

**SPPU In-Sem Offline Examination-April 2022**

Class: SE      Branch: Electrical      Semester: II

Subject: Electrical Machines-I (Code-203144)

Maximum Marks: 30

Duration: 60 Minutes

Date :05.04.2022

**Special Instructions:**

1. Attempt question Nos. 1 or 2, 3 or 4.
2. Draw neat sketch whenever necessary

Q.No.	Question / Description	Marks	CO
1	A) Derive emf equation of a single phase transformer	07	01
	B) A single phase transformer with a ratio of 440/110V takes a no load current of 5Amp at 0.2 pf lagging. If the secondary supplies a current of 120 Amp at 0.8 pf lagging, estimate the current taken by Primary.	08	02
<b>OR</b>			
2	A) Discuss transformer ratios and types of transformer	07	01
	B) A 25kVA 2200/110V transformer has $R_1=1.75\Omega$ , $R_2=0.0045\Omega$ . The leakage reactances are $X_1=2.6\Omega$ & $X_2=0.0075\Omega$ . Calculate (1) equivalent resistance referred to primary and secondary (2) equivalent reactance referred to primary and secondary (3) equivalent impedance referred to primary & secondary (4) Total copper loss	08	02
3	A) Explain OC & SC test of single phase transformer with neat sketch	07	01
	B) A 3 phase step down transformer is connected to 6.6kV main and takes 10A. Calculate the secondary line voltage, line current and output for following connections (1) Delta-delta (2) star-star (3) delta-star (4) star delta	08	02
<b>OR</b>			
4	A) Explain Polarity test of single phase transformer with neat sketch	07	01
	B) Two transformers are connected in open delta and supply a balanced 3 phase load of 240kW at 400V & 0.866 pf, determine (1) The secondary line current (2) The kVA load on each transformer (3) The power delivered by individual transformer (4) If a 3 <sup>rd</sup> transformer having the same rating as each of other two is added to form a delta bank, what total load can be supplied?	08	02