Question Bank
Electrical Engineering
Second Semester
APPLIED SCIENCE (22211) I SCHEME
For UT-1 And UT-2
(PHYSICS)

UNIT-1- MCQS ON CAPACITOR

1). Capacitor is a device used to_____
    a) store electrical energy   b) vary the resistance
    c) store magnetic energy   d) dissipate energy
    View Answer a
    Explanation: Capacitor is used to store the charge. It stores electrical energy between the plates.

2). Capacitor stores which type of energy?
    a) kinetic energy   b) vibrational energy
    c) potential energy   d) heat energy
    View Answer c
    Explanation: Capacitor store charge in between the plates. This charge is stationary so We can say Capacitor store potential energy.

3). Capacitor blocks_____ after long time.
    a) alternating current   b) direct current
    c) both alternating and direct current   d) neither alternating nor direct current
    View Answer b
    Explanation: Capacitor blocks direct current at steady state

4). Why does capacitor block dc signal at steady state?
    a) due to high frequency of dc signal   b) due to zero frequency of dc signal
c) capacitor does not pass any current at steady state   d) due to zero frequency of dc signal
    View Answer d
    Explanation: Frequency of dc signal is zero. So, Capacitive reactance $X_C = 1/2\pi fc$ becomes infinite and capacitor behaves as open circuit for dc signal. Hence, capacitor block dc signal.

5). If a parallel plate capacitor of plate area $2m^2$ and plate separation 1m store the charge
 of 1.77×10^{-11} C. What is the voltage across the capacitor?
    a) 1V   b) 2V
    c) 3V   d) 4V
    View Answer a
    Explanation: $C = \epsilon_0 A/d$ On substituting values of d, A, we get $C = 2\epsilon_0$. $Q = CV$, $V = 1$ V.

6). Which of the following is a passive device?
    a) Transistor   b) Rectifier
    c) Capacitor   d) Vacuum Tubes
    View Answer c
    Explanation: Capacitor is a passive device as it consumes power rest all generate power so, they are active devices

7). What is the value of capacitance of a capacitor which has a voltage of 4V and has 16C of charge?

    a) 2F   **b) 4F**

    c) 6F   d) 8F

8). For which medium capacitance is high?

    a) Air   b) Mica

    c) Water   d) Metal

    View Answer d

Explanation: Metals are assumed to have a high value of dielectric constant so they have high capacitance.

9). What is the relation between current and voltage in a capacitor?

    a) I=1/Cxintegral(Vdt)   b) I=C dv /dt

    c) I=1/C dv /dt   d) I=Ct

    View Answer b

Explanation: Current=rate of change of charge   I=dQ/dt. Q=CV. C(capacitance) is constant for a given Capacitor so I=C dv/dt.

10). If 2V is supplied to a 3F capacitor, calculate the charge stored in the capacitor.

    a) 1.5C   b) 6C

    c) 2C   d) 3C

    View Answer b

Explanation: Q is directly proportional to V. The constant of proportionality in this case is C, that is, the capacitance. Hence Q=CV.   Q=3x2=6C.

11). Calculate the current in the capacitor having 2V supply voltage and 3F capacitance in seconds.

    a) 2A   b) 5A

    c) 6A   d) 3A

    View Answer d

Explanation: Q is directly proportional to V. The constant of proportionality in this case is C, that is, the capacitance. Hence Q=CV.   Q=3x2=6C. I=Q/t= 6/2=3A

12). A 4microF capacitor is charged to 120V, the charge in the capacitor would be?

    a) 480C   b) 480microC

    c) 30C   d) 30microC

    View Answer b

Explanation: Q is directly proportional to V. The constant of proportionality in this case is C, that is, the capacitance. Hence Q=CV.   Q=4x120=480microC.

13). For high frequencies, capacitor acts as _____

    a) Open circuit   b) Short circuit

    c) Amplifier   d) Rectifier

    View Answer b

Explanation: Capacitive impedance is inversely proportional to frequency. Hence at very high frequencies, the impedance is almost equal to zero, hence it acts as a short circuit and thereis no voltage across it.

