Institute for Excellence in Higher Education (IEHE), Bhopal

QUESTION BANK

ELECTRICAL CIRCUIT AND NETWORK SKILLS (SEC)

B.Sc.
Physics & Electronics
V Semester

Department of Physics and Electronics, IEHE, Bhopal

Institute for Excellence in Higher Education, Bhopal

Question Bank

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B.Sc. Semester V

Physics & Electronics

Electrical Circuit and Network Skills

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Department of Physics & Electronics
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Electrical Circuits and Network Skills (Theory)

Multiple Choice Questions (MCQ's)

Question 1. The resistance of a conductor does not depend upon:

(a) the material of the conductor

(c) the length of the conductor

(c) the thickness of the conductor

(d) the potential difference

Question 2. "n" Similar resistors each of resistance "r" when connected in parallel, the resistance comes out to be R; When they are connected in series, the resistance will be

(a)R/n (b) R/n^2 (c) nR (d) n^2R

Question 3. Two capacitors of capacitance C_1 and C_2 are connected in series. The result C is such that

(a) $C = C_1+C_2$ (b) C > C2 (c) $C < C_1$ (d) none of these

Question 4. In a charged capacitor, the energy resides

(a) on the positive plate (b) on both the positive and negative plates.

(c) in the electric field between the plates (d) around the edge of capacitor plates.

Question 5. The Voltmeter is connected to _____ .

(a) series in the circuit (b) parallel in the circuit

(c) both (a) & (b) (d) none of these

Question 6. Which one of the following is a type of analog voltmeter:

(a) moving coil instruments (b) VTVMs

(c) both (a) & (b) (d) None of these

Question 7. What is the standard form of VTV?

(a) Vacuum Tube Voltmeter (b) Voltage Tube Voltmeter.

(c) Vacuum Tube Voltage (d) None of the above

Question 8. Multi-meter can measure:

(a) voltage (b) current

(c) resistance (d) all of the above

Question 9. A PN junction that radiates energy as light instead of as heat is called…….

(a) photo cell (b) zener diode

(c) LED (d) photodiode.

Question 10. The number of depletion layers in transistor is/are:

a) two (b) three (c) one (d) four

Question 11. Most widely used rectifier is

(a) center-tap full wave rectifier (b) bridge full-wave rectifier

(c) half wave rectifier (d) none of these

Question 12. A rectifier is used

(a) to obtain high D.C. voltage from low D.C. Voltage

(b) to convert low A.C. voltage to high A.C. Voltage

(c) convert D.C. voltage to A.C. Voltage

(d) to convert A.C. Voltage to D.C. Voltage

Question 13. What happen when we connect the filter circuit after a rectifier circuit:

(a) the ripple factor decreases (b) the ripple factor increases

(c) the voltage regulation becomes poor (d) the ripple factor remains unchanged

Question 14. The shunt capacitor filter is used when:

(a) load resistance is low (b) load resistance is high

(c) load current is high (d) None of there.

Question 15. In a CE amplifier, the input and output signals are:

(a) in the same phase (b) in opposite phase

(c) equal (d) none of these

Question 16. Dual of the Thevenin's theorem:

(a) Millman's theorem (b) Superposition theorem

(c) Maximum power transfer theorem. (d) Norton's theorem.

Question 17. Can we use Norton's theorem for a circuit containing BJT?

(a) yes (b) depends on the BJT

(c) no (d) insufficient data provided

Question 18. Mesh analysis can be used for:

(a) nonplanar circuits (b) planar circuits

(c) both (a) & (b) (d) none of these are

Question 19. If there are 5 branches and 4 nodes in graph, then the number of possible mesh equations are:

(a) 2 (b) 4

(c) 6 (d) 8

Question 20. Superposition theorem does not work for:

(a) current (b) voltage

(c) power (d) all of these

Question 21. In the analysis of a vacuum tube Circuit, we generally use:

(a) Superposition Theorem. (b) Norton's theorem.

