



**Department of Electrical and Electronics Engineering**

**Subject & Subject Code: EE8005 & Special Electrical Machines**

**UNIT I- MCQ Bank**

**STEPPER MOTORS**

1. A variable reluctance stepper motor is constructed of \_\_\_\_\_ material with salient poles.
- a) Paramagnetic
  - b) Ferromagnetic**
  - c) Diamagnetic
  - d) Non-magnetic

Answer: b

2. In a three-stack 12/8-pole VR motor, the rotor pole pitch is
- a) 15°
  - b) 30°
  - c) 45°**
  - d) 60°

Answer: c

3. A stepper motor having a resolution of 300 steps/rev and running at 2400 rpm has a pulse rate of- pps.
- a) 4000
  - b) 8000
  - c) 6000**
  - d) 10,000

Answer: c

4. If a hybrid stepper motor has a rotor pitch of  $36^\circ$  and a step angle of  $9^\circ$ , the number of its phases must be
- a) **4**
  - b) 2
  - c) 3
  - d) 6

Answer: a

5. The rotor of a stepper motor has no
- a) Windings
  - b) Commutator
  - c) Brushes
  - d) **All of the mentioned**

Answer: d

6. A stepping motor is a \_\_\_\_\_ device.
- a) Mechanical
  - b) Electrical
  - c) Analogue
  - d) **Incremental**

Answer: d

7. The rotational speed of a given stepper motor is determined solely by the
- a) Shaft load
  - b) **Step pulse frequency**
  - c) Polarity of stator current
  - d) Magnitude of stator current.

Answer: b

8. Which of the following phase switching sequence represents half-step operation of a VR stepper motor ?

- a) A, B, C,A.....
- b) A, C, B,A.....
- c) AB, BC, CA, AB.....
- d) A, AB, B, BC.....**

Answer: d

9. A stepper motor may be considered as a \_\_\_\_\_ converter.

- a) Dc to dc
- b) Ac to ac
- c) Dc to ac
- d) Digital-to-analogue**

Answer: d

10. What is the step angle of a permanent-magnet stepper motor having 8 stator poles and 4 rotor poles?

- a) 60°
- b) 45°**
- c) 30°
- d) 15°

Answer: b

11. Which type of device is a stepper motor?

- a) Electromechanical**
- b) Electrochemical
- c) Embedded system
- d) Electromagnetic

Answer: a

12. The speed of the rotation of the stepper motor depends on \_\_\_\_

- a) torque
- b) number of input pulses
- c) frequency of input pulses**
- d) solenoid

Answer: c

13. Which among the following is not the type of a stepper motor?

- a) Variable reluctance
- b) Permanent magnet
- c) Hybrid
- d) Variable magnet**

Answer: d

14. A soft iron multi-toothed rotor and wound stator is present in \_\_\_\_\_

- a) permanent magnet stepper motor
- b) variable reluctance stepper motor**
- c) hybrid stepper motor
- d) DC motor

Answer: b

15. Which type of stepper motors have low cost and low-resolution motor?

- a) Permanent magnet stepper motor**
- b) Variable reluctance stepper motor
- c) Hybrid stepper motor
- d) DC motor

Answer: a

16. What is the step angle of a hybrid stepper motor?

- a) 0.9 degree to 3.6 degree**
- b) 0.9 degree to 7.0 degree

- c) 0.1 degree to 1.0 degree
- d) 1.0 degree to 0.9 degree

Answer: a

17. How does a Stepper Motor move ?

- a). Electrical Pulse**
- b). Continuous Applied Voltage
- c). Alternates from A and B

Answer: a

18. A pulse can be produce by which means ?

- a). Microprocessor
- b). Timing Logic
- c). Toggle Switch
- d). All of the above**

Answer: d

19. Which of the following is not a component of a stepper motor?

- a). Windings
- b). Rotor and Stator
- c). Commutator
- d). Brush**
- e. Both C and D

Answer: d

20. What is the difference between full-step and half-step?

- a). In full-step two phases are on and in half-step only one phase is on.
- b). More resonance is evident in half-step
- c). More power required for full-step
- d). Half-step offers better resolution**

Answer: d

21. What criteria's are necessary to consider when selecting a stepper motor?

- a). Mechanical Motion.
- b). Inertial Load
- c). Speed Requirements
- d). All of the above**

Answer: d

22. Which of the following is NOT an advantage of stepper motors?

- a). Cost-efficient
- b). Maintenance-free
- c). No feedback
- d). More complex circuitry**

Answer: d

23. With a stator having 8 teeth and a rotor having 6 teeth, what step angle will an application be able to achieve?

- a). 15°**
- b). 51°
- c). 20°
- d). 105°

Answer: a

24. If an application using a stepper motor required feedback, which device would be needed to accomplish this?

- a). Counter
- b). Encoder**
- c). Linear Guide
- d). Commutator

Answer: b

25. A variable reluctance stepper motor is constructed of \_\_\_\_\_ material with salient poles.

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Answer: **b**