



Department of Electrical and Electronics Engineering

EE 8004 – Modern Power Converters

Unit II - MCQ Bank

1. power transistor is a ----

- (a) two layer, one junction device
- (b) **three layer, two junction device**
- (c) three layer, three junction device
- (d) four layer, three junction device

Answer --- b

2. GTO (gate turn-off thyristor) is a ---

- (a) PNP
- (b) **PNPN**
- (c) P-METAL -N - DEVICE
- (d) PN SINGLE JUNCTION DEVICE

Answer---- b

3. The latching current is ___ than the holding current

- (a) Negative
- (b) **Lower**
- (c) Higher
- (d) Same as

Answer--- b

4. Schottky diodes are also known as -----

- (a) signaling diode
- (b) easy turn on diode
- (c) **hot carrier diode**
- (d) metal diode

Answer ---- c

5. If the RC firing circuit used for firing an SCR is to be used to fire a TRIAC then

- a) the capacitor should be removed
- b) **the diode should be replaced by a diac**
- c) the diode should be replaced by a bjt
- d) the diode should be shorted using a resistor

Answer(b)

6. In the thyristor gating circuit, the supply to the pulse amplifier is provided by the

- a) zcd
- b) **isolation transformer**
- c) synchronizing transformer
- d) control signal generator

Answer(b)

7. In the thyristor gating circuit, the ZCD is used to

- a) amplify the voltage
- b) produce a train of pulses
- c) **convert AC input the ramp voltage**
- d) used to step-down the voltage

Answer(c)

8. The firing-angle delay is

- a) inversely proportional to the synchronizing transformer voltage
- b) inversely proportional to the control signal voltage
- c) directly proportional to the synchronizing transformer voltage
- d) **directly proportional to the control signal voltage**

Answer(d)

9. The pulse gating is not suitable of

- a) R loads
- b) RC loads
- c) **RL loads**
- d) It is suitable of every type of load

Answer(c)

10. In case of a cosine firing scheme, _____ is used to get a cosine wave

- a) ic 555
- b) a comparator
- c) **an integrator circuit**
- d) a differentiator circuit

Answer(c)

11. If the gating circuits generator negative pulses, then those can be removed by using

- a) schmit triggers
- b) **clippers**
- c) clampers
- d) zener diodes

Answer(b)

12. The improved version of the UJT oscillator triggering circuit is the

- a) **ramp & pedal triggering**
- b) rc triggering
- c) cosine-pulse triggering
- d) ramp triggering

Answer(a)

13. $R_{B1} = 3 \text{ k}\Omega$ & $R_{B2} = 6 \text{ k}\Omega$. Find the intrinsic stand-off ratio (η) of the UJT.

- a) 9
- b) **1/3**
- c) 2/3
- d) 3

Answer(b)

14. The decaying factor in the wave shape of the output pulses from the pulse transformer is its

- a) transformer ratio
- b) **inductance**
- c) capacitance
- d) resistance

Answer(b)

15. 1. In a 3 phase M-6 controlled converter for continuous conduction mode, each SCR conducts for _____ per cycle.

- a) **$2\pi/6$ radians**
- b) 30 degrees
- c) $3\pi/2$ radians
- d) 120 degrees

Answer(a)

16. In a 3 phase, 12-pulse controlled converter for continuous conduction mode, each SCR conducts for _____ per cycle.

- a) **$\pi/6$ radians**
- b) 60 degrees
- c) $3\pi/2$ radians
- d) 12 degrees

Answer(a)

17. A 3-phase full converter delivers a ripple free load current of 10 A with a firing angle delay of 45° . The input voltage is 3-phase, 400 V, 50 Hz. The source current is given by the following relation.

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Find the fundamental component of the source current amplitude.

- a) **11.03**
- b) 2.205
- c) $11.03 \sin 45$
- d) 46.98

Answer(a)

18. A 3-phase full converter delivers a ripple free load current of 10 A with a firing angle delay of 45° . Find the DF (distortion factor).