(c) Thevenin's theorem. (d) Reciprocal theorem

Question 22. Thevenin's theorem is true for:

(a) linear networks (b) non-linear networks.

(c) both (a) & (b) (d) none of there

Question 23. Which material is commonly used for the base of a breadboard to provide electrical insulation

(a) aluminum (b) plastic

(c) copper (d) glass

Question 24. How are the rows and columns labelled on a bread board?

(a) numbers for rows, letters for columns.

(b) letters for rows, numbers for columns

(c) roman numerals for rows, letters for columns

(d) arabic numerals for rows, Roman numeral for columns.

Question 25. Which part of a breadboard is designed for connecting components like resistors, LED'S and integrated circuits?

(a) the central channel. (b) the terminal block

(c) the rails (d) the bus stripe

Question 26. How many tie points (connection points) are typically found in a standard full-Sized breadboard.

(a) 200 (b) 300

(c) 400 (d) 830

Question 27. Which is the colour commonly used for the power (Vcc) rail on a breadboard?

(a) red (b) blue

(c) green (d) black

Question 28. What is the purpose of testing a circuit on breadboard?

(a) to check the circuit's resistance.

(b) to ensure the circuit works as intended before permanent assembly

(c) to measure the power source voltage of the power source

(d) to determine the circuit's frequency

Question 29. What is the purpose of the "Jumper wires" often used with breadboards?

(a) to increase the voltage (b) to connect components on the bread beard

(c) to provide insulation. (d) to cool down the components.

Question 30. What is the standard grid size (in millimetres) of most breadboards used in

(a) 2.54 mm (b) 5.08mm

(c) 1.27mm (d) 0.5mm

Question 31. How many electrons are there in the fourth orbit of a copper atom?

(a) 1 (b) 2 (c) 3 (d) 4

Question 32. The maximum permissible number of electrons in the third orbit of an atom is:

(a)18 (b) 8 (c) 32 (d) 2

Question 33. Varactor diodes are commonly used
(a)As voltage-controlled capacitance

(b)As a constant current source

(c)As voltage multiplier

(d)As a constant voltage source

Question 34. The reason-why electrons are not pulled by the nucleus of an atom.
(a) because of the centrifugal or outward force created by their orbital motion.

(b) because of the force of attraction between them and the nucleus is weak.

(c) because they are not being attracted by the positive nucleus.

(d) because of the strong bonding between them that resists any force pulling themtowards the nucleus.

Question 35. The electrons in the largest orbit travel_____than the electrons in the smaller orbits.

(a) more slowly (b) faster (c) in the same velocity (d) a little bit slower

Question 36. A transistor configuration with the lowest current gain is:

(a) common base (b) common emitter (c) common collector (d) emitter-follower

Question 37. A pure semiconductor is called:

(a) impure semiconductor (b) doped semiconductor

(c) intrinsic semiconductor (d) extrinsic semiconductor

Question 38. Valence orbit is the other form of:

(a)outermost orbit (b) 3rd orbit (c) 4th orbit (d) 2nd orbit

Question 39. There are two mechanisms by which holes and electrons move through a silicon crystal. They are:

(a) covalent bond and recombination (b) diffusion and drift

(c) free electron and charge particles (d) forward and reverse bias

Question 40. The valence electrons in a semiconductor are:

(a) four (b) eight (c) two (d) three

Question 41. What is the barrier potential of germanium PN diode at 25˚C?

(a) 0.7 V (b) 0.3 V (c) 0.5 V (d) 0.4 V

Question 42. The barrier potential for a Silicon diode at 25˚C is approximately:

(a) 0.4 V (b) 0.3 V (c) 0.7 V (d) 0.5 V

Question 43. What is the other name of Esaki diode?

(a) Diac (b) Hot-carrier diode (c) Shockley diode (d) Tunnel diode

Question 44. When both emitter and collector junctions are reverse biased, the transistor is said to be in_____region.

