Program: BE ELECTRONICS Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester VI

Course Code: EXC 604 and Course Name: **Power Electronics I**

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. | In case of an RC half wave triggering circuit, the firing angle can be ideally varied between |
| Option A: | 0 to 180 |
| Option B: | 0 to 90 |
| Option C: | 0 to 120 |
| Option D: | 0 to 360 |
|  |  |
| Q2. | In case of a R firing circuit with Vgp >Vgt |
| Option A: | α = 90° |
| Option B: | α > 90° |
| Option C: | α < 90° |
| Option D: | α = 0° |
|  |  |
| Q3. | For the following RC triggering circuit with R load and a firing angle of α, the voltage across the R load is zero for |
| Option A: | ωt = 0 to α and ωt = π to 2π+α |
| Option B: | ωt = 0 to α |
| Option C: | ωt = π to 2π+α |
| Option D: | ωt = α to 2π |
|  |  |
| Q4. | Pulse triggering can be only used by the \_\_\_\_\_\_\_\_\_\_\_\_\_ type of triggering circuit |
| Option A: | R |
| Option B: | RC |
| Option C: | UJT |
| Option D: | RLC |
|  |  |
| Q5. | The GTO can be turned off |
| Option A: | by a positive gate pulse |
| Option B: | by a negative gate pulse |
| Option C: | by a negative anode-cathode voltage |
| Option D: | by removing the gate pulse |
|  |  |
| Q6. | In a GTO the n+ layer forms the |
| Option A: | anode & gate |
| Option B: | cathode & gate |
| Option C: | cathode |
| Option D: | gate |
|  |  |
| Q7. | A power transistor is a \_\_\_\_\_\_\_\_\_ device. |
| Option A: | two terminal, bipolar, voltage controlled |
| Option B: | two terminal, unipolar, current controlled |
| Option C: | three terminal, unipolar, voltage controlled |
| Option D: | three terminal, bipolar, current controlled |
|  |  |
| Q8. | For a power transistor, if the base current IB is increased keeping VCE constant, then |
| Option A: | IC increases |
| Option B: | IC decreases |
| Option C: | IC remains constant |
| Option D: | Ie increases |
|  |  |
| Q9. | A power BJT is used as a power control switch by biasing it in the cut off region (off state) or in the saturation region (on state). In the on state |
| Option A: | both the base-emitter & base-collector junctions are forward biased |
| Option B: | the base-emitter junction is reverse biased, and the base collector junction is forward biased |
| Option C: | the base-emitter junction is forward biased, and the base collector junction is reversed biased |
| Option D: | both the base-collector & the base-emitter junctions are reversed biased |
|  |  |
| Q10. | A fully controlled converter uses |
| Option A: | diodes only |
| Option B: | thyristors only |
| Option C: | both diodes and thyristors |
| Option D: | transistors only |
|  |  |
| Q11. | Transformer utilization factor is a measure of the merit of a rectifier circuit. It is the ratio of |
| Option A: | AC input power to the transformer volt - amp rating required by secondary |
| Option B: | AC input power to the transformer volt - amp rating required by primary |
| Option C: | DC output power to the transformer volt - amp rating required by secondary |
| Option D: | DC output power to the transformer volt - amp rating required by primary |
|  |  |
| Q12. | 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: | a) one, one |
| Option B: | b) two, one |
| Option C: | c) one, two |
| Option D: | d) two, two |
|  |  |
| Q13. | What is the voltage across the R load when only T2 is conducting |
| Option A: | Vs |
| Option B: | Vs/2 |
| Option C: | 2Vs |
| Option D: | Zero |
|  |  |
| Q14. | The output of a single-phase half bridge inverter on R load is ideally |
| Option A: | a sine wave |
| Option B: | a square wave |
| Option C: | a triangular wave |
| Option D: | constant dc |
|  |  |
| Q15. | In VSI (voltage source inverters) |
| Option A: | both voltage and current depend on the load impedance |
| Option B: | only voltage depends on the load impedance |
| Option C: | only current depends on the load impedance |
| Option D: | only current depends on load. |
|  |  |
| Q16. | \_\_\_\_\_\_\_\_\_\_\_\_ is the measure of the contribution of any individual harmonic to the inverter output voltage. |
| Option A: | THD |
| Option B: | Distortion Factor |
| Option C: | Harmonic Factor |
| Option D: | TUF |
|  |  |
| Q17. | The values of duty cycle (α) lies between |
| Option A: | 0<α<1 |
| Option B: | 0>α>-1 |
| Option C: | 0<=α<=1 |
| Option D: | 1<α<100 |
|  |  |
| Q18. | . If T is the time period for a chopper circuit and α is its duty cycle, then the chopping frequency is |
| Option A: | Ton/α |
| Option B: | Toff/α |
| Option C: | α/Toff |
| Option D: | α/Ton |
|  |  |
| Q19. | Which notation represents the feedback path in closed loop system representation? |
| Option A: | b(t) |
| Option B: | c(t) |
| Option C: | e(t) |
| Option D: | r(t) |
|  |  |
| Q20. | Which among the following represents an illustration of closed loop system? |
| Option A: | Automatic washing machine |
| Option B: | Automatic electric iron |
| Option C: | Bread toaster |
| Option D: | Electric hand drier |
|  |  |
| Q21. | The AC voltage controllers are used in \_\_\_\_\_\_\_\_\_\_ applications. |
| Option A: | power generation |
| Option B: | electric heating |
| Option C: | conveyor belt motion |
| Option D: | power transmission |
|  |  |
| Q22. | In the principle of phase control |
| Option A: | the load is on for some cycles and off for some cycles |
| Option B: | control is achieved by adjusting the firing angle of the devices |
| Option C: | control is achieved by adjusting the number of on off cycles |
| Option D: | control cannot be achieved |
|  |  |
| Q23. | The single phase bridge type cycloconverter uses \_\_\_\_\_\_\_\_\_\_ number of SCRs |
| Option A: | 4 |
| Option B: | 8 |
| Option C: | 6 |
| Option D: | 7 |
|  |  |
| Q24. | The principle of three phase cycloconverter is to |
| Option A: | add and remove number of SCRs |
| Option B: | vary progressively the firing angle of the devices |
| Option C: | keep the firing angle as 0° for all the devices |
| Option D: | vary progressively the gate turn on time of the device |
|  |  |
| Q25. | In three phase cycloconverters, the reduction factor is given by |
| Option A: | input frequency/output frequency |
| Option B: | (input frequency/output frequency) -1 |
| Option C: | (input frequency/output frequency) -1/2 |
| Option D: | (input frequency/output frequency) 1/2 |