Program: BE ELECTRONICS Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: ELX702 and Course Name: **Power Electronics**

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

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| Q1. | A device that cannot be triggered with low voltage of either polarity is |
| Option A: | Diac |
| Option B: | Triac |
| Option C: | SCS |
| Option D: | Zener diodes |
|  |  |
| Q2. | The TRIAC’s terminals are |
| Option A: | gate, anode, cathode |
| Option B: | MT1, MT2, gate |
| Option C: | gate1, gate2, anode, cathode |
| Option D: | MT1, MT2, gate1, gate2 |
|  |  |
| Q3. | The MOSFET combines the areas of & |
| Option A: | field effect & MOS technology |
| Option B: | semiconductor & TTL |
| Option C: | mos technology & CMOS technology |
| Option D: | cmos technology |
|  |  |
| Q4. | Choose the correct statement(s)   1. The gate circuit impedance of MOSFET is higher than that of a BJT 2. The gate circuit impedance of MOSFET is lower than that of a BJT 3. The MOSFET has higher switching losses than that of a BJT   iv) The MOSFET has lower switching losses than that of a BJT |
| Option A: | Both i & ii |
| Option B: | Both ii & iv |
| Option C: | Both i & iv |
| Option D: | Only ii |
|  |  |
| Q5. | The effect of over-voltages on SCR are minimized by using |
| Option A: | RL circuits |
| Option B: | Circuit breakers |
| Option C: | Varistors |
| Option D: | di/dt inductor |
|  |  |
| Q6. | The usual way to accomplish higher gate current for improved di/dt rating is by using |
| Option A: | varistors |
| Option B: | pilot thyristors |
| Option C: | twisted cables |
| Option D: | op-amps |
|  |  |
| Q7. | The term used to measure the degree of utilization of SCRs connected in series & parallel is |
| Option A: | tuf |
| Option B: | string efficiency |
| Option C: | voltage/current utilization ratio |
| Option D: | rectification efficiency |
|  |  |
| Q8. | If the RC firing circuit used for firing an SCR is to be used to fire a TRIAC then |
| Option A: | the capacitor should be removed |
| Option B: | the diode should be replaced by a diac |
| Option C: | the diode should be replaced by a bjt |
| Option D: | the diode should be shorted using a resistor |
|  |  |
| Q9. | By using a freewheeling diode (FD) in a rectifier with RL load, the power consumed by the load |
| Option A: | increases |
| Option B: | decreases |
| Option C: | is not affected |
| Option D: | decreases to zero |
|  |  |
| Q10. | A 230V, 50Hz, single-pulse SCR is feeding a RL load with α = 40° and β= 210°. Find the value of average output voltage |
| Option A: | 32V |
| Option B: | 54 V |
| Option C: | 106 V |
| Option D: | 84 V |
|  |  |
| Q11. | A fully controlled converter uses |
| Option A: | diodes only |
| Option B: | thyristors only |
| Option C: | both diodes and thyristors |
| Option D: | diode and resistors |
|  |  |
| Q12. | A single phase full-converter using R load is a |
| Option A: | one, one |
| Option B: | two, one |
| Option C: | one, two |
| Option D: | two, two |
|  |  |
| Q13. | The output current wave of a single-phase full bridge inverter on RL load is |
| Option A: | a sine wave |
| Option B: | a square wave |
| Option C: | a triangular wave |
| Option D: | constant dc |
|  |  |
| Q14. | Single-phase full bridge inverters requires |
| Option A: | 4 SCRs and 2 diodes |
| Option B: | 4 SCRs and 4 diodes |
| Option C: | 2 SCRs and 4 diodes |
| Option D: | 2 SCRs and 2 diodes |
|  |  |
| Q15. | For a full wave bridge inverter, the output voltage (Vo) |
| Option A: | Vo = Vs/2 for 0 < t < T/2 |
| Option B: | Vo = Vs for 0 < t |
| Option C: | Vo = Vs for T/2< t < T |
| Option D: | Vo = -Vs for T/2< t < 3T/2 |
|  |  |
| Q16. | A single-phase half bridge inverter is connected to a 230 V dc source which is feeding a R load of 10 Ω. Determine the average current through each SCR inverter switch. |
| Option A: | 11.5 A |
| Option B: | 5.75 A |
| Option C: | 23 A |
| Option D: | 5 A |
|  |  |
| Q17. | What is the formula for output voltage for Buck converter? |
| Option A: | 8D×Vin |
| Option B: | 5D×Vin |
| Option C: | 2D×Vin |
| Option D: | D×Vin |
|  |  |
| Q18. | What is the formula for output voltage for Buck-Boost converter? |
| Option A: | D×Vin |
| Option B: | Vin ÷ (1-D) |
| Option C: | D×Vin ÷ (1-D) |
| Option D: | D×Vin ÷ (1+D) |
|  |  |
| Q19. | Buck-Boost acts as Buck converter for duty cycle is equal to \_\_\_\_\_\_\_\_\_ |
| Option A: | .9 |
| Option B: | .7 |
| Option C: | .6 |
| Option D: | .4 |
|  |  |
| Q20. | Buck-Boost acts as Boost converter for duty cycle is equal to \_\_\_\_\_\_\_\_\_ |
| Option A: | .8 |
| Option B: | .1 |
| Option C: | .2 |
| Option D: | .4 |
|  |  |
| Q21. | A fully controlled converter uses |
| Option A: | diodes only |
| Option B: | thyristors only |
| Option C: | both diodes and thyristors |
| Option D: | transistor. |
|  |  |
| Q22. | A single phase full-converter using R load is a \_\_\_\_\_\_\_\_\_ quadrant converter and that using an RL load without FD is a \_\_\_\_\_\_\_\_\_\_ quadrant converter |
| Option A: | one, one |
| Option B: | two, one |
| Option C: | one, two |
| Option D: | two, two |
|  |  |
| Q23. | A single-phase full converter B-2 type connection has a RLE type of motor load connected. The minimum requirement to turn-on the device is |
| Option A: | α > 30° |
| Option B: | Vm sinα > E |
| Option C: | Vm sinα < E |
| Option D: | α < 30° |
|  |  |
| Q24. | A cycloconverter is a \_\_\_\_\_\_\_\_\_ |
| Option A: | one stage power converter |
| Option B: | one stage voltage converter |
| Option C: | one stage frequency converter |
| Option D: | two stage frequency converter |
|  |  |
| Q25. | In a three phase AC circuit, the sum of all three generated voltages is \_\_\_\_\_\_\_ |
| Option A: | Infinite (∞) |
| Option B: | Zero (0) |
| Option C: | One (1) |
| Option D: | two (2) |