**Internal Examination – II**

**Sub : Special Electrical Machines** (PE 502 EE) **Time:** 1 Hr.

**Class:** B E – VII Semester - EEE - Sec -A & B Academic Year : 2021-22

**Max Marks:** 20

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**Part – A**

**Answer all questions (3 X 2 = 6 Marks)**

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| --- | --- | --- | --- | --- |
| **S. No.** | **Questions** | **Marks** | **CO** | **BL** |
| **1** | Compare Conventional Synchronous motor and PMBLDC motor? | 2 | CO4 | 2 |
| **2** | Write down the torque equation of BLDC motor | 2 | CO3 | 5 |
| **3** | Formulae for Linear synchronous speed of Linear Induction motor | 2 | CO5 | 1 |

**Part – B**

**Answer any two questions (2 X 7 = 14 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Questions** | **Marks** | **CO** | **BL** |
| **4** | Explain the operation of BLDC square wave motor with 180 degree magnet arc | 7 | CO4 | 3 |
| **5** | A three phase, four pole star connected synchronous motor has 72 slots with 20 conductors per slot. The flux/pole is 0.05 wb and the speed is 1500 rpm. Assuming the full pitched coil, find the line and phase voltage. | 7 | CO4 | 4 |
| **6** | Derive the thrust equation of Linear Induction motor? | 7 | CO5 | 3 |

**Objective Question paper**

**Sub : Special Electrical Machines** (PE 502 EE) **Time:** 10 mts.

**Class:** B E – VII Semester - EEE - Sec -A & B Academic Year : 2021-22

**Max Marks:** 5( Each carries 0.5 mark)

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1. The Hall effect sensor is used as the rotor position sensor for the BLDC motor.  
   a) True  
   b) False
2. In BLDC motor armature windings are placed on the stator side.  
   a) True  
   b) False
3. BLDC motor is analogous to \_\_\_\_\_\_\_\_\_\_\_\_\_\_  
   a) Permanent magnet synchronous motor  
   b) DC motor  
   c) Rotating Transformer  
   d) Single-phase Induction motor
4. The speed of a BLDC motor can be controlled by \_\_\_\_\_\_\_\_\_\_  
   a) Changing input DC voltage  
   b) Changing temperature  
   c) Changing wind direction  
   d) Cannot be controlled
5. Which are the advantages of BLDC motor?  
   I. Low cost  
   II. Simplicity  
   III. Reliability  
   IV. Good performance  
   a) I, II, III, IV  
   b) I, II  
   c) I, II, IV  
   d) II, III, IV
6. The torque angle, in a synchronous motor, is the angle between
7. The supply voltage and the back e.m.f.
8. Magnetizing current and back e.m.f.
9. The rotating stator flux and rotor poles
10. None of the above
11. The size of a synchronous motor decreases with the increase in
12. Flux density
13. Horse power rating
14. Speed
15. All of the above
16. In a synchronous motor, the magnitude of stator back e.m.f. Eb depends on

a) Load on the motor

b) DC excitation only

c) Both the speed and the rotor flux

d) None of the above

1. The coupling angle or load angle of synchronous motor is defined as the angle between the
2. Rotor and stator teeth
3. Rotor and stator poles of opposite polarity
4. Rotor and stator poles of same polarity
5. None of the above
6. The coupling angle or load angle of synchronous motor is defined as the angle between the
7. 00
8. 450
9. 900
10. 1200