



Department of Electrical and Electronics Engineering
EE8017- High Voltage Direct Current Transmission
Unit III - MCQ Bank

1. HVDC-VSC scheme employs

- (a) IGBT valves**
- (b) light or optically triggered thyristor valves
- (c) mercury arc valves
- (d) MOSFETs and GTO valves

Answer: a) IGBT valves

2. The main advantage of HVDC-VSC schemes is

- (a) both active and reactive powers can be controlled**
- (b) does not require DC filters
- (c) can be used for very high power more than 1500 MW
- (d) all of the above

Answer: a) both active and reactive powers can be controlled

3. IGBT converters operate on the principle of

- (a) voltage source converter**
- (b) current source converter
- (c) power source converter
- (d) either (a) or (b)

Answer: a) voltage source converter

4. In HVDC-VSC schemes filters are used

- a) only on the AC side**

- b) only on the DC side
- c) both AC and DC side
- d) no filter is needed

Answer: a) only on the AC side

5. Size of an AC filter and its MVAR capacity is much less in VSC schemes as
- a) no harmonics are generated
 - b) harmonics generated are of much higher order
 - c) filter need not supply RKVA at power frequency and harmonics generated are at switching**
 - d) frequency and higher
 - e) none of the above

Answer: c) filter need not supply RKVA at power frequency and harmonics generated are at switching

6. VSC Converters use:
- a) Thyristor
 - b) Power diode
 - c) Transistors**
 - d) All of these

Answer: c) Transistors (VSC or Voltage-source converters for HVDC employ Insulated-gate bipolar transistor (IGBT) transistors.

7. Generally the Converter transformers used in VSC HVDC systems are as compare to LCC HVDC systems:
- a) Complex
 - b) Simple**
 - c) Identical

Answer: b) Simple

8. In single phase VSI, the harmonic which is not present is

- a. **2nd**
- b. 3rd
- c. 5th
- d. 7th

Answer a) 2nd

9. Which Switching devices are mostly used in self-commutated converter

- a) Diode
- b) IGBT
- c) GTO
- d) Thyristor
- e) **Both b) and c)**

Answer: e) Both b) and c)

10. _____ in which the dc voltage always has one polarity and the power reversal take place through reversal of DC current polarity

- a) **Voltage Source Converter**
- b) Current Source Converter

Answer: a) Voltage Source Converter

11. _____ in which the dc current always has one polarity and the power reversal take place through reversal of DC Voltage polarity

- a) Voltage Source Converter
- b) **Current Source Converter**

Answer: b) Current Source Converter

12. The insulation used in HVDC cable is made up of _____

- a) **Extruded Polymer**
- b) Mica
- c) Varnish

d) Rubber

Answer: a) Extruded Polymer

13. Line commutated converters are also called as _____

a) Voltage source Converter

b) Self commutated Converter

c) Force commutated converter

Answer: c) Force commutated converter

14. VSC HVDC system is useful for reduction of power quality problem

a) True

b) False

Answer: a) True

15) Identify the correct statement about conventional thyristor

a) Conventional thyristor has only the turn on control and its turn off depend on the current coming to zero as per circuit and system condition

b) Conventional thyristor has both the turn off control and turn on control

c) Conventional thyristor are line commutated converter

d) Both a) and b)

Answer: d) Both a and b

16) Identify the correct statement about Insulated Gate Bipolar Transistor (IGBT)

a) (IGBT) has only the turn on control and its turn off depend on the current coming to zero as per circuit and system condition

b) (IGBT) has both the turn off control and turn on control

c) (IGBT) thyristor are line commutated converter

d) Both b) and c)

Answer: b) (IGBT) has both the turn off control and turn on control

17. Match the following:

Devices Converter

- 1) Thyristor i) Self-commutated converter
2) IGBT ii) Force commutated converter

Option: a) 1)-ii) 2)-i)

b) 1)-i) 2)-ii)

Answer: a)

18. Self-commutated converter preferred than line commutated converter

- a) False
b) True

Answer: b) True

19. In VSC HVDC power reversal is possible by following

- a) Changing Direction of DC Current**
b) Changing Direction of DC Voltage
c) Not Possible

