NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Engineering and Technology
Program/s: B.Tech EEE
Year: 2nd   **Semester:** 3rd
Examination: End Semester Examination
Examination year: December - 2021

Course Code: EE 206   **Course Name:** Electrical Machine I
Date: 03/12/2021
Time: 10:30 am to 12:30 pm

Total Marks: 40
Total Pages: 1

Instructions:

→ Write each answer on a new page.
→ Use of a calculator is permitted.
→ Draw all relevant Diagrams.
→ * COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping

Q. No.	Attempt any Eight Questions	Marks	COs*	BTL#
Q.1	Why OC test and SC test are required in single phase transformer? Explain with circuit diagram.	5	CO3	BT1, BT2
Q.2	Draw and explain the equivalent circuit of single phase transformer.	5	CO3	BT1, BT2, BT3
Q.3	Explain Scott connection with diagram and give its application.	5	CO3, CO4	BT1, BT2, BT3
Q.4	A 25-kVA, 1-phase transformer, 2,200 volts to 220 volts, has a primary resistance of 1.0 Ω and a secondary resistance of 0.01 Ω. Find the equivalent secondary resistance and the full-load efficiency at 0.8 p.f. if the iron loss of the transformer is 80% of the full-load Cu loss.	5	CO3	BT2, BT3, BT4
Q.5	Give the classification types of DC generators and DC motors with relevant diagram.	5	CO1, CO2	BT1, BT2, BT3
Q.6	Give different characteristics and applications of various types of dc generators and dc motors.	5	CO1, CO2	BT1, BT2, BT3
Q.7	Why starter is required? Draw and explain 3-point starter for DC shunt motor.	5	CO2	BT2, BT3, BT4
Q.8	In a long-shunt compound generator, the terminal voltage is 230 V when generator delivers 150 A. Determine (i) induced e.m.f. (ii) total power generated and (iii) distribution of this power. Given that shunt field, series field, diverter and armature resistance are 92, 0.015, 0.03 and 0.032 respectively. Diverter is attached across the series winding.	5	CO2	BT2, BT3, BT4
Q.9	A 4-pole, 220-V shunt motor has 540 lap-wound conductor. It takes 32 A from the supply mains and develops output power of 5.595 kW. The field winding takes 1 A. The armature resistance is 0.09 Ω and the flux per pole is 30 mWb. Calculate (i) the speed and (ii) the torque developed in newton-metre.	5	CO1, CO2	BT2, BT3, BT4

***********End of Question Paper***********