

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.
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- 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 N_s is the synchronous speed and s the slip, then actual running speed of an induction motor will be (1)**
- (a) N_s
 - (b) $S N_s$
 - (c) $(1-s)N_s$
 - (d) $(N_s-1)s$.
- 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. isHertz (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)