(a) active (b) cut-off (c) saturation (d) amplifying

Question 45. The holding of one extreme amplitude of the input waveform to a certain amount of DC potential is called_____

(a) slicing (b) limiting (c) rectifying (d) clamping

Question 46. Clamper is also known as

(a) DC restorer (b) rectifier (c) charger (d) clipper

Question 47. When PN junction is connected to a battery in such a way that P-side is connected to positive terminal of the battery and negative terminal to N-side, this connection is known as:

(a) forward bias (b) reverse bias (c) back bias (d) Knee bias

Question 48. A semiconductor is formed by …… bonds.

(a) covalent

(b) electrovalent

(c)co-ordinate

(d)none of the above

Question 49. A semiconductor has …… temperature coefficient of resistance.

(a) positive (b) negative (c) zero (d) none of the above

Question 50. The most commonly used semiconductor is ……

A) germanium

B) silicon

C) carbon

D) sulphur

Question 51. When a pure semiconductor is heated, its resistance:

A) goes up

B) goes down

C) remains the same

D) can't say

Question 52. When a pentavalent impurity is added to a pure semiconductor, it becomes:

A) an insulator

B) an intrinsic semiconductor

C) p-type semiconductor

D) n-type semiconductor

Question 53. Addition of pentavalent impurity to a semiconductor creates many ……

A) free electrons

B) holes

C) valence electrons

D) bound electrons

Question 54. An n-type semiconductor is ……

A) positively charged

B) negatively charged

C) electrically neutral

D) none of the above

Question 55. A trivalent impurity has …. valence electrons

A) 4

B) 5

C) 6

D) 3

Question 56. Addition of trivalent impurity to a semiconductor creates many …

A) holes

B) free electrons

C) valence electrons

D) bound electrons

Question 57. As the doping to a pure semiconductor increases, the bulk resistance of the semiconductor …

A) remains the same

B) increases

C) decreases

D) none of the above

Question 58. A hole and electron in close proximity would tend to …….

A) repel each other

B) attract each other

C) have no effect on each other

D) none of the above

Question 59. In a semiconductor, current conduction is due to …….

A) only holes

B) only free electrons

C) holes and free electrons

D) none of the above

Question 60. The random motion of holes and free electrons due to thermal agitation is called:

A) diffusion

B) pressure

C) ionization

D) none of the above

Question 61. The battery connections required to forward bias a pn junction are ……

A) +ve terminal to p and –ve terminal to n

B) -ve terminal to p and +ve terminal to n

C) -ve terminal to p and –ve terminal to n

D) None of the above

Answer: A

Question 62. In the depletion region of a pn-junction, there is a shortage of …….

A) acceptor ions

B) holes and electrons

C) donor ions

D) none of the above

Question 63. A reverse bias pn-junction has ……

A) very narrow depletion layer

B) almost no current

C) very low resistance

D) large current flow

Question 64. A pn-junction acts as a …….

A) controlled switch

B) bidirectional switch

C) unidirectional switch

D) none of the above

Question 65. A reverse biased pn junction has resistance of the order of

A) Ω

B) KΩ

C) MΩ

D) None of the above

Question 66. The leakage current across a pn junction is due to ……

A) minority carriers

B) majority carriers

C) junction capacitance

D) none of the above

Question 67. In forward bias of a pn-junction, the width of depletion layer ……

A) Decreases

B) Increases

C) Remains the same

D) None of the above

Question 68. In an intrinsic semiconductor, the number of free electrons ……

A) equals the number of holes

B) is greater than the number of holes

C) is less than the number of holes

D) none of the above

Question 69. Under normal conditions a diode conducts current when it is ……

A) reverse biased

B) forward biased

C) avalanched

D) saturated

Question 70. The term bias defines as …….

A) the value of ac voltage in the signal.

B) the condition of current through a pn junction.

C) the value of dc voltages for the device to operate properly.

D) the status of the diode.

