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Total Number of Pages : 03

B.Tech.  
PEL4I101

4<sup>th</sup> Semester Regular / Back Examination 2018-19

ELECTRICAL MACHINES - II

BRANCH : EEE

Time : 3 Hours

Max Marks : 100

Q.CODE : C1011

Answer Part-A which is compulsory and any four from Part-B.

The figures in the right hand margin indicate marks.

Answer all parts of a question at a place.

Part – A (Answer all the questions)

Q1

Answer the following questions:

(2 x 10)

- a) If the current drawn by a DC series motor increased from 10A to 12A, what is the change in torque expressed as a percentage of initial torque?
  - a. 21%
  - b. 25%
  - c. 41%
  - d. 44%
- b) The brush axis of a dc shunt generator is rotated by an angle ' $\alpha$ ' from the GNA. The torque developed will be proportional to
  - a.  $\sin \alpha$
  - b.  $\cos \alpha$
  - c.  $\tan \alpha$
  - d.  $\cos 2\alpha$
- c) Two dc machines are mechanically coupled. One is operating as motor and the other as generator. The iron and frictional losses of the machines will be identical when:
  - a. Their speeds are identical
  - b. Their speeds and excitation are identical.
  - c. Their speeds and armature current are equal.
  - d. Their armature sizes are equal.
- d) In a dc generator the critical resistance can be increased by
  - a. Increasing its field resistance
  - b. Increasing its speed
  - c. Decreasing its field resistance
  - d. Decreasing its speed
- e) Armature coil is short circuited by brushes when it lies
  - a. Along neutral axis
  - b. Along field axis
  - c. Along GNA
  - d. Along d-Axis
- f) An over excited alternator operates at \_\_\_\_\_ p.f. by \_\_\_\_\_ reactive power.
  - a. Lagging, delivering
  - b. Leading, delivering
  - c. Lagging, consuming
  - d. Leading, consuming
- g) Active power of an alternator can be varied by
  - a. Changing field excitation
  - b. Changing prime mover speed
  - c. Changing the power factor
  - d. Any one of the above
- h) An electromechanical energy conversion device has cylindrical stator but salient pole rotor. If  $\delta$  is the angle between stator field and rotor field, the average torque developed is proportional to (A and B are constants) \_\_\_\_\_
  - a.  $A \sin \delta$
  - b.  $A \sin 2\delta$
  - c.  $A \sin \delta + B \sin 2\delta$
  - d.  $\delta$
- i) In a salient pole synchronous motor, the developed reluctance torque attains the maximum value when the load angle in electrical degrees is
  - a. 0
  - b. 45
  - c. 60
  - d. 90