KATHMANDU UNIVERSITY
End Semester Examination
February, 2025

Marks Scored:

Level : B.E.
Year : III

Course : EPEG 318
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date : 10 FEB 2025

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices

1. A three bridge inverter requires minimum of _____ switching devices
   a. Three b. Four c. Six d. Twelve

2. In the three phase bridge inverter, each step consists of
   a. 30 degrees b. 60 degrees c. 90 degrees d. 120 degrees

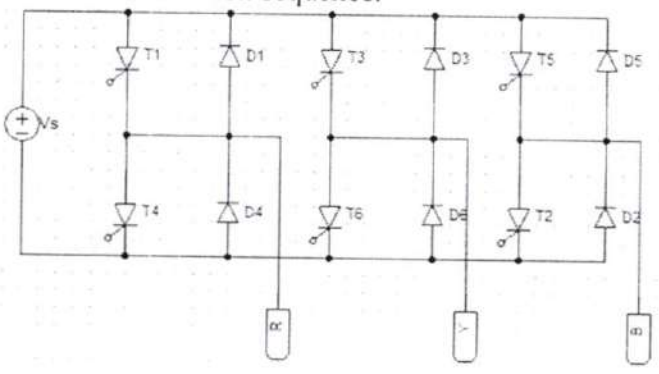
3. In the 180^0 mode voltage source inverter _____ devices conduct at a time.
   a. Five b. Two c. Six d. Three

4. Pulse gating is suitable for circuits with
   a. Resistive load only
   b. Both resistive and combined resistive-inductive loads
   c. Combined resistive inductive loads only.
   d. Capacitive loads only.

5. In continuous gating signal for a circuit
   a. Overlap angle is very high b. SCR is heated up
   c. Size of the pulse transformer is small d. Commutation cannot be achieved effectively

6. High frequency gating uses a
   a. Train of pulses b. Continuous gating block
   c. Carrier signal d. A single pulse only

7. For a three phase bridge inverter in the 180^0 mode _____ devices are conducting from 120^0 to 180^0 interval of conduction sequence.



   a. T1, T6, T5 b. T2, T6, T5 c. T1, T6. T5 d. T1, T2, T3

8. A single phase voltage controller has an input of 230Volts and a load of 15 Ohm. For 6 cycles on and 4 cycles off, the r.m.s output voltage is
   a. 189 Volts b. 260 Volts c. 156 Volts d. 178 Volts

9. For a star connected load, the voltage across "R" phase when only T1 and T2 are conducting 60^0 to 120^0 is
   a. Vs b. Vs/2 c. –Vs/2 d. Zero

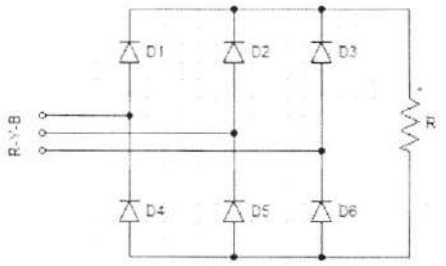
10. The conduction angle of the thyristors for a single phase semi converter having continuous conduction is
   a. α b. π c. $\alpha+\pi$ d. $\pi-\alpha$

11. A three-phase full converter supplied from a 230 V source is working as a line commutated inverter. The load consists of RLE type with R = 5 Ω, E = 200 V and L = 1 mH. A continues current of 10 A is flowing through the load, The value of the firing angle delay is
   a. 119 degree b. 127 degree c. 156 degree d. 143 degree

12. The thyristor turn off requires that the anode current
   a. Falls below the holding current b. Falls below the latching current
   c. Rises above the holding current d. Rises above the latching current

13. The type of commutation when the load is commutated by transferring its load current to another incoming thyristor is
   a. Class A or load commutation
   b. Class B or resonant commutation
   c. Class c or complementary commutation
   d. Class D or impulse commutation

14. For a phase sequence of R-Y-B, diodes D3 and D5 conducts when



   a. R is the most positive & B is the most negative
   b. R is the most positive & Y is the most negative
   c. R is the most negative & B is the most positive
   d. R is the most negative & Y is the most positive

15. The maximum value of line voltage for a 3 phase bridge rectifier with an average voltage of 286.48 Volts is
   a. 100 Volts b. 200 Volts c. 300 Volts d. 400 Volts

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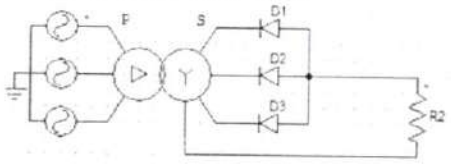
16. For a single-phase dual converter, with converters C_1 and C_2 connected in anti-parallel, which relation among the following is true to keep the average voltages from C_1 and C_2 equal? C_1 and C_2 have firing angles $\alpha 1$ and $\alpha 2$ respectively.
a. $\alpha 1 = \alpha 2$. b. $\alpha 1 + \alpha 2 = 180°$. c. $\alpha 1 + \alpha 2 = 360°$. d. $\alpha 1 + \alpha 2 = 90°$.

17. For a three phase full controlled converter, with 3 thyristors in the upper or positive group and 3 thyristors in the lower or negative group, at any given time
a. Two thyristors are conducting from each group.
b. One thyristor is conducting from each group.
c. One thyristor is conducting from either of the groups.
d. All 6 thyristors are conducting at a time.

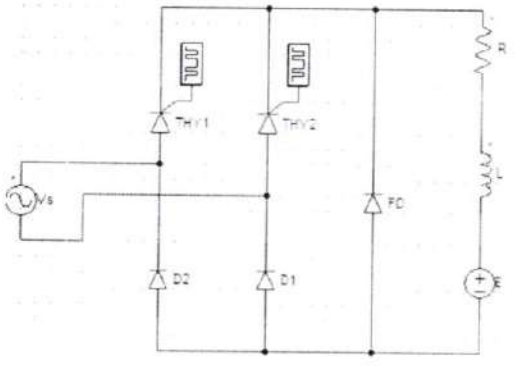
18. The diode rectifier for the circuit indicates that of a



a. Three phase half wave common cathode arrangement
b. Three phase half wave common anode arrangement
c. Three phase full wave common anode arrangement
d. Three phase full wave common cathode arrangement

19. In a 3-phase semi-converter, firing angle is less than 60°, as such each SCR and diode conduct respectively for _____ (in degrees)
a. 60, 60 b. 90, 30 c. 120, 120 d. 180, 180

20. In the semi-converter circuit T1 & T2 are fired at an angle α, then from $\omega t = \pi$ to $\alpha+\pi$



a. T1 is conducting
b. T2 is conducting
c. D is conducting
d. FD is conducting