Question 71. A crystal diode has ……

A) one pn junction

B) two pn junctions

C) three pn junctions

D) none of the above

Question 72. A crystal diode is commonly used as ……

A) an amplifier

B) a rectifier

C) an oscillator

D) a voltage regulator

Question 73. The ratio of reverse resistance and forward resistance of a germanium crystal diode is about …….

A) 1 : 1

B) 100 : 1

C) 1000 : 1

D) 40,000 : 1

Question 74. If the temperature of a crystal diode increases, then leakage current ……

A) remains the same

B) decreases

C) increases

D) becomes zero

Question 75. If the doping level of a crystal diode is increased, the breakdown voltage…….

A) remains the same

B) is increased

C) is decreased

D) none of the above

Question 76. The knee voltage of a crystal diode is approximately equal to …….

A) applied voltage

B) breakdown voltage

C) forward voltage

D) barrier potential

Question 77. If the doping in a crystal diode is increased, the width of depletion layer……

A) remains the same

B) is decreased

C) is increased

D) none of the above

Question 78. A Zener diode is used as …….

A) an amplifier

B) a voltage regulator

C) a rectifier

D) a multivibrator

Question 79. The doping level in a Zener diode is …… that of a crystal diode

A) the same as

B) less than

C) more than

D) none of the above

Question 80. A Zener diode is always connected in ____ bias.

A) reverse

B) forward

C) either reverse or forward

D) none of the above

Question 81. In the breakdown region, a Zener diode behaves like a …… source.

A) constant voltage

B) constant current

C) constant resistance

D) none of the above

Question 82. A Zener diode is ……. device

A) a non-linear

B) a linear

C) an amplifying

D) none of the above

Question 83. The ripple factor of a half-wave rectifier is ……

A) 2

B) 1.21

C) 2.5

D) 0.48

Question 84. _____ in a 10 V power supply is used as filter.

A) paper capacitor

B) mica capacitor

C) electrolytic capacitor

D) air capacitor

Question 85. A half-wave rectifier has an input voltage of 240 V rms. If the step-down transformer has a turns ratio of 8:1, what is the peak load voltage? Ignore diode drop.

A) 27.5 V

B) 86.5 V

C) 30 V

D) 42.5 V

Question 86. The maximum efficiency of a half-wave rectifier is ……

A) 40.6 %

B) 81.2 %

C) 50 %

D) 25 %

Question 87. The base of a transistor is ……. doped

A) heavily

B) moderately

C) lightly

D) none of the above

Question 88. The element that has the bigger size in a transistor is ……

A) collector

B) base

C) emitter

D) collector-base-junction

Question 89. In a PNP transistor, the majority charge carriers are ……

A) acceptor ions

B) donor ions

C) free electrons

D) holes

Question 90. The collector of a transistor is ……. doped

A) heavily

B) moderately

C) lightly

D) none of the above

Question 91. A transistor is a …… controlled device.

A) current

B) voltage

C) both voltage and current

D) none of the above

Question 92. In an NPN transistor, ……. are the minority charge carriers.

A) free electrons

B) holes

C) donor ions

D) acceptor ions

Question 93. The emitter of a transistor is …… doped

A) lightly

B) heavily

C) moderately

D) none of the above

Question 94. In a transistor, the base current is about …….. of emitter current

A) 25%

B) 20%

C) 35 %

D) 5%

Question 95. At the base-emitter junctions of a transistor, one finds _____.