Answer: a) Changing Direction of DC Current

20. In classical HVDC power reversal is possible by following

- a) Changing Direction of DC Current
b) Changing Direction of DC Voltage
c) Not Possible

Answer: b) Changing Direction of DC Voltage

21. In classical converter, the DC current is maintained constant by

- a) DC Capacitance
b) DC Smoothing Reactor

Answer: b) DC Smoothing Reactor

22. In voltage source converter, the DC voltage is maintained constant by

- a) **DC Capacitance**
- b) DC Smoothing Reactor

Answer: a) DC Capacitance

23. Harmonics are less in classical converter

- a) True
- b) **False**

Answer: b) False

24. Reactive power flow controller is possible in which controller.

- a) Classical Converter
- b) **Voltage Source Converter**
- c) Both
- d) None

Answer: b) Voltage Source Converter

25. Phase reactors are used in following

- a) Controlling both active and reactive power by neglecting currents flow through them
- b) Functions as filters to reduce the high frequency harmonic content
- c) Controlling only reactive power by neglecting currents flow through them
- d) All of the above
- e) **Only a) and b)**

Answer: e) Only a) and b)

26. VSC-HVDC system is introduced in which year

- a) 1989
- b) **1990**
- c) 1992
- d) 1995

Answer: b) 1990

27. With the help of VSC-HVDC, power transfer capacity through HVDC system has been

- a) Decreased
- b) Increased**

Answer: b) Increased

28. Converter transformer core saturation will lead to

- (a) Harmonic oscillations
- (b) Ferro resonance**
- (c) Sub harmonic oscillations (0.5 Hz)
- (d) torsional oscillations in turbine-generator unit

Answer b) Ferro resonance

29. A 12 pulse bridge is preferred in HVDC because

- (a) It eliminates certain harmonics**
- (b) It results in better power factor
- (c) Series connection of converters on DC side is better
- (d) None of the above

Answer: a) It eliminates certain harmonics

30. Series reactor has

- a. Low impedance
- b. Low resistance**
- c. Low reactance
- d. High resistance

Answer: B. Low resistance

31. Conversion of AC to DC is done by using

- A. Rectifier**
- B. Inverter
- C. Filter

D. None of the above

Answer: A. Rectifier

32. HVDC system prefer 12 pulse converter because

A. High ripple and high harmonics

B. No ripple and no harmonics

C. Less ripple and less harmonics

D. None of the above

Answer: C. Less ripple and less harmonics

33. The advantages of neutral grounding is

A. Freedom from persistent arcing grounds

B. Over voltages due to lightning can be discharged to earth

C. Simplified design earth fault protection

D. All of the above

Answer: D. All of the above

34. Solid grounding is adopted for voltages below

a. 100V

b. 200V

c. 400V

d. 660V

Answer: d. 660V

35. In a star connected system without neutral grounding, zero sequence currents are

a. Zero

b. Phasors sum of phase currents

c. Same as rms value of phase currents

d. Same as peak value of phase currents

Answer: A. Zero

36. Moisture content in the soil the earth soil resistance
- a. Increase
 - b. Decrease**
 - c. Does not affect
 - d. None of the above

Answer: B. Decrease

37. Generally grounding is provided for
- a. Only for the safety of the equipment
 - b. Only for the safety of the operating person
 - c. Both A and B**
 - d. None of the above

Answer: C. Both A and B

38. Conversion of DC to AC is done by
- A. Rectifier
 - B. Inverter**
 - C. Filter
 - D. None of the above

Answer: B. Inverter

39. The advantages of neutral earthing
- A. Safety of personnel
 - B. Reduction of earth fault current
 - C. Elimination of arcing ground**
 - D. None of the above

Answer: C. Elimination of arcing ground

40. Ground resistance should be designed such that
- A. Grounding resistance should be as low as possible**
 - B. Grounding resistance should be as high as possible

- C. Grounding resistance should be always zero
- D. None of the above

Answer: A. Grounding resistance should be as low as possible

41. What type of insulation is preferred for DC smoothing reactors?

- A. Air
- B. Oil**
- C. Paper
- D. Varnish

Correct Answer: B. Oil