- a) 1.414
- b) 0
- c) **0.707**
- d) 0.569

Answer(c)

19. What is the relationship between DF, CDF and PF?

- a) $PF = CDF = DF$
- b) $PF = CDF/DF$
- c) $PF = DF/CDF$
- d) **$PF = CDF \times DF$**

Answer(d)

20. The commutation period when both incoming and outgoing SCRs are conducting due to source inductance is called as the

- a) conduction delay
- b) **overlap period**
- c) one on one period
- d) distorting angle

Answer(b)

21. A 3-phase full converter delivers a ripple free load current of 10 A with a firing angle delay of 45° . The input voltage is 3-phase, 400 V, 50 Hz. The source current is given by the following relation.

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Find the value of 2nd harmonic source current amplitude.

- a) 11.25 A
- b) 0.256 A
- c) $2.69 \sin (\omega t - 45) \text{ A}$
- d) **0 A**

Answer(d)

22. In a p-pulse converter, each SCR conducts for (per cycle)

- a) p radians
- b) p degrees
- c) $p/2\pi$ radians

d) $2\pi/p$ radians

Answer(d)

23. Which of the below mentioned converter can operate in both 3-pulse and 6-pulse modes?

- a) 3-phase half wave controller
- b) 3-phase full converter
- c) **3-phase semi-converter**
- d) None of the mentioned

Answer(c)

24. A M-6 controlled converter or 6-pulse half-wave controlled converter is obtained by using a transformer having

- a) a double delta connected secondary winding
- b) **a double star connected secondary winding**
- c) a double delta connected primary winding
- d) 6-windings on both primary and secondary sides

Answer(b)



25. Dual converters provide

- a) two quadrant operation
- b) three quadrant operation
- c) **four quadrant operation**
- d) none of the mentioned

Answer(c)

26. A dual converters has

- a) two full converters in series
- b) two half converters in series
- c) **two full converters in anti-parallel**
- d) two half converters in anti-parallel

Answer(c)

27. The major advantage of using dual converters is that

- a) it is cheaply available
- b) it has better pf
- c) **no mechanical switch is required to change the mode of operation**
- d) its operating frequency is very high

Answer(c)

28. The four quadrant operation of dual converters can be obtained by

- a) moving the mechanical lever
- b) adding inductance to the circuit

c) **changing the firing angle value**

d) none of the mentioned

Answer(c)

29. A single full converter alone can give a

a) four quadrant operation

b) three quadrant operation

c) **two quadrant operation**

d) none of the mentioned

Answer(c)

30. For a single-phase dual converter, with converters C1 and C2 connected in anti-parallel, which relation among the following is true to keep the average voltages from C1 and C2 equal? C1 and C2 have firing angles α_1 and α_2 respectively.

a) $\alpha_1 = \alpha_2$

b) $\alpha_1 + \alpha_2 = 360^\circ$

c) **$\alpha_1 + \alpha_2 = 180^\circ$**

d) none of the mentioned

Answer(c)

31. In non-circulating current mode dual converters, the circulating current is avoided by

a) connecting a series reactor

b) maintaining $\alpha_1 + \alpha_2 = 180^\circ$

c) **operating only one converter**

d) adding an extra SCR

Answer(c)

32. In case of TRC (Time Ratio Control), _____ is varied

a) **duty cycle**

b) firing angle

c) supply frequency

d) supply voltage magnitude

Answer(a)

33. In constant frequency TRC or pulse width modulation scheme, _____ is varied.

a) V_s

b) **T_{on}**

c) T

d) f

Answer(b)

34. In case of variable frequency system _____ is varied

a) **T**

- b) Ton
 - c) Toff
 - d) supply frequency
- Answer(a)

35. In pulse width modulation scheme, _____ is kept constant.

- a) Vs
 - b) **Ton**
 - c) T
 - d) Toff
- Answer(b)

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