Started on	Wednesday, 26 October 2022, 11:50 AM
State	Finished
Completed on	Wednesday, 26 October 2022, 12:40 PM
Time taken	50 mins 21 secs
Grade	**90.0** out of 100.0

Question 1

Correct

Mark 5.0 out of 5.0

A separately-excited dc generator supplies 40 A to a resistance load at 220 V when running at 1500 rpm. The armature resistance is 0.05 Ω and field current will remain unchanged. What is the value of the load resistance, in Ω? [1 decimal place]

Answer: 5.5

The correct answer is: 5.5

Question 2

Correct

Mark 5.0 out of 5.0

What is the induced emf in the armature at this condition, in V? [1 decimal place]

Answer: 222.0

The correct answer is: 222

Question 3

Correct

Mark 5.0 out of 5.0

If the speed drops to 1200 rpm:

What is the induced voltage in the armature, in V?

Answer: 177.6

The correct answer is: 177.6

Question 4

Correct

Mark 5.0 out of 5.0

What is the armature current, in A?

Answer: 32

The correct answer is: 32

Question 5

Complete

Not graded

If the machine is now operated as a shunt-excited generator with the same load resistance and terminal voltage of 220 V, speed of 1500 rpm, field resistance of 100 Ω, and mechanical losses of 100 W:

What is the field current, in A? [1 decimal place]

Answer: 2.2

The correct answer is: 2.2

Question 6

Correct

Mark 5.0 out of 5.0

What is the armature current, in A? [1 decimal place]

Answer: 42.2

The correct answer is: 42.2

Question 7

Correct

Mark 5.0 out of 5.0

What is the induced voltage in the armature, in V? [1 decimal place]

Answer: 222.1

The correct answer is: 222.1

Question 8

Correct

Mark 10.0 out of 10.0

What is the total power loss in the machine, in W? [whole number, i.e., 0 decimal places]

Answer: 673

The correct answer is: 673

Question 9

Correct

Mark 5.0 out of 5.0

What is the efficiency of the generator, in %? [1 decimal place]

Answer: 92.9

The correct answer is: 92.9

Question 10

Correct

Mark 5.0 out of 5.0

A 300-V dc shunt motor runs at 1200 rpm at no-load while taking 5 A. The armature and shunt field resistances are 0.2 Ω and 300 Ω, respectively. Assuming the flux is constant and the motor draws 50 A from the supply when loaded:

What is the field current, in A? [1 decimal place]

Answer: 1.0

The correct answer is: 1

Question 11

Correct

Mark 5.0 out of 5.0

What is the armature current at no-load, in A? [1 decimal place]

Answer: 4.0

The correct answer is: 4

Question 12

Correct

Mark 5.0 out of 5.0

What is the armature current when loaded, in A? [1 decimal place]

Answer: 49.0

The correct answer is: 49

Question 13

Correct

Mark 5.0 out of 5.0

What is the induced voltage in the armature at no-load, in V? [1 decimal place]

Answer: 299.2

The correct answer is: 299.2

Question 14

Correct

Mark 5.0 out of 5.0

What is the induced voltage in the armature when loaded, in V? [1 decimal place]

Answer: 290.2

The correct answer is: 290.2

Question 15

Correct

Mark 5.0 out of 5.0

What is the speed of the motor when loaded, in rpm? [whole number, i.e., 0 decimal places]

Answer: 1164

The correct answer is: 1164

Question 16

Correct

Mark 5.0 out of 5.0

The motor is now run as a dc series motor with a field resistance 0.4 Ω, and it draws a current of 40 A at 800 rpm:

What is the induced voltage in the armature at this condition, in V?

Answer: 276

The correct answer is: 276

Question 17

Correct

Mark 5.0 out of 5.0

If the load for the dc series motor is reduced to a new situation so that the motor takes 30 A:

What is the induced voltage in the armature at this new condition? [1 decimal place]

Answer: 282

The correct answer is: 282

Question 18

Incorrect

Mark 0.0 out of 5.0

What is the new operating speed, in rpm? [1 decimal place]

Answer: 817.4 ✖

The correct answer is: 1090

Question 19

Incorrect

Mark 0.0 out of 5.0

What is the ratio of the new load torque to the previous load torque? [2 decimal places]

Answer: 1.33 ✖

The correct answer is: 0.56

Question 20

Correct

Mark 5.0 out of 5.0

What is the percentage change in the electromagnetic torque from the previous load condition to the new load condition, %? [whole number, i.e., 0 decimal places]

Answer: 44 ✔

The correct answer is: 44

◄ EXAMPLES

Jump to...

LECTURE 6: 2021-04-06 (0800-1000 HRS) ►