Board of Technical Education
2nd Mid Term Examination 2017-18

Sect. Code - EE - 306
Max Mark - 15
Date. 18.1.18

Sub: Electrical Machine - II
Time 1 Hrs.

Note - Attempt Any two questions Carry Equal Marks

Q-1 (1) Compare 3φ IM with 1 φ IM on ground of performance, Cost and Working for 5HP Ratings

Q.2 (2) Why and where shaded pole motor used explain its working principle.

Q.3 (3) Compare Repulsion motor with Induction motor (Sq. cage) on principle and use basis

Q.4 (4) Discuss Advantage of 3φ Sq. Cage motor over with 3φ Slip Ring Motor

$7\frac{1}{2} \times 2 = 15$

Examiner
GP.C Alwar

Answer Sheet EE-306

Q-1 Compare 3ϕ Induction Machine with 1ϕ I/M for same Rating of 5 H.P ?

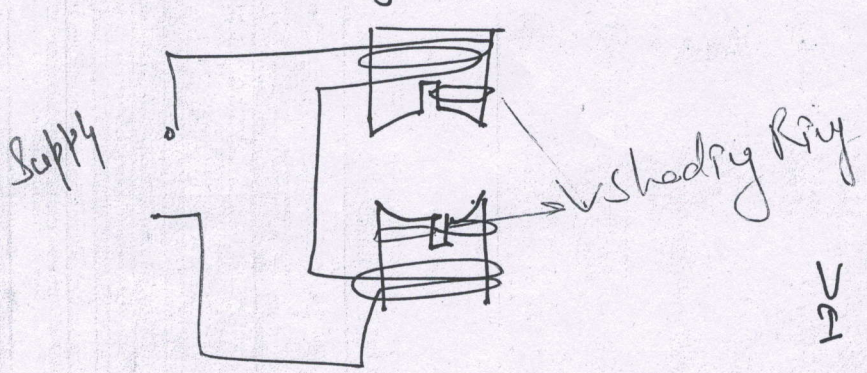
Ans-1

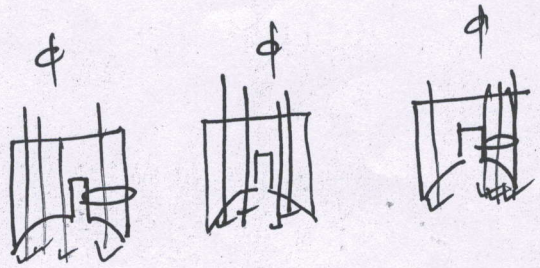
3 phase Induction M/c	1ϕ Induction M
(A) - Compact Size,	- Not A Self Starting M
- Smooth Running	- High Noise level
- Self starting	- large slip in Compa
- High Cost.	to 3ϕ I/M motor
- Starting and Max Torque Al.	- Limited Torque
- any speed possible for slip-	- portable and low C
- Ring Motor	

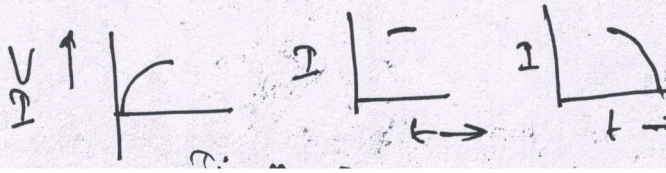
Q-2 Why and where shaded pole used. Explain its working principle ?

Ans.- Shaded pole motor normally used for simple Compact Construction available in low fiction kW (1/20 HP) etc Ratings. thats why it is good choice for Heat Blowers, Convection its maintance also simple.

working principle







As shown in figure the shadeling Ring behave like a Short ~~circ~~ circuited secondary of T/F Hence opposes the change in current. which in turn shift the line of force from one side of pole to another side. this direction of flow. followed by Rotor itself.

Q.3 Compare Repulsion Motor with Induction Motor 1φ Sq. Type on principle and uses basis

Repulsion Motor	1φ Induction I/M
Principle. Repulsion motor Receive Power from stator as Induction principle in which Rotor is provided with distributed winding and Commutator plus brush Assembly Brushed short-circuited each other.. current flow in Rotor Cause polarity similer to the Stator. that why a Repulsive force act between them between "Short Neutral" to ~~Head~~ "Hard-Neutral" Zone.	- In 1φ Sq. Ind m. Energy also Transfered by Induction principle but it produce a pulsating Tor on Rotor and Rot fails to start- Until Some oth Mean Not provi like Splitting of phase, shadding Ring on pole etc
Use - Initially in Traction but Now A days ~~1~~ 1φ is used in Inverter AC etc.	- Almost-every where. fan, Blower, washing Refrigerator etc.

Q.4 Discuss Advantage of 3ϕ Sq. Cage Motor ~~with~~ over 3ϕ Slip Ring Motor

Ans

3ϕ Squared Cage Motor	3ϕ Slip Ring Motor
— low Cost.	— Need Rotor winding and Slip Rings
— Compact Size	— wear & Tear in Rings and Brushes
— less Maintenance	— Torque Can be Controlled At any speed
— less vibration	— High Starting Torque
— easy to start No Speed/rc starter Needed for SHP Ratings	— Max. Torque Can be obtain At starting
— ~~Gm~~ Poor speed Regulation	— Speed Regulation possible
	— Costly
	— High Cost of Maintenan