**SSM INSTIUTE OF ENGINEERING AND TECHNOLOGY**
**Unit test – I (SET-B)**
**Department of Electrical & Electronics Engineering**

**EE 6703 – SPECIAL ELECTRICAL MACHINES**
(Answer all questions)

1. **How the synchronous reluctance motor so better compare with synchronous motor?**
   a) Low cost b) power factor
   c) Self-start d) small size
2. **What is the type of Synchronous reluctance motor?**
   a) Poly phase motor b) two phase motor
   b) Three phase motor d) All of the above
3. **Which is singly excited motor**
   a) DC shunt motor b) DC series motor
   c) Synchronous motor d) synchronous reluctance motor
4. **Which of the following motors is generally used for turntables?**
   a) Universal motor b) Shaded-pole motor
   c) Reluctance motor d) Hysteresis motor
5. **Which of the following motors is generally used in synchronized conveyors**
   a) Reluctance motor b) Hysteresis motor
   c) Shaded-pole motor d) Two-value capacitor motor
6. **What is the angle between stator d- axis and q- axis?**
   a)90° b)0°
   c)45° d)any of the mentioned
7. **When Load angle is being constant**
   a)Constant Vs b)Constant frequency
   c)Constant flux linkage d)none of the mentioned
8. **The reluctance offered to the stator flux by two very large air gaps in series with high permeability iron, in reluctance machine is maxi, when the space angle $\theta_r$ = _____**
   a) 0° b) 45°
   c) 90° d) 180°
9. **Why synchronous reluctance motor having two different reactance**
   a) Axial rotor b) Radial rotor
   c) salient pole rotor d) all of the above
10. **How is the relationship between no stator and rotor poles…**
    a) Both are equal b) stator pole <rotor pole
    c) stator poles > rotor poles d) Both are not equal
11. **How is the relationship between flux linkage and slip speed**
    a) Independent b) Direct proportional
    c) Indirect proportional d) any of mentioned
12. **when reluctance motor gives maximum average torque**
    a) **δ = 45°** b) **δ**= 90°
    c) **δ**=0° d) **δ**=180°
    *Explanation: The equation for average torque is $T_{e(av)}=(1/8)\square_{max}^{2}(Rl_q - Rl_d)\sin(2\delta)$, and it is maximum when δ=45°*
13. **what about the value resistance losses in reluctance motor**
    a) constant b) varying
    c) zero d) any of the mentioned
14. **when single phase reluctance machine acts as generator**
    a) **δ**=positive b) **δ**= negative
    c) **δ**=zero d) any of the mentioned
    *Explanation: If δ is positive, then the machine acts as a motor and if δ is negative, the machine acts as a generator*
15. **In which applications synchronous reluctance motors are used**
    a) grinder applications b) timing devices
    c) welding applications d) elevators
    *Explanation: The single phase reluctance motors operate at constant synchronous speed, in case the supply frequency remains constant, and hence timing devices mostly use these motors*
16. **If the salient pole rotor in a single phase reluctance motor is replaced by a cylindrical rotor, then**
    (i) reluctance offered to stator flux remains constant for all rotor positions
    (ii) no reluctance torque will be developed
    (iii) reluctance torque will be developed
    (iv) reluctance offered to stator flux changes for all rotor positions

Which of the above statements are true?

a) (i), (ii) b) (ii), (iii)

c) (iii), (iv) d) (i), (iv)

*Explanation: The reluctance torque is developed only when the reluctance is seen but the stator flux varies with rotor movement, and it depends on the air gap. For a cylindrical rotor, the air gap remains same, and hence no change in reluctance and no torque is developed.*

**17. Where the singly excited magnetic systems are used _____**

a) electromagnets, relays b) moving-iron instruments

c) reluctance motors d) any of the mentioned

*Explanation: All of the applications mentioned above needs singly excited magnetic systems*

**18. When synchronous reluctance motor called as symmetrical?**

a) $X_d \leq X_q$ b) $X_d = X_q$

c) $X_d \neq X_q$ d) none of the above

**19. When the air gap is much lower in salient pole rotors?**

a) Along the poles b) Between the poles

c) On the pole faces d) None of the above

**20. When the stability limit is occur in synchronous motor?**

a) $0^o$ b) $45^o$

c) $180^o$ d) $90^o$

**21. when $P_{in} = P_{mech}$ in synchronous reluctance motor.**

a) Reactance losses are neglected b) Resistance losses are neglected

c) Impedance losses are neglected d) None of the above neglected

**22. How the permanent magnet synchronous motors operate as a synchronous reluctance motor?**

a) Magnets replaced by cage windings

b) Magnets replaced by symmetrical winding

c) Magnets replaced by unsymmetrical winding

d) None of the above

**23. Define – Load angle.**

a) Angle between rotating magnetic field and rotor poles.

b) Lag angle between rotating magnetic field and rotor poles.

c) Lead angle between rotating magnetic field and rotor poles.

d) None of the above

**24. Which rotor is not preferable for synchronous reluctance motor?**

a) Cylindrical type rotor b) skewed rotor

c) salient pole rotor d) none of the above

**25. What is the type of synchronous reluctance motor?**

a) Induction motor b) Servo motor

c) Universal motor d) synchronous motor

**Faculty Incharge** **HOD/EEE**