A) a reverse bias

B) a wide depletion layer

C) low resistance

D) none of the above

Question 96. The input impedance of a transistor is …

A) high

B) low

C) very high

D) almost zero

Question 97. Most of the majority charge carriers from the emitter …

A) recombine in the base

B) recombine in the emitter

C) pass through the base region to the collector

D) none of the above

Question 98. In a transistor …

A) $I_C = I_E + I_B$

B) $I_B = I_C + I_E$

C) $I_E = I_C - I_B$

D) $I_E = I_C + I_B$

Question 99. The value of α of a transistor is …

A) more than 1

B) less than 1

C) 1

D) none of the above

Question 100. In a transistor, $I_C = 100$ mA and $I_E = 100.2$ mA. The value of β is …

A) 100

B) 500

C) about 1

D) 200

Question 101. In a transistor if $\beta = 100$ and collector current is 10 mA, then I_E is …

A) 100 mA

B) 100.1 mA

C) 11 mA

D) none of the above

Question 102. The relation between β and α is …

A) $\beta = 1 / (1 - \alpha)$

B) $\beta = (1 - \alpha) / \alpha$

C) $\beta = \alpha / (1 - \alpha)$

D) $\beta = \alpha / (1 + \alpha)$

Question 103. The most commonly used transistor arrangement for amplifier is …… arrangement.

A) common emitter

B) common base

C) common collector

D) none of the above

Question 104. The input impedance of a transistor connected in …….. mode is the highest.

A) common emitter

B) common collector

C) common base

D) none of the above

Question 105. If the value of α is 0.9, then value of β is …

A) 9

B) 0.9

C) 900

D) 90

Question 106. The arrow in the symbol of a transistor indicates the direction of ……

A) electron current in the emitter

B) electron current in the collector

C) hole current in the emitter

D) donor ion current

Question 107. The collector-base junction in a transistor has …

A) forward bias at all times

B) reverse bias at all times

C) low resistance

D) none of the above

Question 108. The CB configuration of transistor is used to provide which type of gain?

A) voltage

B) current

C) resistance

D) power

Question 109. A transistor may be used as a switching device or as a …

A) fixed resistor

B) tuning device

C) rectifier

D) variable resistor

Question 110. In a transistor, collector current is controlled by ……

A) collector voltage

B) base current

C) collector resistance

D) all of the above

Answer: B

Question 111. Maximum efficiency of Half Wave Rectifier is:

A) 25%

B) 40.6%

C) 65.6%

D) 85.6%

Question 112. Maximum efficiency of Full Wave Rectifier is:

A) 25%

B) 41.6%

C) 65.2%

D) 81.2%

Question 113. Ripple factor of Full Wave Rectifier is:

A) 0.483

B) 0.383

C) 0.283

D) 0.83

Question 114. Ripple factor =

A) I_{rms} / I_{dc}

B) Irms – I_{dc}

C) Irms + Idc

D) Irms * Idc

Question 115. Common Collector configuration of transistor is used for impedance matching because its ……

A) input impedance is very high
B) input impedance is low
C) output impedance is very low
D) none of the above

Question 116. For highest power gain, one would be use ……. Mode.

A) CC
B) CB
C) CE
D) None of the above

Question 117. The phase difference between the output and input voltages of a CE amplifier is:

A) 180^0
B) 0^0
C) 90^0
D) 270^0

Question 118. The purpose of coupling capacitor in a transistor amplifier is to …..

A) increase the output impedance of transistor.
B) protect the transistor.
C) pass a.c. and block d.c.
D) provide biasing.

Question 119. The quantity of a charge that will be transferred by a current flow of 10 A over 1-hour period is

(a) 10 C

(b) $3.6 * 10^4$

(c) $2.4 * 10^3$

(d) $1.6 * 10^2$

Question 120. What is the value of equivalent resistance if the resistor 10 ohm is parallel to 20 ohm?

(a) 30 ohms

(b) 12.68 ohm

(c) 6.67 ohm

(d) 3.28 ohm

Question 121. The equivalent resistance of four resisters joined in parallel is 20 ohms . The current flowing through them are 0.6 , 0.3 , 0.2 and 0.1 amps . The value of each resistor

(a) 4 ohms , 8 ohms ,12 ohms , 24 ohms

(b) 40 ohms, 80 ohms , 120 ohms , 240 ohms

(c) 40 ohms , 40 ohms , 40 ohms , 40 ohms

(d) 240 ohms, 240 ohms , 240 ohms , 240 ohms

Question 122. In an electric circuit, current becomes half when resistance is

(a) Removed

(b) Doubled

(c) Halved

(d) None of these

Question 123. Ohm's law is obeyed by many substances, but it is not a fundamental law of nature, it fails if

(a) V depends on I non-linearly

(b) the relation V & I depend on the sign of V for the same absolute value of V

(c) the relation between V and I is non-unique.

