Code No: 154AU **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, November/December - 2020
ELECTRICAL MACHINES – II
(Electrical and Electronics Engineering)

Time: 2 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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1. Explain in detail about the effect of variation in supply frequency and supply voltage on starting toque, synchronous speed, percentage slip and load current? [15]

2. Derive the condition for maximum torque developed in three phase induction motor. [15]

3.a) Explain the phenomenon Crawling in induction motors.
b) A 3 phase induction motor has a ratio of maximum torque to full load torque is 2.5:1. Determine the ratio of actual starting torque to full load torque for star delta starting. Take R_2=0.4Ω and X_2=4Ω. [7+8]

4. A 3 phase, 6 pole 50Hz star connected induction motor gave the following data (line values)
No load test: 400V, 9A, 1250W
Short circuit test: 200V, 50A, 6930W
Full load current 32 A
Stator loss at stand still = 0.55 times total copper loss.
Find the following: a) slip b) starting torque, full load torque c) maximum power factor d) maximum power output e) maximum torque in synchronous watts and corresponding slip. [15]

5. Give the constructional details of cylindrical and salient pole rotors used in alternators. [15]

6. A 1000KVA, 11KV, 3 phase 50Hz star connected turbo alternator has effective resistance of 2Ω/phase. The OCC and zero power factor full load data is given below.

Open circuit Voltage	5805	7000	12550	13755	15000
Field current (A)	40	50	110	140	180
Terminal voltage at full load Zero P.F.	0	1500	8500	10500	12400

Find percentage regulation at full load 0.8 pf lagging using zero power factor method. [15]

7. What is need for paralleling alternators? Write about necessary conditions for paralleling alternators. [15]

8.a) How single phase induction motor is made to self-start? Explain in detail.
b) Discuss about construction and operation of capacitor start capacitor run induction motor. [7+8]

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