QUIZ – ANSWER KEY

QUIZ NO: 132

TOPIC: ELECTRICAL ENGINEERING

DATE: 07/12/2022

1. Ripple factor of center tapped full wave rectifier is _____ ?

   [A] 1.414

   [B] 1.21

   [C] 1.3

   [D] 0.48

   Answer: D

   Explanation: Ripple factor of a rectifier is the measure of the effectiveness of a power supply filter in reducing the ripple voltage. It is calculated by taking a ratio of RMS AC voltage to DC output voltage. For a center tapped full wave rectifier, it is 0.482.

2. If input frequency is 50Hz then ripple frequency of center tapped full wave rectifier will be equal to _____?

   [A] 100Hz

   [B] 50Hz

   [C] 25Hz

   [D] 500Hz

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Answer: A

Explanation: Since in the output of center tapped rectifier one half cycle is repeated hence frequency will twice as that of input frequency. That is 100Hz.

3. Transformer utilization factor of a center tapped full wave rectifier is equal to ___ ?

   [A] 0.623

   [B] 0.678

   [C] 0.693

   [D] 0.625

   Answer: C
   Explanation: Transformer utilization factor is the ratio of DC power supplied to the AC rating of the primary winding. The factor indicated the effectiveness of transformer usage by the rectifier. For a center tapped full wave rectifier, it is equal to 0.81 w.r.t the primary winding, 0.57 w.r.t the secondary winding (double of that of a half wave rectifier) and the average value is 0.69.

4. If peak voltage on a center tapped full wave rectifier circuit is 5V and diode cut-in voltage is 0.7, then peak inverse voltage on diode will be ___?

   [A] 4.3 V

   [B] 10 V

   [C] 5.7 V

   [D] 9.3 V

   Answer: D

   Explanation: PIV is the maximum reveres bias voltage that can be appeared across a diode in the circuit. If PIV rating of the diode is less than this value breakdown of diode may occur. For a center tapped full wave rectifier, PIV of diode is PIV=$2V_m - V_d$ = 10-0.7 = 9.3V.

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5. Efficiency of center tapped full wave rectifier is _____ ?

      [A] 50%

      [B] 81.2%

      [C] 40.6%

      [D] 45.3%

Answer: B

Explanation: Efficiency of a rectifier is the effectiveness of rectifier to convert AC to DC. It is obtained by taking a ratio of DC power output to maximum input power delivered to load. It is usually expressed in percentage. For center tapped full wave rectifier, it is 81.2%.

6. In a center tapped full wave rectifier, the input sine wave is 20sin500 πt. The average output voltage is ___ ?

      [A] 12.73V

      [B] 6.93V

      [C] 11.62V

      [D] 3.23V

Answer: A

Explanation: The equation of sine wave is in the form E_m sin wt.
Therefore, $E_m = 20$
Hence output voltage is $2E_m/\pi$. That is $40/\pi$.

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7. In a center tapped full wave rectifier, the input sine wave is 200sin50 πt. If load resistance is of 1k then average DC power output of half wave rectifier is ____ ?

    [A] 12.56W
    [B] 16.20W
    [C] 4.02W
    [D] 8.04W

    Answer: B

    Explanation: The equation of sine wave is in the form E_m sin wt.
    On comparing E_m = 200
    Power = $4E_m2/ π^2R_L$ = 800/ $π^2$x 1000 = 16.20W.

8. In a center tapped full wave rectifier, the input sine wave is 250sin100 πt. The output ripple frequency of rectifier will be __ ?

    [A] 50Hz
    [B] 200Hz
    [C] 100Hz
    [D] 25Hz

    Answer: C

    Explanation : The equation of sine wave is in the form E_m sin wt.
    Therefore, w = 100π that is, frequency f = w/2π = 50Hz
    Since the output of center tapped full wave rectifier have double the frequency of input, output frequency is 100Hz.

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9. Transformer utilization factor of a bridge full wave rectifier is equal to ___ ?

      [A] 0.62
      [B] 0.69
      [C] 0.81
      [D] 0.43

      Answer: C

      Explanation: Transformer utilization factor is the ratio of AC power delivered to load to the DC power rating. This factor indicates effectiveness of transformer usage by rectifier. For bridge full wave rectifier it is equal to 0.81.

10. If peak voltage on a bridge full wave rectifier circuit is 5V and diode cut-in voltage is 0.7, then peak inverse voltage on diode will be __ ?

      [A] 4.3V
      [B] 5.7V
      [C] 10V
      [D] 5V

      Answer: A

      Explanation: PIV is the maximum reveres bias voltage that can be appeared across a diode in the circuit. If PIV rating of the diode is less than this Value breakdown of diode may occur. Therefore, PIV rating of diode should be greater than PIV in the circuit. For bridge rectifier PIV is $V_m - V_D$ = 5-0.7=4.3.

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