



Regulation R17

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code: 1P4BC

B.Tech II Year II Semester Supplementary Examinations, July 2022

ELECTRICAL MACHINES-II

(EEE)

Maximum Marks: 70

Date: 26.07.2022 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 are advantages of slip ring over squirrel cage rotor?
- 2 State the principle of 3-phase induction motor and why it is called as an asynchronous motor?
- 3 What is circle diagram of an induction motor?
- 4 List out the methods of speed control of squirrel cage type 3-phase induction motor
- 5 Write down the formula for distribution factor
- 6 What is synchronous reactance?
- 7 List the factors that affect the load sharing in parallel operating generators?
- 8 State the condition to be satisfied before connecting two alternators in parallel
- 9 Explain the phenomenon of hunting?
- 10 Give the working principle of universal motor?

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 Describe the principle construction and operation of Induction motor. [10]
OR
- 12 a) Develop an equivalent circuit of a 3 phase induction motor. What do the various parameters represent? [5]
b) Explain the torque-slip characteristics of 3 phase Induction motor. [5]
- 13 a) An 8 pole 50 Hz 3 phase slip ring induction motor has effective rotor resistance of 0.08 ohms per phase. Starting speed is 650 rpm. How much resistance must be inserted in the rotor phase to obtain the maximum torque at starting? Ignore the magnetizing current and stator leakage impedance. [5]
b) Define the term slip of an induction motor. Explain its significance. [5]
OR
- 14 Explain the various speed controlled methods of a 3-phase IM. [10]
- 15 a) What is armature reaction? With the help of neat diagrams explain its effect on main flux in synchronous machines. [5]

- b) Explain the following terms related 3-phase a.c. windings. [5]
i) Single-layer and double-layer windings.
ii) Full-pitch and short-pitch windings.
iii) Integral slot and fractional slot windings.

OR

- 16 What is meant by synchronization? Explain the way of synchronizing an alternator to the infinite bus bars. [10]
- 17 Explain briefly the principle of operation of 3-phase synchronous motor and mention applications of synchronous motor. [10]
- OR
- 18 Explain the different methods of starting of synchronous motors. [10]
- 19 Explain the operation of capacitance split phase induction motor. [10]

OR

- 20 a) Explain the working of a single induction motor. [5]
b) What is hunting and how it can be suppressed? [5]