Department of Computer Science & Engineering (CSE)
B.Sc. Engineering 2nd Year 2nd Semester Summer-2023
CT-01

Course Code: EEE 2265
Full Marks: 15

Course Title: Electrical Drives and Instrumentation
Time: 45 Minutes

Answer All the Questions

		Marks
Q.1	Define transformers? Discuss about transformer losses.	3
Q.2	A step-up transformer has a turn ratio of 0.5. Transformers' primary current and voltage rated as 10A and 2200V respectively. Transformer's winding parameters are given as $R_P = 15\Omega, X_P = 2.5\Omega$, $R_S = 25\Omega, X_S = 3\Omega$. Core resistance, $R_C = 1.5\Omega$ and Magnetizing reactance, $X_M = 2.75\Omega$. Draw the Exact Equivalent circuit of this transformer referred to the primary side.	4
Q.3	A shunt dc generator has output current of 450A at 250V output voltage. The shunt field and armature resistances are 50Ω and 0.025Ω respectively. Calculate the armature generated voltage.	4
Q.4	A series dc generator has an output voltage of 250V and delivers 15 KW output power. The series field and armature resistances are 0.3Ω and 0.02Ω respectively. Calculate the total armature generated power.	4

$P = E_A I_A$

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CT-02

Course Code: EEE 2265 **Course Title: Electrical Drives and Instrumentation**

Full Marks: 15 **Time: 45 Minutes**

Answer All the Questions Marks

Q.1 Define Slip. Draw the power flow diagram of induction motor. 3

Q.2 A 480V, 60 Hz, 50-hp, three phase induction motor is drawing 50A at 0.8 PF lagging. The stator copper losses are 2.5 kW, the rotor copper losses are 700W. The friction and windage losses are 600W, the core losses are 2000W, and the stray losses are negligible. Find (a) The air gap power P_{AG}, (b) The power converted P_{CONV}, (c) Output Power P_{OUT}. 4

Q.3 A shunt dc motor has a current load of 400A at 250V terminal voltage. The shunt field and armature resistances are 50Ω and 0.025Ω respectively. Calculate the armature generated voltage. 4

$V_t - (I_A \times R_A)$

Q.4 A 50-hp, 250V, 1500 r/min dc shunt motor has armature resistances of 0.08 Ω, and it produces a no-load speed of 1500 r/min. Find the speed of this motor when its input current is 100A & 200A 4

$R_F = 50\,\Omega$

$P_{conv} = P_{AG} - P_{rcl}$

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CT-03

Course Code: EEE 2265 **Course Title: Electrical Drives and Instrumentation**

Full Marks: 15 **Time: 45 Minutes**

Answer All the Questions Marks

Q.1 Draw three bulb connection method of parallel operation of synchronous generator. 3

Q.2 Draw a circuit diagram of an inverting amplifier. If the V_{in} =10mV, Input resistance R_1 = 5kΩ, feedback resistance R_f = 15kΩ, then find the voltage gain & V_o for the inverting amplifier. 4

Q.3 Draw a circuit diagram of a non-inverting amplifier. If the V_{in} =15V, Input resistance R_1 = 15kΩ, feedback resistance R_f = 3kΩ, then find the voltage gain & V_o for the non-inverting amplifier. 4

Q.4 Calculate the V_o and Current i_o through the resistor R_L for the following amplifier circuit. 4