

R16

Code No: 133AN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year I Semester Examinations, February -2024

ELECTRICAL TECHNOLOGY
(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) What are the various losses of a d.c machine? [2]
- b) Why brushes are used in DC machines? [3]
- c) What is the function of core in transformer? [2]
- d) Explain the relationship between number of turns and current in transformer. [3]
- e) What is the value of slip during starting of induction motor? [2]
- f) What are the applications of induction motor? [3]
- g) What is the relationship between speed and frequency in alternator? [2]
- h) What are the types of alternators? [3]
- i) What are the examples of indicating instruments? [2]
- j) What is a synchro? Give its applications. [3]

PART – B

(50 Marks)

- 2.a) Describe in detail about flux control method of speed control of DC motors.
- b) Discuss about the construction of DC series machines. [5+5]

OR

- 3.a) What are the various characteristics of DC generators? Discuss.
- b) Explain the working of three point starter in detail. [5+5]

- 4.a) Discuss in detail about various types of transformers.
- b) The maximum flux density in the core of a 200/2000 V, 50 Hz single phase transformer is 2 Wb/m^2 . If the EMF per turn is 10 Volt, calculate the number of primary and secondary turns and the area of the core. [5+5]

OR

- 5.a) Explain the working transformer on load with the help of phasor diagram.
- b) A 5000/200 V, 75 kVA, single phase, 50 Hz transformer has core loss of 600 W and full load copper loss of 800 W. determine the kVA load for maximum efficiency and value of maximum efficiency at unity power factor. [5+5]

6. Explain the working of three phase induction motor in detail. Draw its torque-slip characteristics. [10]

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OR

- 7.a) Give the detailed construction of slip ring induction motor.
b) Explain the advantages and disadvantages of DOL starting of induction motors. [5+5]
- 8.a) How an alternator operate? Describe in detail.
b) Describe in detail about SC test on alternators. [5+5]

OR

- 9.a) Derive the EMF equation in alternators.
b) Discuss about distribution and coil span factors with the help of examples. [5+5]
- 10.a) Explain the working of shaded pole motor in detail.
b) Explain the working of AC servo motor in detail. [5+5]

OR

- 11.a) Explain the working of stepper motor in detail.
b) What is a moving iron instruments? What is its operation? [5+5]

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