

R16

Code No: 133AN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, November/December - 2017

ELECTRICAL TECHNOLOGY

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) What is critical field resistance and critical speed of a d.c generator? [2]
- b) Write the expressions for core losses and remedial measures to reduce them in a dc machine. [3]
- c) What is the principle of operation of single phase transformer? [2]
- d) Derive the condition for maximum efficiency of a 1-phase transformer. [3]
- e) Define slip. [2]
- f) Define crawling and cogging. [3]
- g) Write the EMF equation of Alternator. [2]
- h) Define Distribution and Coil span factors. [3]
- i) What is the difference between Moving Coil and Moving iron Instruments? [2]
- j) What are the applications of stepper motor? [3]

PART-B**(50 Marks)**

- 2.a) Derive emf equation of dc generator.
 - b) Explain Magnetization and load characteristics of DC generators. [5+5]
- OR**
3. Discuss the various methods of speed control of a D.C motor. [10]
- 4.a) Derive an emf equation of a single phase transformer.
 - b) Explain about hysteresis and eddy current losses occur in a transformer. [5+5]
- OR**
5. A 10kVA, 1-phase, 50Hz, 500/250V transformer gave following test results:
OC test (LV) side: 250V, 3.0A, 200W
SC test (HV) side: 25V, 20A, 300W
Calculate efficiency and regulation at full-load, 0.8 p.f lagging. [10]
- 6.a) Explain Principle of operation of three-phase induction motors.
 - b) Distinguish the difference between squirrel cage and slip ring induction motor. [5+5]
- OR**
7. Explain different starting methods of 3-phase induction motor. [10]

8.a) Draw the phasor diagram of the synchronous generator on load. Explain the meaning synchronous reactance. [5+5]

b) Explain constructional features of alternator.

OR

9.a) Explain the Principle of operation of alternator. [5+5]

b) Write short notes on SC,OC tests on alternator.

10.a) Explain the construction and operation of an a.c. tachometer. [5+5]

b) How the shaded pole motor works explain in detail?

OR

11.a) Explain construction and working of moving coil instruments. [5+5]

b) What are the applications of synchro?

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