Unit 5 - Week-3

Assignment-3

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

Due on 2019-08-21, 23:59 IST.

1) A half controlled converter can operate in how many quadrants of V-I Plane? *1 point*

- One
- Two
- Three
- Four

No, the answer is incorrect.
Score: 0
Accepted Answers:
One

2) For a half controlled converter, the duration $\pi \leq \omega t \leq \beta$ is known as *1 point*

- Duty Interval
- Coasting Interval
- Freewheeling Interval
- Zero Current Interval

No, the answer is incorrect.
Score: 0
Accepted Answers:
Freewheeling Interval

3) A 220 V, 960 rpm, 10A separately excited DC motor has an armature resistance of 2Ω. It is fed from a single phase half controlled bridge with an input ac supply of single phase 230 V, 50 Hz. If the triggering angle $\alpha = 60^0$, the no load speed of the motor is *2 points*

- 960 rpm
- 1029 rpm
- 1423 rpm
- 1561 rpm

No, the answer is incorrect.
Score: 0
Accepted Answers:
1561 rpm

4) If the triggering angle $\alpha = 120^0$ for Q3, the no load speed of the motor is *2 points*

- 960 rpm
- 1051 rpm
- 1352 rpm
- 1529 rpm

No, the answer is incorrect.
Score: 0
Accepted Answers:
1352 rpm

5) If the AC input supply frequency is f, the ripple frequency of the output voltage of a three phase fully controlled bridge converter is *1 point*

- f
- 2f
- 3f
- 6f

No, the answer is incorrect.
Score: 0
Accepted Answers:
6f

6) A three phase fully controlled bridge converter is fed from 3 phase, 400 V 50 Hz AC supply. If the triggering angle of the converter is 45^0, the average output DC voltage is *2 points*

- 231.1 V
- 305.6 V
- 381.9 V
- 421.7 V

No, the answer is incorrect.
Score: 0
Accepted Answers:
381.9 V

7) A three phase full controlled converter is feeding the armature of a separately excited DC motor. The motor has to operate in quadrant-III. Which of the following methods is suitable? *1 point*

- By adjusting the triggering angle α only
- By adjusting the triggering angle α followed by armature connection reversal
- By operating with triggering angle $\alpha > 90^0$
- By connecting a freewheeling diode across the armature in addition to adjusting the triggering angle α

No, the answer is incorrect.
Score: 0
Accepted Answers:
By adjusting the triggering angle α followed by armature connection reversal

8) The intergroup reactor in a circulating current dual converter directly helps in *1 point*

- Limiting the circulating current
- Adjusting the output voltage of the converter
- Adjusting the output current of the converter
- Regenerative braking of the dc motor

No, the answer is incorrect.
Score: 0
Accepted Answers:
Limiting the circulating current

9) A 220 V, 1400 rpm, 50 A separately excited dc motor has an armature resistance of 0.4 Ω. The motor is fed from a circulating current dual converter bridge having the ac-input of 3-phase 400 V, 50 Hz. Calculate the firing angles of the dual converter for motor operation at rated torque and 900 rpm. *3 points*

- 54° & 126°
- 74° & 106°
- 80° & 100°
- 85° & 95°

No, the answer is incorrect.
Score: 0
Accepted Answers:
74° & 106°

10) Calculate the firing angles of the dual converter feeding dc motor as given in Q9, for motor operation at rated torque and -900 rpm. *3 points*

- 126° & 54°
- 106° & 74°
- 100° & 80°
- 95° & 85°

No, the answer is incorrect.
Score: 0
Accepted Answers:
106° & 74°

11) A class A two-quadrant chopper operates in which quadrants of V-I plane? *1 point*

- 1 & 2
- 2 & 3
- 3 & 4
- 4 & 1

No, the answer is incorrect.
Score: 0
Accepted Answers:
1 & 2

12) A 230 V, 900 rpm, 200 A separately excited dc motor has an armature resistance of 0.05 Ω. The motor is fed from a two quadrant chopper which provides motoring and regenerative braking operation. The source has a voltage of 200 V dc. Assuming continuous conduction, calculate the duty cycle of the chopper for operation at rated torque and speed of 500 rpm. *0 points*

- 0.54
- 0.44
- 0.34
- 0.24

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.54

13) The motor in Q12 is operated in regenerative braking mode with rated torque and speed of 600 rpm. Calculate the duty cycle of the switch. *0 points*

- 0.29
- 0.39
- 0.49
- 0.59

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.59

14) Assuming continuous current operation for a single quadrant chopper used for motoring operation of a dc motor, what is the interval $t_{on} \leq t \leq T$ called? *1 point*

- Duty interval
- Freewheeling interval
- Coasting interval
- Energy storage interval

No, the answer is incorrect.
Score: 0
Accepted Answers:
Freewheeling interval

15) A single phase full controlled converter is used to control the armature of a separately excited dc motor. The critical speed which separates continuous and discontinuous current operation is found out to be 720 rpm. Which of the following statements is correct? *1 point*

- The converter operates in continuous current operation for speed greater than 720 rpm
- The converter operates in continuous current operation for speed less than 720 rpm
- The converter operates in continuous current operation for speed greater than 360 rpm
- The converter operates in continuous current operation for speed less than 360 rpm

No, the answer is incorrect.
Score: 0
Accepted Answers:
The converter operates in continuous current operation for speed less than 720 rpm