Unit 10 - Week 7

Week 7 Assignment 7

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-18, 23:59 IST.

Common data for Question 1 to 6

The rotor of a 4 pole DC machine has 48 slots with a double layer simplex winding. Slots are numbered from 1 to 48. All coils are full pitched.

1) How many coils does the armature have?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 48

1 point

2) Consider a particular coil which has one of its sides in slot number 10. The other side of the coil is not in slot number 22. Then in which slot (slot number) the other side of the coil is?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 46

1 point

3) How many commutator segments does the commutator have?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 48

1 point

4) How many brush does the machine have?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 4

1 point

5) How many parallel paths are there in the armature?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 4

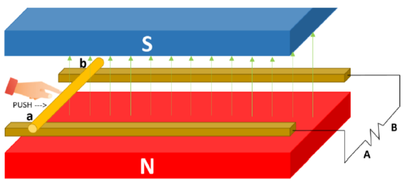
1 point

6) Calculate the slot pitch in electrical degrees

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 15

1 point

Common data for Question 7 to 9



(The lengths of the rail and magnets is infinitely long although it shown to be quite short in the diagram for convenience)

The flux density between the magnets is B = 0.8 Tesla. The length of the conductor **ab** is L = 0.5 m and its mass is m = 1 kg. The Conductor **ab** is pushed at a constant velocity of v = 0.2 m/s. The Resistance between **A** and **B** is 2 Ω

7) Calculate the force applied on the conductor (in N).

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.015,0.017

1 point

8) Calculate the power (in mW) required to keep the conductor moving at the constant velocity of v = 0.2 m/s.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 3.1,3.3

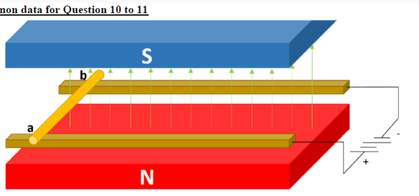
1 point

9) If we stop to push the conductor suddenly, then the conductor will continue to move for a while due to inertia and some heat will be generated in the resistance during this time (when the conductor is moving due to inertia without any push). Calculate the total heat generated in this period in milli Jule.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 19,21

1 point

Common data for Question 10 to 11



(The lengths of the rail and magnets is infinitely long although it shown to be quite short in the diagram for convenience)

The flux density between the magnets is B = 0.8 Tesla. The length of the conductor **ab** is L = 0.5 m. EMF of the battery E = 0.1 V. The total resistance of the circuit (conductor, rail and battery) = 1Ω.

10) If there is no friction at all, then at what velocity (in m/s) will the conductor move in steady state?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.24,0.26

1 point

11) If there is a constant frictional force of f = 10 mN, then at what velocity (in m/s) will the conductor move in steady state?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.1775,0.1975

1 point

12) Consider the homopolar DC generator discussed in lecture 56. The area of the disk is A = 1 m^2 and the flux density is 0.8 T. Estimate the voltage (in V) that can be obtained from this generator if the disk is rotating at 1200 rpm.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 15,17

1 point