(d) all of the above

Question 124. A current of 1A is drawn by a filament of an electric bulb. Number of electrons passing through a cross section of the filament in 16 seconds would be roughly

(a) 10^{20}

(b) 10^{16}

(c) 10^{18}

(d) 10^{23}

Question 125. A dielectric is placed in an electric field. The electric displacement is___.

(a) directly proportional to the electric field

(b) inversely proportional to the applied electric field

(c) independent of polarisation

(d) independent on the dielectric constant of the dielectric

Question 126. A 10 uF capacitor is charged to a potential difference of 50 V and is connected to another uncharged capacitor in parallel, now the common potential difference becomes 20V . The capacitance of second capacitor is

(a) 10 uF

(b) 20 uF

(c) 30 uF

(d) 15 uF

Question 127. An ideal voltmeter should have

(a) Zero resistance

(b) Low resistance

(c) Infinite resistance

(d) Moderate resistance

Question 128. In an circuit, an ammeter is always connected in

(a) parallel

(b) series

(c) both

(d) one

Question 129. The resistance of an ideal ammeter is

(a) zero

(b) very small

(c) very large

(d) infinite

Question 130. The 24 V potential difference is applied across a parallel combination of four 60 ohms resistors. The current in each resistor is

(a) 1 A

(b) 4 A

(c) 16 A

(d) 36 A

Question 131. A voltmeter must have very high internal resistance so that ____.

(a) accuracy is high

(b) resolution is high

(c) it draws a small amount of current.

(d) creates high loading effect of the circuit.

Question 132. Which of the following is not correct?

(a) Voltmeter should have a very high resistance.

(b) An ammeter should have a very low resistance.

(c) A shunt should have a very low resistance.

(d) An electronic voltmeter draws appreciable current from source

Question 133. Sensitive low voltage electronic components are protected from____.

(a) static charge

(b) induction circuit

(c) lighting

(d) all of these

Question 134. In order to increase the range of a voltmeter

(a) a low resistance is connected in parallel

(b) a low resistance is connected in series

(c) a high resistance is connected in parallel

(d) a high resistance is connected in series.

Question 135. The dependent electrical energy sources are of _____ kinds.

a) 5 b) 2 c) 3 d) 4

Question 136. Pick the incorrect statement among the following.

a) Inductor is a passive element b) Current source is an active element

c) Resistor is a passive element d) Voltage source is a passive element

Question 137. A practical current source can also be represented as _____.

a) a resistance in parallel with an ideal voltage source

b) a resistance in parallel with an ideal current source

c) a resistance in series with an ideal current source

d) none of the mentioned

Question 138. A dependent electrical energy source _____.

a) may be either current source or a voltage source

b) is always a voltage source

c) is always a current source

d) none of the mentioned

Question 139. In nodal analysis how many nodes are taken as reference nodes?

a) 1 b) 2 c) 3 d) 4

Question 140. In Superposition theorem, while considering a source, all other voltage sources are?

a) open circuited b) short circuited

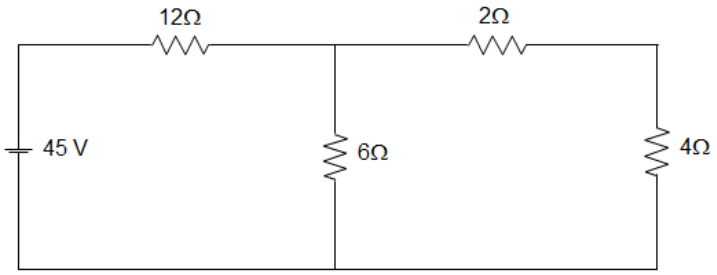
c) change its position d) removed from the circuit

