Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name: Electrical Machines & Electronics
Subject Code: 4TE03EMN1 **Branch: B.Tech (**Automobile, Mechanical)
Semester: 3 **Date:**22/03/2018 **Time:** 2:30 To 5:30 **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) If field current is decreased in shunt dc motor, the speed of the motor **(1)**
(a) Remains same
(b) Increases
(c) Decreases
(d) None of the above.

b) Eddy current loss depends on **(1)**
(a) Frequency
(b) Flux density
(c) Thickness
(d) All of the above.

c) In a dc machine 4 pole lap winding is used. The numbers of parallel paths are **(1)**
(a)4
(b) 1
(c) 2
(d) 3

d) Diverters are used only in **(1)**
(a) Shunt motors
(b) Series motors
(c) Either of these
(d) None of the above.

e) In Ns is the synchronous speed and s the slip, then actual running speed of an induction motor will be **(1)**
(a) Ns
(b) SNs
(c) (l-s)Ns
(d) (Ns-l)s.

f) Slip rings are usually made of **(1)**
(a) Copper
(b) Carbon

(c) Phosphor bronze
(d) Aluminum

g) The frequency of voltage generated by an alternator having 4-poles and rotating at 1800 p.m. is .....Hertz **(1)**
(a) 60
(b) 7200
(c) 120
(d) 450.

h) Write e.m.f. equation of generator. **(1)**

i) How the eddy current losses are reduces in d.c. machine? **(1)**

j) Draw symbol of NAND and NOR gates. **(1)**

k) Write different types of tariffs. **(1)**

l) Draw pin diagram of 741 IC. **(1)**

m) What is function of inverting and non-inverting amplifier? **(1)**

n) Define slip and write its equation. **(1)**

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

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

a) Explain principle and working of simple loop d.c. generator **(7)**

b) Discuss different types of d.c. generators with neat and clean diagram. **(7)**

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

a) Derive e.m.f equation of single phase transformer. **(7)**

b) Explain speed control of d.c. shunt motor. **(7)**

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

a) What is difference between autotransformer and ordinary transformer? Write short note on autotransformer. **(7)**

b) Draw and explain various methods of measurement of slip. **(7)**

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

a) What are different conditions to connect two alternators in parallel? Explain parallel operation of two alternators. **(7)**

b) Explain advantages of high transmission voltage. **(7)**

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

a) Write and explain different equipment using for power factor improvement. **(7)**

b) Draw and explain (i) Half wave rectifier (ii) Full wave bridge rectifier. **(7)**

Q-7 **Attempt all questions** **(14)**

a) Write short note on De-Morgan's theorem with truth tables. **(7)**

b) What do you meant by most economical power factor? Explain in detail most economical power factor. **(7)**

Q-8 **Attempt all questions** **(14)**

a)	Classify different types of substations. Explain pole mounted substation with neat and clean diagram.	**(7)**
b)	Draw and explain three phase bridge rectifier.	**(7)**