

Unit 9 - Week 8

Course outline

How to access the portal?

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

DC Machines - Voltage Build-up and Load Characteristics

DC Generator Characteristics and Introduction to DC Motors

DC Motors: Basics and Speed-Torque Relationship

Quiz : Assignment 8

Feedback Form

Week 9

Week 10

Week 11

Week 12

Solutions for Assignments

Assignment 8

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

Due on 2019-09-25, 23:59 IST.

1) Normally (when there is no armature reaction) the brushes are aligned with the magnetic neutral axis. Due to armature reaction, in case of DC motors, the brushes are shifted **1 point**

- Forward same as the direction of rotation
- Backwards opposite to the direction of rotation
- Either (a) or (b)
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Backwards opposite to the direction of rotation

2) Differentially compounded DC motors are mainly used in **1 point**

- Drilling machines
- Elevators
- Electric traction
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of the above

3) A long shunt compound motor and a short shunt compound motor should be of **1 point**

- Cumulative type and differential type, respectively.
- Differential type and cumulative type, respectively.
- Both can be of either cumulative or differential type,
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both can be of either cumulative or differential type,

4) A separately excited generator, when running at 1200 rev per min, supplies 200A at 125V to a circuit of constant resistance. What will be the current when the speed is dropped to 1000 rev per min if the field current is unaltered? Armature resistance : 0.04 Ω; total drop at brushes: 2 V; ignore change in armature reaction. **0 points**

- 130.87 A
- 116.17 A
- 87.48 A
- None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
116.17 A

For questions 5 & 6

The armature of a 4-pole lap-wound dc machine has core length=30cm, diameter=40cm, total conductors=500, speed =1200r.p.m, and current=20A.

5) For an average flux density of 0.5T, the electromagnetic power developed is: **1 point**

- 9630 W
- 9580 W
- 9740 W
- None of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of the above.

6) For an average flux density of 0.5T, the internal torque is: **1 point**

- 75 N-m
- 78 N-m
- 63 N-m
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
75 N-m

7) A shunt machine connected to 250 V mains has an armature resistance (including brushes) of 0.12 Ω, and the resistance of the field circuit is 100 Ω. Find the ratio of the speed as a generator to the speed as a motor, the line current in each case being 80 A. **1 point**

- 1.08
- 0.85
- 0.9
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
1.08

For questions 8, 9 & 10

A 1500-kw, 550 V, 16-pole lap-connected separately excited generator with 2500 conductors runs at 150 rev per min. The full-load copper losses are 25kW.

8) Find the no-load terminal voltage, neglecting armature reaction and change in speed **1 point**

- 532.83 V
- 559.16 V
- 538.22 V
- 515.56 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
559.16 V

9) Calculate the useful flux per pole. **1 point**

- 0.0108 wb
- 0.0895 wb
- 0.0056 wb
- None of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.0895 wb

10) Calculate the area of the pole shoe if the gap density has a uniform value of 0.9 Wb/m². **1 point**

- 981 cm²
- 924 cm²
- 946 cm²
- 994 cm²

No, the answer is incorrect.
Score: 0

Accepted Answers:
994 cm²