Question 141. In Reciprocity Theorem, which of the following ratios is considered?

a) Voltage to current b) Current to current

c) Voltage to voltage d) No ratio is considered

Question 142. A circuit is given in the figure below. We can infer that _____



a) The circuit follows Reciprocity Theorem

b) The circuit follows Superposition Theorem

c) Both a and b

d) None of these

Question 143. The maximum power is delivered from a source to its load when the load resistance is _____ the source resistance.

a) greater than b) less than

c) equal to d) less than or equal to

Question 144. The temperature coefficient of a metal as the temperature increases will _____

a) Decreases b) Increases

c) Remains unchanged d) Increases and remains same

Question 145. Kirchhoff's Current law is based on the law of conservation of _____

a) energy b) momentum

c) mass d) charge

Question 146. Thevenin resistance is found by _____

a) Shorting all voltage sources

b) Opening all current sources

c) Shorting all voltage sources and opening all current sources

d) Opening all voltage sources and shorting all current sources

Question 147. In superposition theorem, when we consider the effect of one current source, all the other current sources are _____

a) Shorted b) Opened

c) Removed d) Undisturbed

Very Short Answer Questions

Question 1. Define voltage source. Differentiate ideal and practical voltage source.

Question 2. Define active and passive elements.

Question 3. Define linear and nonlinear network

Question 4. What is meant by current.

Question 5. Define line voltage and phase voltage

Short Answer Questions

Question 1. Define n-type semiconductors.

Question 2. Define is p-type semiconductors.

Question 3. Classify Solids on the basis of Band Structure.

Question 4. Why semiconductor is importance. Describe the properties of semi-conductor.

Question 5. Differentiate between Intrinsic and Extrinsic Semiconductors

Question 6. What is the principle of multi-meter? Describe the types of multimeters.

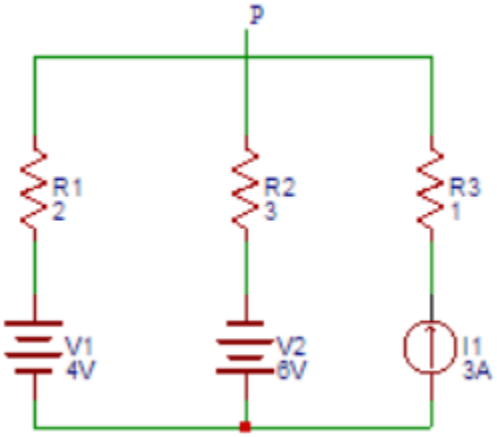
Question 7. Define the following terms:
(a) Node (OR) Junction (b) Tree (c) Branch (d) Mesh

Question 8. What you know about ohm's law. Write limitations of ohm'.

Question 9. Differentiate series and parallel connections in a circuit.

Question 10. Explain ideal voltage and ideal current source.

Question 11. Find the voltage at node P in the following figure.



Question 12. Write the statement of any 2 of the following theorems:

a) Thevenin Theorem
b) Nortons Theorem
c) Superposition Theorem
d) Reciprocity Theorem

Question 13. What do you mean by Linear, Bilateral and two terminal networks?

Long Answer Questions

Question 1. What Is a Power Supply? How Does a Switching Power Supply Work?

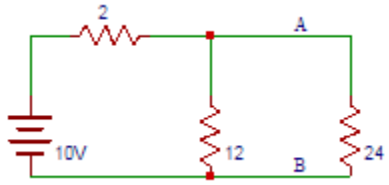
Question 2. What is a transistor? Explain various types of transistor and their biasing.

Question 3. Differenciate between High Pass and Low pass filter.

