

- Q.26 Explain the working principle of synchronous motor?  
(CO5)
- Q.27 Why is the stator core of alternator is laminated. (CO7)
- Q.28 Explain anyone methods of starting of a synchronous motors.  
(CO5)
- Q.29 Write a short note on capacitor start motor? (CO6)
- Q.30 What is the Principle operation of universal motor and also write its application. (CO6)
- Q.31 List five application of single phase Induction motor.  
(CO6)
- Q.32 Explains the working of two phase servo motor. (CO8)
- Q.33 Explain the construction and working of a PM stepper motor. (CO8)
- Q.34 Write down the necessary condition for parallel operation of an alternator. (CO7)
- Q.35 Explain the working principle of DC motor. (CO3)

#### Section-D

**Note:** Long answer questions. Attempt any two question out of three Questions. (2x10=20)

- Q.36 Explain construction and working principle of 3 phase Induction motor in details. (CO4)
- Q.37 Writes down the construction of various parts of DC machine with neat diagram. (CO3)
- Q.38 Explain & Draw the various characteristics of DC shunt motors. (CO3)

Note : Curs outcome/CO is for office use only.

No. of Printed Pages : 4  
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#### 4th Sem. Branch : Mechatronics Subject : DC & AC Machines

Time : 3 Hrs. M.M. : 100

#### SECTION-A

**Note:** Multiple type Questions. All Questions are compulsory. (10x1=10)

- Q.1 The relation between line current and phase current in star connection. (CO1)  
 a)  $I_L = I_{ph}$       b)  $I_L = 3I_{ph}$   
 c)  $I_L = \sqrt{3}I_{ph}$       d) None
- Q.2 The value of power factor for a pure inductive load is \_ (CO1)  
 a) 0      b) 1  
 c) 0.5      d) 2
- Q.3 Angle between stator field & rotor field is known as (CO2)  
 a) Power factor      b) Torque angle  
 c) Both A & B      d) None
- Q.4 Armature core of DC machines is made of - (CO3)  
 a) Silicon steel      b) Brass  
 c) Cast Iron      d) Carbon
- Q.5 Electrical machine which converts mechanical energy into electrical energy is known as (CO2)  
 a) Generator      b) Motor  
 c) Transformer      d) None

Q.6	Function of a starter-	(CO3)	
	a) To start the motor b) To start & stop the motor c) To limit the starting current d) To limit the applied voltage		
Q.7	Stator core of a 3-phase induction motor is laminated to reduces the-	(CO4)	
	a) Eddy current loss b) Hysteresis loss c) Both Eddy & Hysteresis loss d) Weight of the stator		
Q.8	Motor used in control system are called-	(CO8)	
	a) Servo motor                  b) Toy motor c) Quick motor                  d) None		
Q.9	Motor in which the rotor turns in discrete movement is called-	(CO8)	
	a) Servo motor                  b) Linear Induction motor c) Stepper motor                d) Universal motor		
Q.10	The frequency of voltage generated in large alternators in India is-	(CO7)	
	a) 0Hz                          b) 25 Hz c) 60 Hz                        d) 50 Hz		

### Section-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 The direction of 3-phase induction motor can be reversed by\_\_\_\_\_.
- Q.12 Define the generator.

- Q.13 The rating of Alternator is usually expressed in\_\_\_\_\_.
- Q.14 Gives any two application of slip ring induction motor.
- Q.15 Torque developed due to alignment of the two field will be maximum when the torque angle is\_\_\_\_\_.
- Q.16 The commutator segment of DC machine is made of \_\_\_\_\_ material.
- Q.17 Fleming's R.H.R is used to determine the direction of force (True/False)
- Q.18 Write anyone application of DC series motor.
- Q.19 Rotor of PM stepper motor contains \_\_\_\_\_ poles.
- Q.20 The best suited motor for electric traction is \_\_\_\_\_.(CO3)

### Section-C

**Note:** Short answer type Question. Attempt any twelve questions out of fifteen Questions. (12x5=60)

- Q.21 What are the advantages of 3-phase system over single phase system.
- Q.22 Write relation between line & Phase voltage and line current & Phase current in delta connection.
- Q.23 Write a short note on stepper motor and its application.
- Q.24 Explain anyone methods of speed control of Induction motor.
- Q.25 Writes comparison between 3-phase induction motor & 3 phase synchronous motor.