

Time: One Hour

Max. Marks: 25

Instructions

Solve any 25 questions from Q.1 to Q.30

- 1 The structure of the IGBT is a ----- structure connected by a MOS gate  
(A)P-N-P (B)N-N-P-P (C)P-N-P-N (D)N-P-N-P
- 2 If the cathode of an SCR is made positive with respect to the anode & no gate current is applied then  
(A)all the junctions are reversed biased (B)all the junctions are forward biased (C)only the middle junction is forward biased (D)only the middle junction is reversed biased
- 3 A triac has ---- no of terminals  
(A)2 (B)3 (C)4 (D)5
- 4 The IGBT cell has a parasitic structure embedded in it  
(A)Thyristor (B)BJT (C)PMOSFET (D)none of the above
- 5 The latching current is \_\_\_\_\_ the holding current  
(A)lower than (B)higher than (C)same as (D)negative of
- 6 ----- proximity sensor detects metal objects?  
(A)Capacitive (B)Magnetic (C)Ultrasonic (D)Inductive
- 7 Which of the following are electrical braking method  
(A)Dynamic (B)Plugging (C)Regenerative (D)All of the above
- 8 False triggering of the SCRs by varying flux & noise is avoided by using  
(A)F.A.C.L.F & C.B (B)Shielded cables & twisted gate leads (C)Snubber circuits (D)di/dt inductor in series with the gate
- 9 The natural reversal of ac supply voltage commutates the SCR in case of  
(A)forced commutation (B)only line commutation (C)only natural commutation (D)both line & natural commutation
- 10 The controlled parameter in IGBT is the  
(A)IG (B)VGE (C)IC (D)VCE
- 11 In a DC series motor, the e.m.f developed is proportional to  
(A) $N \times I_a$  (B) $N \times I_a^2$  (C) $N \times I_a^3$  (D) $N \times I_a^{1.5}$
- 12 Capacitance of a parallel plate capacitor is  
(A) $C = A\epsilon/d$  (B) $C = \epsilon/d$  (C) $C = A/d$  (D) $C = A$
- 13 A thyristor may turned on due to large  
(A)dv/dt (B)Gate current (C)Cathode current (D)None of the above
- 14 The VI characteristics of UJT is similar to  
(A)CE with a linear and saturation region (B)FET with a linear and pinch off region (C)tunnel diode in some respects (D)PN junction diode in some respects
- 15 A snubber cricuit is  
(A)RC in series (B)LC in series (C)RC in parallel (D)IC in parallel
- 16 The forward break over voltage is the  
(A)anode-cathode voltage at which conduction starts with gate signal applied (B)anode-cathode voltage at which conduction starts with no gate signal applied (C)gate voltage at which conduction starts with no anode-cathode voltage (D)gate voltage at which conduction starts with anode-cathode voltage applied
- 17 For large DC machines, the yoke is usually made of which material?  
(A)Cast steel (B)Cast iron (C)Iron (D)both a and b
- 18 The area under the curve of the gate characteristics of thyristor gives the total average gate -----  
(A)current (B)voltage (C)impedance (D)power dissipation
- 19 Consider the two transistor analogy of SCR, if  $\alpha_1$  & if  $\alpha_2$  are the common-base current gains of both the transistors then to turn-on the device  
(A) $\alpha_1 + \alpha_2$  should approach zero (B) $\alpha_1 \times \alpha_2$  should approach unity (C) $\alpha_1 - \alpha_2$  should approach zero (D) $\alpha_1 + \alpha_2$  should approach unity
- 20 For the SCR to remain in the ON state  
(A)gate signal is continuously required (B)no continuous gate signal is required (C)no forward anode-cathode voltage is required (D)negative gate signal is continuously required
- 21 The most suitable control-motor application is ---  
(A)AC shunt motor (B)DC separately motor (C)AC one-phase induction motor (D)DC shunt motor
- 22 The three terminals of the IGBT are  
(A)base, emitter & collector (B)gate, source & drain (C)gate, emitter & collector (D)base, source & drain
- 23 Which braking is not possible in series motor?  
(A)Regenerative braking (B)Dynamic braking (C)Counter current braking (D)rheostat braking
- 24 In case of the UJT firing circuit, when the UJT turns on  
(A)the capacitor starts to charge (B)the capacitor starts to discharge (C)the capacitor remains unaffected (D)there is no capacitor in a UJT firing circuit
- 25 The dv/dt protection is provided in order to

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- (A)limit the power loss                      (B)reduce the junction temperature                      (C)avoid accidental turn-on of the device                      (D)avoiding sudden large voltage across the load
- 26 The  $dv/dt$  rating of SCR can be improved by using  
(A)cathode-short structure                      (B)anode-short structure                      (C)gate-short structure                      (D)centre gate thyristor
- 27 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
- 28 An SCR is a  
(A)four layer, four junction device                      (B)four layer, three junction device                      (C)four layer, two junction device                      (D)three layer, single junction device
- 29 Dc series motor behaves as in dynamic braking?  
(A)Thyristor                      (B)Transformer                      (C)Induction                      (D)Separately excited motor
- 30 Among the following, the most suitable method to turn on the SCR device is the  
(A)gate triggering method                      (B) $dv/dt$  triggering method                      (C)forward voltage triggering method                      (D)temperature triggering method