QUIZ – ANSWER KEY

QUIZ NO: 126

TOPIC: ELECTRICAL ENGINEERING

DATE: 23/11/2022

1. Why are the DC motors preferred for traction applications?

   [A] Torque and speed are inversely proportional to armature current

   [B] Torque is proportional to armature current

   [C] Torque is proportional to square root of armature current

   [D] The speed is inversely proportional to the torque and the torque is proportional to square of armature current

   Answer: D
   Explanation: DC motors are used for traction as, according to the characteristics of DC motors speed is inversely proportional to torque and square of armature current as well, if linear magnetization is concerned. Thus, DC motors are perfectly suitable for traction.

2. Which of the following load application normally needs starting torque more than the rated torque?

   [A] Blowers

   [B] Conveyors

   [C] Air compressors

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[D] Centrifugal pumps

Answer: B

Explanation: Conveyors need high starting torque initially, and constant torque later. Thus, DC series motor is used in conveyors as it provides very high starting torque, which is practically 5 times the rated torque.

3. Which of the following motors can be used to drive the rotary compressor?

[A] DC shunt motor

[B] DC series motor

[C] Universal motor

[D] Synchronous motor

Answer: D
Explanation: Rotary compressor generally demand constant speed operation throughout the load. Sometimes, DC machines are not able to produce constant speed throughout the process hence, synchronous machine is used.

4. Which DC motor is used with flywheel for intermittent light and heavy loads?

[A] Series motor

[B] Shunt motor

[C] Cumulatively compounded motor

[D] Differentially compounded motor

Answer: C

Explanation: Cumulative compound DC motor is used with flywheel carrying peaks and so to smooth out the load on the motor as well as to reduce peaks on power system. Without flywheel the motor construction will be much larger.

5. Separately excited DC generators are still used in _____ ?

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[A] Thermal power plants

[B] Ward Leonard speed control system

[C] Hydro power plant

[D] In all fields

Answer: B

Explanation: Separately excited DC generators are still used in wide output voltage control like in Ward Leonard speed control. In all power plants today, generally AC generators are used due to low cost and less maintenance required.

6. In world today, around 25% of the motors are manufactured are DC motors ?

[A] True

[B] False

Answer: A

Explanation: For a dc machine, of course, the main attraction lies in its flexibility, versatility and ease of control. This explains why in spite of its rather heavy initial investment it still retains its charm in strong competitive industrial applications.

7. Maximum torque in a DC machine is limited by _____ ?

[A] Commutation

[B] Heating

[C] Losses other than heating

[D] Stability

Answer: A

Explanation: While for all other motors maximum torque is restricted to certain value as various losses in other motors lead to heating of the core materials. In DC machines for maximum torque commutation time will obviously decrease and beyond some point commutation process can't be fastened.

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8. Which of the following motor can replace DC series motor?

[A] DC shunt motor
[B] Cumulative compound motor
[C] Wound-rotor induction motor
[D] Synchronous motor

Answer: C

Explanation: DE series motor's closest rival is the wound-rotor induction motor with a rotor resistance control. But ultimately the availability and economics of a dc power is the deciding factor rather than the motor characteristic.

9. Which motor has almost replaced DC shunt motor from its applications ?

[A] Wound-rotor induction motor
[B] Differential compound motor
[C] Air motor
[D] Squirrel caged induction motor

Answer: D

Explanation: Owing to the relative simplicity, cheapness and ruggedness of the squirrel cage induction motor, the shunt motor is less preferred for constant-speed drives except at low speeds. At high or medium speed applications we use induction motor, mostly squirrel caged.

10. DC shunt motor is still used instead of synchronous motor in ____?

[A] High speed applications
[B] Low speed applications
[C] Medium and high-speed applications
[D] Everywhere

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Answer: B

Explanation: At low speeds, DC shunt motors are comparable with synchronous motors. The outstanding feature of a DC shunt motor however is its superb wide range flexible speed control above and below the base speed using solid-state controlled rectifiers.