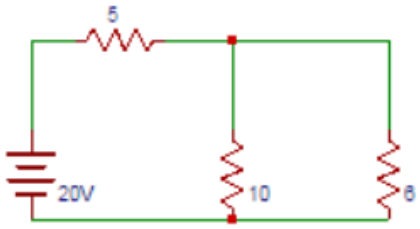
Question 4. What is Band pass Filter?

Question 5. Explain transistor as an amplifier.

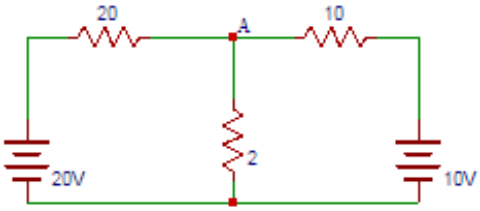
Question 6. A) State Thevenin Theorem and mention the steps to form Thevenin equivalent Circuit.
B) Consider the circuit shown below. Find the equivalent Thevenin's voltage between nodes A and B.



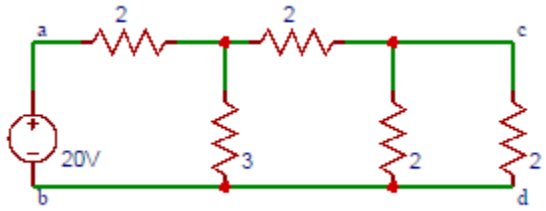
Question 7. A) State the Nortons Theorem and mention the steps to form Nortons equivalent circuit.
B) Find the current through 6Ω resistor in the circuit shown below.



Question 8. A) State the Superposition Theorem and mention the steps to find voltage or current across a component using Superposition theorem.
B) Find the voltage across 2Ω resistor due to 20V source in the following circuit.



Question 9. State Reciprocity Theorem and following circuit, the current drawn by 2Ω resistor (a-b) after the source is replaced is?



Question 10. State and proof maximum power transfer theorem.

Answer Key

1. d	**26. d**	**51. b**	**76. d**	**101. c**	**126. d**
2. d	**27. a**	**52. d**	**77. c**	**102. c**	**127. c**
3. c	**28. b**	**53. a**	**78. b**	**103. a**	**128. b**
4. c	**29. b**	**54. c**	**79. c**	**104. b**	**129. a**
5. b	**30. a**	**55. d**	**80. a**	**105. a**	**130. b**
6. a	**31. a**	**56. a**	**81. a**	**106. c**	**131. c**
7. a	**32. a**	**57. c**	**82. a**	**107. b**	**132. d**
8. d	**33. a**	**58. b**	**83. b**	**108. a**	**133. d**
9. c	**34. a**	**59. c**	**84. c**	**109. b**	**134. d**
10. a	**35. a**	**60. c**	**85. d**	**110. b**	**135. d**
11. b	**36. a**	**61. a**	**86. a**	**111. b**	**136. d**
12. d	**37. c**	**62. b**	**87. c**	**112. d**	**137. b**
13. a	**38. a**	**63. b**	**88. a**	**113. a**	**138. a**
14. b	**39. b**	**64. c**	**89. d**	**114. a**	**139. a**
15. b	**40. a**	**65. c**	**90. b**	**115. a**	**140. b**
16. d	**41. b**	**66. a**	**91. a**	**116. c**	**141. a**
17. c	**42. c**	**67. a**	**92. b**	**117. a**	**142. a**
18. b	**43. d**	**68. a**	**93. b**	**118. c**	**143. c**
19. a	**44. b**	**69. b**	**94. d**	**119. b**	**144. d**
20. c	**45. d**	**70. c**	**95. c**	**120. c**	**145. d**
21. c	**46. a**	**71. a**	**96. b**	**121. b**	**146. c**
22. a	**47. a**	**72. c**	**97. c**	**122. b**	**147. b**
23. b	**48. a**	**73. d**	**98. d**	**123. d**	**End.**
24. b	**49. b**	**74. c**	**99. b**	**124. a**	
25. a	**50. b**	**75. c**	**100. c**	**125. a**	

----------End----------