



B.Tech II Year I Semester Supplementary Examinations, February 2021
ELECTRICAL TECHNOLOGY

(Electronics and Communication Engineering)

Maximum Marks: 70

Date: 24.02.2021 Duration: 3 hours

- Note: 1. This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 What is critical field resistance and critical speed of a d.c generator?
- 2 List the applications of DC motors?
- 3 Explain the working principle of the transformer.
- 4 Define regulation and efficiency of a transformer.
- 5 Is starters necessary for starting of 3-phase induction motors? Why?
- 6 Define slip.
- 7 Write the EMF equation of Alternator.
- 8 What do you mean by synchronous reactance?
- 9 What is use of Damping torque?
- 10 Compare spring control torque method with gravity control method.

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 Derive an expression for torque developed in the armature of DC motor. (10M)
OR
- 12 Discuss the various methods of speed control of a D.C motor. (10M)
- 13 a) Draw and explain the phasor diagram for a single phase transformer when it is connected to a inductive load? (5M)
b) Short-circuit test is conducted on a 5KVA, 400V/100 V single phase transformer with 100 V winding shorted. The input voltage at full load current is 40 V. The wattmeter, on the input reads 250 W. Find the power factor for which regulation at full load is zero. (5M)

OR

- 14 Explain the constructional features of a single phase transformer and further classify the transformers based on design. (10M)

- 14
- 15 Explain the construction and working principle of a 3-phase induction motor. (10M)
OR
- 16 Draw and discuss about the Torque-Slip characteristics of a 3-phase Induction Motor. (10M)
- 17 Explain in detail Synchronous Impedance method of Pre-determining regulation of an alternator. (10M)
OR
- 18 Explain constructional features of alternator. Derive its EMF Equation . (10M)
- 19 a) Compare Analog and Digital Instruments. (5M)
b) What are the different types of errors in measurement? Explain. (5M)
OR
- 20 Explain construction and working of Permanent Magnet moving coil instruments. (10M)