempt all questions**	**(14)**
	a)	Explain no load and block rotor test of induction motor.	**7**
	b)	Explain the Scott connection for three phase transformer.	**7**
Q-4		**Attempt all questions**	**(14)**
	a)	What is the procedure to draw the circle diagram for induction motor?	**7**
	b)	Explain double field revolving theory for single phase induction motor.	**7**
Q-5		**Attempt all questions**	**(14)**
	a)	A 3-phase,400V induction motor gave the following test readings: No load:400V,1250W,9A,Short circuit:150V,4kW,38A Draw the circle diagram. If the normal rating is 14.9kW,find the circle diagram, the full –load value of current, pf and slip.	**7**
	b)	Explain the effect of over excitation and under excitation on power factor on Synchronous motor.	**7**
Q-6		**Attempt all questions**	**(14)**
	a)	Explain power developed by a synchronous motor with neat diagram.	**7**
	b)	Explain the Open delta connection for three phase transformer.	**7**
Q-7		**Attempt all questions**	**(14)**
	a)	Write a note on Shaded pole Induction motor.	**7**
	b)	Compare Induction motor and Synchronous motor.	**7**
Q-8		**Attempt all questions**	**(14)**
	a)	What is Voltage regulation? Write different methods of voltage regulation in alternator and Explain any one method.	**7**
	b)	Explain e.m.f equation of Alternator.	**7**