



Department of Electrical and Electronics Engineering
EE8017- High Voltage Direct Current Transmission

Unit V - MCQ Bank

1) In load flow studies of a power system, a voltage control bus is specified by

- A. Real power and reactive power
- B. Reactive power and voltage magnitude
- C. Voltage and voltage phase angle
- D. Real power and voltage magnitude**

Answer: D)

2) In power system, the maximum number of buses are

- A. Generator buses
- B. Load buses**
- C. Slack buses
- D. P-V buses

Answer: B)

3) In power system, if a voltage controlled bus is treated as a load bus then which one of the following limits would be violated?

- A. Voltage**
- B. Active power
- C. reactive power
- D. Phase angle

Answer: A)

4) In a load flow analysis of a power system, the load connected at a bus is represented as

- A. Constant current drawn from the bus

- B. Constant impedance connected at the bus
- C. Voltage and frequency dependent sources at the bus
- D. Constant real and reactive power drawn from the bus**

Answer: D)

5) The voltage of a particular bus can be controlled by controlling the

- A. Active power of the bus
- B. Reactive power of the bus**
- C. Phase angle
- D. All of the above

Answer: B)

6) Gauss-Seidel iterative method can be used for solving a set of

- A. Linear differential equations only
- B. Linear algebraic equations only**
- C. Both linear and nonlinear algebraic equations
- D. Both linear and nonlinear algebraic differential equations

Answer: B)

7) The Gauss-Seidel load flow method has following disadvantages, select the incorrect statement

- A. Unreliable convergence**
- B. Slow convergence
- C. Choice of a slack bus affects convergence
- D. A good initial guess for voltages is essential for convergence

Answer: A)

8) Compared to Gauss-Seidel method, Newton-Raphson method takes

- A. Less number of iterations and more time per iteration**
- B. Less number of iterations and less time per iteration
- C. More number of iterations and more time per iteration

D. More number of iterations and less time per iteration

Answer: A)

9) Regulation transformers are used in power systems for control of

A. Voltage

B. Power factor

C. Power flow

D. All of the above

Answer: C)

10) In a load flow study, a PV bus is treated as a PQ bus when

A. Voltage limit is violated

B. Active power limit is violated

C. Phase angle is high

D. Reactive power limit is violated

Answer: D)

11) The positive sequence current of a transmission line is

A. Always zero

B. One third of negative sequence current

C. Equal to negative sequence current

D. three times the negative sequence current

Answer: C)

12) Which type of convergence takes place in Newton Raphson method:

a) Linear convergence

b) Quadratic convergence

c) Cubic convergence

d) None of these

Answer: a. Quadratic convergence

13) For n number of nodes the rank of graph is with respect to Graph theory in Power System Analysis for n number of nodes the rank of graph is:

- a) $n+2$
- b) n
- c) $n-1$**

Answer: C. $n-1$

14) The approximate number of iteration required for n-bus system in Newton-Raphson method is:

- a) 1
- b) n
- c) 3**
- d) n^2

Answer: C. 3

15) The state variables in load flow studies are:

- a) P and Q
- b) P and IVI
- c) P and δ
- d) IVI and δ**

Answer: D. IVI and δ

15) The dimension of the bus incidence matrix is:

- a) $e \times (n-1)$**
- b) $e \times n$
- c) $e \times (n+1)$
- d) $e \times e$

Answer: A. $e \times (n-1)$

16) Base current in amperes is mathematically expressed as:

- a) Base KVA / Base KV (line to line)

- b) **Base KVA / $\sqrt{3}$ Base KV (line to line)**
- c) Base KVA / 3 Base KV (line to line)
- d) $1.5 * \text{Base KVA} / \text{Base KV}$ (line to line)

Answer: B. Base KVA / $\sqrt{3}$ Base KV (line to line)

17) The number of nodes and the number of branches in a tree are related by:

- a) $b = n$
- b) $b = n+1$
- c) **$b = n-1$**
- d) $b = 2n$

Answer: C. $b = n-1$

18) The dimension of bus incidence matrix is:

- a) exn
- b) **$ex(n-1)$**
- c) $ex(n+1)$
- d) $ex(n+2)$

Answer: B. $ex(n-1)$

19) In element node incidence matrix if the p th element is incident to and directed away from q the node, then which of following is correct:

- a) **$\alpha_{pq} = 1$**
- b) $\alpha_{pq} = -1$
- c) $\alpha_{pq} = 0$

Answer: a) $\alpha_{pq} = 1$

20) If e is number of elements and n is number of nodes in graph, then the element-node incidence matrix will have the dimensions:

- a) **$e*n$**
- b) e/n
- c) $e+n$

d) e^{-n}

Answer: a) e^{*n}

21) With respect to branch-path incidence matrix If the pth branch is in the path from qth bus to reference and oriented in the opposite direction then:

a) **$K_{pq} = -1$**

b) $K_{pq} = 1$

c) $K_{pq} = 0$

Answer: a) $K_{pq} = -1$

22) Susceptance is _____ part of _____:

a) Real, Admittance

b) **Imaginary, Admittance**

c) Real, Conductance

d) Imaginary, Conductance

Answer: b) Imaginary, Admittance

23) The dimension of bus incidence matrix is:

a) exn

b) **$ex(n-1)$**

c) $ex(n+1)$

d) $ex(n+2)$

Answer: b) $ex(n-1)$

24) With respect to branch-path incidence matrix if the pth branch is in the path from qth bus to reference and oriented in the same direction then:

a) $K_{pq} = -1$

b) **$K_{pq} = 1$**

c) $K_{pq} = 0$

Answer: b) $K_{pq} = 1$

25) In element node incidence if pth element is not incident to qth node then which of following is correct:

- a) $\alpha_{pq} = 1$
- b) $\alpha_{pq} = -1$
- c) Both of these
- d) None of these**

Answer: d) None of these

26) In element node incidence matrix if the pth element is incident to and directed towards the q the node, then which of following is correct:

- a) $\alpha_{pq} = 1$
- b) $\alpha_{pq} = -1$**
- c) $\alpha_{pq} = 0$

Answer: b) $\alpha_{pq} = -1$