Quiz - 3 (SET A)

Total Duration is for 30 minutes,
Total marks 15.
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A triangular signal with a peak value of 25 units is to be compared with a DC signal of K units such that gate signal is to be issued as long as dc signal is less than 25 units. If the duty cycle is to be maintained at 0.75, then the value of K is? 1 point

- 20
- 25
- 18.75
- 15.25

A buck-boost regulator is feeding a load such that the load current variation is linear in nature. Assuming the circuit is loss-free, if the average output current is 10A and average source current is 20A, then the duty ratio of the circuit is? 2 points

- ○ 2/3
- ○ 1/3
- ◉ 1/2
- ○ 1/5

Clear selection

For regenerative braking of dc motor, which of the following choppers are suitable 1 point

- ○ Type A
- ○ Type B
- ◉ Type C
- ○ Both Type A and Type B

Clear selection

A chopper is operating at 5kHz switching frequency. If the maximum per-unit ripple is 50%, then the time constant of the load to which the chopper is feeding is, 3 points

- 0.091 msec
- 0.364 sec
- 0.364 msec
- 0.5 m sec

In an ideal step-up chopper operation, which one of the following statement is true 1 point

- source current is greater than load current
- source voltage is greater than load voltage
- Input power must be greater than output power
- none of the above

Clear selection

In a Type C chopper, the action of free wheeling diode is revealed during 1 point

- 1st quadrant operation
- 2nd quadrant operation
- Both 1st and 2nd quadrant operations
- None

A type A chopper is feeding an RLE load with Vs = 100V, E = 30V, R =10 Ohms. L is sufficiently large to make current continuous. At this condition, what is the value of duty cycle of the chopper to make thyristor current to be ripple free? 3 points

- 0.3
- 0.15
- 0.1
- 0.5

A resistor of 10 Ohms, is connected to an AC supply of 230V, 50 Hz through a controlled switch. If the switch is controlled through a 10 kHz constant frequency based chopper control with 20% Turn-off duration, then the duty cycle is

1 point

- 0.2
- 1
- 0.01
- 0.8
- Other:

In a two-quadrant chopper operating in 1st and 4th quadrants, the condition for zero output voltage is

1 point

- Times when output current is zero.
- During regenerative braking
- Output Power is same as input power
- Equal turn On and turn OFF times

In a loss-free boost regulator feeding R = 10 ohms with Vs = 100V, the duty ratio is set at 40%. The average inductor current is 1 point

- 0.1 A
- 10 A
- 27.77 A
- 20.23 A

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