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**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING  
MID TERM EXAMINATION - APR 2023**

**Semester :** Semester IV -2021

**Course Code :** EEE2017

**Course Name :** Sem IV - EEE2017 - Electrical Machines-II

**Program :** EEE

**Date :** 13-APR-2023

**Time :** 2:00PM - 3:30PM

**Max Marks :** 50

**Weightage :** 25%

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**Instructions:**

- (i) Read all questions carefully and answer accordingly.
  - (ii) Question paper consists of 3 parts.
  - (iii) Scientific and non-programmable calculator are permitted.
  - (iv) Do not write any information on the question paper other than Roll Number.
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**PART A**

**ANSWER ALL THE FIVE QUESTIONS**

**5 X 2=10M**

1. The rotor conductors of Squirrel cage IM are

a) connected to 3 slip rings

(CO1) [Knowledge]

b) short circuited, by the end rings

c) open circuited

d) connected to load directly

2. When 3-phase supply is given to the 3 phase winding of the IM ,

a) a rotating magnetic field of variable magnitude is produced

(CO1) [Knowledge]

b) a rotating magnetic field of constant magnitude is produced

c) a constant magnetic field of constant magnitude is produced

d) none of the above

3. Induction Motor is termed as Asynchronous Motor, because it always runs at a

a) Constant speed

(CO1) [Knowledge]

b) speed lesser than synchronous speed

c) speed Greater than synchronous speed

d) speed lower than Rotor Speed

4. The induction motor is fundamentally a transformer in which the stator is the primary and the rotor is  
 a) short-circuited secondary. (CO2) [Knowledge]  
 b) Open circuit secondary  
 c) Star connected load  
 d) Delta connected impedance
5. The frequency of rotor current is given by the equation  $f_r = \dots$  where  $S$  is the slip and  $f$  is the supply frequency  
 a)  $Sf^2$  (CO2) [Knowledge]  
 b)  $S^2 f$   
 c)  $f/S$   
 d)  $Sf$

### PART B

**ANSWER ALL THE TWO QUESTIONS**

**2 X 10 = 20M**

6. The torque slip characteristic of 3 phase IM is hyperbolic for large value of slip- Comment on the statement. Draw the characteristic and clearly indicate the effect of change in rotor resistance  
 (CO1) [Comprehension]
7. Develop the equivalent circuit for a 3 phase the Induction motor and explain how the mechanical power developed is taken care in this representation  
 (CO2) [Comprehension]

### PART C

**ANSWER THE FOLLOWING QUESTION**

**1 X 20 = 20M**

8. The power input to a 3 phase IM is 60kW, the stator losses is 1kW. Name the different losses that can be computed from the given data if the motor is running with a slip of 3%. Compute the mechanical power developed  
 (CO2) [Application]