

Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2018
EE2CO06 Electrical Machines-II

Programme: Diploma

Branch/Specialisation: EE

Duration: 3 Hrs.**Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

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|-----|-------|--|----------|
| Q.1 | i. | The number of slip-rings on wound rotor induction motor is usually. | 1 |
| | | (a) Two (b) Three (c) Four (d) None of these | |
| | ii. | Synchronous speed of induction motor is. | 1 |
| | | (a) Stator flux speed (b) Rotor speed
(c) Both (a) and (b) (d) None of these | |
| | iii. | The speed of a 4-pole 60 Hz synchronous motor will be. | 1 |
| | | (a) 1800 r.p.m. (b) 2400 r.p.m.
(c) 3000 r.p.m. (d) 3600 r.p.m. | |
| | iv. | The power developed by synchronous motor will be maximum when the load angle is. | 1 |
| | | (a) Zero degree (b) 45 degree
(c) 90 degree (d) 120 degree | |
| | v. | The frequency of voltage generated in large alternator is. | 1 |
| | | (a) 50 Hz (b) 100 Hz
(c) In kilo cycles (d) In mega cycles | |
| | vi. | The number of poles in turbo-alternators is usually. | 1 |
| | | (a) 2 (b) 4 (c)12 (d) 50 | |
| | vii. | A single phase induction motor is | 1 |
| | | (a) Self starting (b) Not a self starting
(c) Both (a) and (b) (d) None of these | |
| | viii. | Double revolving field theory concept used in | 1 |
| | | (a) Single phase induction motor
(b) Three phase induction motor
(c) Reluctance motor
(d) Synchronous motor | |

P.T.O.

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- ix. A universal motor can run **1**
(a) A.C. only (b) D.C. only
(c) Either A.C. or D.C. (d) None of these
- x. A reluctance motor is. **1**
(a) Self-starting (b) Constant speed motor
(c) Need no D.C. excitation (d) All of these
- Q.2 i. Define the synchronous speed of 3-phase induction motor with formula. **2**
ii. Give the difference between squirrel cage and slip-ring 3-phase induction motor. **3**
iii. Draw and explain the torque-slip characteristics of 3-phase induction motor. **5**
- OR iv. Why starter is used in 3-phase induction motor also explain the working of star-delta starter. **5**
- Q.3 i. Write the effect of change in excitation in synchronous motor. **2**
ii. Write the working principle of synchronous motor. **3**
iii. Draw and explain the V curve of synchronous motor. **5**
- OR iv. Define hunting phenomenon of synchronous motor and write its prevention. **5**
- Q.4 i. What is alternator? write its type also. **2**
ii. Draw the power-angle characteristics of synchronous generator. **3**
iii. Draw and explain the open circuit characteristics (O.C.C.) of synchronous generator. **5**
- OR iv. Define the distribution factor, pitch factor, synchronous impedance and voltage regulation of synchronous generator **5**
- Q.5 i. Give the types of single phase induction motor. **2**
ii. Compare the three phase induction motor with single phase induction motors with reference to rating, application and operation. **3**
iii. What is double revolving field theory. also draw the circuit diagram of single phase induction motor **5**
- OR iv. Draw the torque-speed characteristics of single phase induction motor and also give applications. **5**

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- Q.6 Attempt any two:
- i. Explain with working principle and application of universal motor. **5**
ii. Explain with working principle and application of stepper motor. **5**
iii. Explain with working principle and application of repulsion motor. **5**

Marking Scheme
EE2CO06 Electrical Machines-II

Q.1	i.	The number of slip-rings on wound rotor induction motor is usually. (b) Three	1			
	ii.	Synchronous speed of induction motor is. (a) Stator flux speed	1			
	iii.	The speed of a 4-pole 60 Hz synchronous motor will be. (a) 1800 r.p.m	1			
	iv.	The power developed by synchronous motor will be maximum when the load angle is. (c) 90 degree	1			
	v.	The frequency of voltage generated in large alternator is. (a) 50 Hz	1			
	vi.	The no of poles in turbo-alternators is usually. (a) 2	1			
	vii.	A single phase induction motor is (b) Not a self starting	1			
	viii.	Double revolving field theory concept used in (a) Single phase induction motor	1			
	ix.	A universal motor can run (c) Either A.C. or D.C.	1			
	x.	A reluctance motor is. (d) All of above	1			
Q.2	i.	For Definetion	- 1 mark	2		
		For formula.	- 1 mark			
	ii.	Each difference	- 1 mark	3		
			(1 mark * 3)			
	iii.	Torque-Slip characteristics	- 3 marks.	5		
		Explanation	- 2 marks			
OR	iv.	Why starter is used in 3-phase induction motor	- 2 marks	5		
		Working of star-delta starter	- 3 marks			
Q.3	i.	Each point (0.5 mark * 4)	- 0.5 mark	2		
	ii.	Working principle	- 3 Marks	3		
	iii.	V curve of synchronous motor	- 3 marks	5		
		Explanation	- 2 marks			
OR	iv	Hunting phenomenon	- 3 marks	5		
		Prevention	- 2 marks			
Q.4	i.	Definetion	- 1 mark	2		
		Type	- 1 mark			
	ii.	Power-angle characteristics	- 3 marks	3		
	iii.	Characteristics (O.C.C.)	- 3 marks	5		
		Explanation	- 2 marks			
OR	iv	Each definetion	- 1.25 marks	5		
		(1.25 marks * 4)				
Q.5	i.	Types	- 2 marks	2		
	ii.	Each comparision (1 mark * 3 = 3 marks)	- 1 mark	3		
	iii.	Double revolving field theory	- 3 marks	5		
		Circuit diagram	- 2 marks			
OR	iv	Torque –speed characteristics	- 3 marks	5		
		Applications	- 2 marks			
Q.6		Attempt any two-				
	i.	Working principle	- 2.5 marks	5		
		Application	- 2.5 marks			
	ii.	Working principle	- 2.5 marks	5		
		Application	- 2.5 marks			
	iii.	Working principle	- 2.5 marks	5		
		Application	- 2.5 marks			
