TELANGANA UNIVERSITY
S.S.R. DEGREE COLLEGE, NIZAMABAD (C.C:5029)
VI SEMESTER INTERNAL ASSESSMENT I EXAMINATIONS
PHYSICS (BASIC ELECTRONICS) QUESTION BANK

I. Multiple Choice Questions

1. Superposition theorem is applicable for _____ circuits   [c]
(a) A.C   (b) D.C   (c) Both (a) and (b)   (d) None

2. The equivalent circuit of Norton consists of current source in _____   [b]
(a) Series with resistance   (b) Parallel with resistance
(c) Series with capacitor   (d) Parallel with capacitor

3. Reciprocity theorem is applicable for _____ networks.   [c]
(a) Linear   (b) Bilateral   (c) Both (a) and (b)   (d) None

4. The venin impedance Z_{TH} is found   [d]
(a) By short circuiting the given two terminals   (b) Between any two open terminals
(c) By removing voltage sources along with the internal resistance   (d) All the above

5. _____ parameters are widely used in transmission line theory.   [c]
(a) z   (b) ABCD   (c) y   (d) h

6. In maximum power transfer theorem, the maximum power transfer will occur at efficiency   [b]
(a) 25%   (b) 50%   (c) 75%   (d) 100%

7. If a two port network is not symmetrical but reciprocal then, _____   [c]
(a) $A \neq B$ (b) $A \neq C$ (c) $A \neq D$ (d) $B \neq D$

8. A balanced T-section is known as _____   [b]
(a) Transmission line   (b) H-Section   (c) π-Section   (d) Resonant

9. The h- parameters are mostly used in _____   [a]
(a) Transmission line   (b) Filters   (c) Rectifiers   (d) Open circuits

10. _____ Parameters are also known as transmission line parameter.   [a]
(a) ABCD   (b) h   (c) y   (d) z

11. A semiconductor is formed by _____ bonds.   [a]
(a) Covalent   (b) Coordinate   (c) Electrovalent   (d) None

12. The most commonly used semiconductor is _____   [a]
(a) Silicon   (b) Germanium   (c) Carbon   (d) Sulphur

13. A semiconductor has generally _____ valence electrons.   [c]
(a) 2   (b) 3   (c) 4   (d) 6

14. In an intrinsic semiconductor, the number of free electrons is _____ the number of holes.   [c]
(a) Greater than   (b) Less than   (c) Equal to   (d) None

15. A Zener diode is _____ device.   [a]
(a) A non-linear   (b) A linear   (c) An amplifying   (d) None

16. A Zener diode has _____ breakdown voltage. [a]
(a) Sharp (b) Zero (c) Undefined (d) None

17. The most widely used rectifier is _____ [c]
(a) Half-wave rectifier (b) Centre-tap full wave rectifier (c) Bridge rectifier (d) None

18. A Zener diode employs _____ characteristic for its operation. [b]
(a) Forward (b) Reverse (c) Both a & b (d) None

19. In the breakdown region, a Zener diode behaves like a _____ [a]
(a) Constant voltage (b) Constant current (c) Constant resistance (d) None

20. The bridge rectifier requires _____ diodes. [d]
(a) 1 (b) 2 (c) 3 (d) 4

II. Fill in the Blanks
1. A closed path that transfers energy from source to load is known as Circuit
2. Source transformation is a network reduction technique.
3. The number of circuits required to solve a network using superposition theorem is equal to the number of voltage plus current sources.
4. Thevenin's theorem helps in simplifying computation warm the load across the insult is varying.
5. During the analysis of Thevenin's and Norton's theorem, voltage sources are short circuited and current sources are open circuited
6. $\dfrac{V_S^2}{4R_L}$ is the equation for maximum power transferred.
7. Maximum power transfer theorem is applicable for both AC and DC circuits.
8. Maximum power transfer theorem states that maximum power is delivered from source to load when the resistance is equal to Load, Source resistance.
9. Superposition theorem can be applied only to circuits having linear bilateral elements.

10. The number of possible combinations generated by four variables taken two at a time in a two port network is six
11. The forbidden energy gap of semiconductor is of the order of 1eV
12. The electrical conductivity of a semiconductor at absolute zero temperature is zero
13. Fermi level is the highest energy level occupied by an electron at 0 K.
14. At room temperature, in n-type material there exist large number of positive ions.
15. When a P-type semiconductor is joined to n-type semiconductor it produces P-N Junction diode
16. The reverse voltage at which the junction breakdown occurs is known as Breakdown voltage
17. The impurity level in an extrinsic semiconductor is about 1 atom for 10^8 atoms of pure semiconductor.
18. In a semiconductor current conduction is due to holes and free electrons.
19. A Zener diode has one PN junction.
20. A Zener diode is used as a Voltage regulator

Short Answers.

1. What are active elements and passive elements?

A: The elements which can deliver energy are called active elements. These are voltage and current source. The elements which consume energy either by absorbing or storing are called passive elements. These are resistor, inductors and capacitors.

2. Write the equation for maximum power transferred?

A: $\dfrac{V_S^2}{4R_L}$

3. Which theorem helps in simnplifying computation when load across the circuit is varying?

A: The veinin's theorem is used for simplifying computation when load connected across the circuit is varying.

4. When Thevenin's theorem is used?

A: Thevenin's theorem is useful when the current in a one branch of a network is to determine for different values of the branch resistance.

5. Write the concept on which superposition theorem depends?

A: The concept on which superposition theorem depends is linearity.

6. Define doping?

A: The process of adding impurities to an intrinsic (pure) semiconductors is called as doping.

7. Give examples for pentavalent and trivalent atoms?

A: Arsenic, bismuth antimony, phosphorus are pentavalent atoms while boron, aluminium, indium are trivalent atoms.

8. Define P-N junction?

A: The point at which P-type and N-type semiconductors are joined is called P-N junction.

9. Define rectification?

A: The process of converting an alternating current (A.C) voltage into unidirectional voltage is known as rectification.

10. What is Zener breakdown?

A: The breakdown occurring due to application of strong electric field is known as Zener breakdown.