14). For very low frequencies, capacitor acts as _____

    a) Open circuit   b) Short circuit

    c) Amplifier   d) Rectifier

    View Answera

Explanation: Capacitive impedance is inversely proportional to frequency. Hence at very low frequencies the impedance is almost infinity and hence acts as an open circuit and no current flows through it

15). A capacitor consists of_____
     a) Two conductors   b) Two semiconductors
     c) Two dielectrics   d) Two insulators
     Answer: a
     Explanation: A capacitor consists of two conductors connected in parallel to each other so that
it can store charge in between the plates.

16). Capacitor preferred when there is high frequency in the circuits is _____
     a) Electrolyte capacitor   **b) Mica capacitor**
     c) Air capacitor   d) Glass capacitor
     View Answer b
     Explanation: Mica capacitors are preferred for high frequency circuits because they have
 low ohmic losses and less reactance.

20). Capacitance increases with _____
     a) Increase in plate area   b) Decrease in plate area
     c) Increase in distance between the plates   d) Increase in density of the material
     View Answera
     Explanation: Capacitance is directly proportional to the plate area. Hence as the plate
area Increases, The capacitance also increases.

21). Capacitance increases with _____
     a) Increase in distance between the plates   b) Decrease in plate area
     c) Decrease in distance between the plates   d) Increase in density of the material
     View Answer c
     Explanation: Capacitance is inversely proportional to the distance between the two parallel
plates. Hence, as the distance between the plate decreases, the capacitance increases.

22). Which among the following expressions relate charge, voltage and capacitance of a capacitor?
     a) $Q=C/V$ b) $Q=V/C$
     c) $Q=CV$ d) $C=Q^2V$
     View Answer c
     Explanation: Q is directly proportional to V. The constant of proportionality in this case is C,
that is, the capacitance. Hence Q=CV.

23). If a 2F capacitor has 1C charge, calculate the voltage across its terminals.
     a) 0.5V   b) 2V
     c) 1.5V   d) 1V
     View Answera
     Explanation: Q is directly proportional to V. The constant of proportionality in this case is C,
 that is, the capacitance. Hence Q=CV. V=Q/C=1/2 V=0.5V.

24). What is the voltage across a capacitor at the time of switching, that is, when t=0?
     a) Infinity   b) 0V
     c) Cannot be determined   d) 1V
     View Answer b
     Explanation: At the time of switching, when t=0, the capacitor acts as a short circuit. The
voltage across a short is always equal to zero hence the voltage across the capacitor is equal to zero

25). What is the voltage across the capacitor if the switch is closed and steady state is reached?
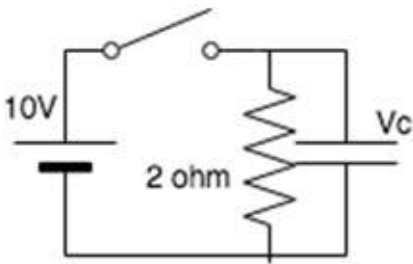
    a) 8V   b) 0V
    c) 10V   d) Infinity
View Answer c

Explanation: When steady state is reached, the capacitor acts as a open circuit and the 10V is connected   in parallel to it. Hence Vc=10V.

26). If one plate of a parallel plate capacitor is charged to positive charge the other plate is charged to?
    a) Positive   b) Negative
    c) Positive or negative   d) Not charged
View Answer b

Explanation: If one plate is charged to positive, the other plate is automatically charged to negative so that it can store electrical charge

27). When the voltage across a capacitor increases, what happens to the charge stored in it?
    a) Increases   b) Decreases
    c) Becomes zero   d) Cannot be determined
View Answera

Explanation: When the voltage across a capacitor increases, the charge stored in it also increases becausea charge is directly proportional to voltage, capacitance being the constant of proportionality

28). When will capacitor fully charged?
    a) When the voltage across its plates is half the voltage from ground to one of its plates
    b) When the current through the capacitor is a 1/root2 time its value
    c) When the supply voltage is equal to the capacitor voltage
    d) Never
View Answer c

Explanation: When the capacitor voltage is equal to the supply voltage the current stops flowing through the circuit and the charging phase is over.

29). What happens to the current flow in a fully charged capacitor?
    a) Current flow stops
    b) Current flow doubles
    c) Current flow becomes half its original value
    d) Current flow becomes one-fourth its original value
View Answera

Explanation: When a capacitor is fully charged, it does not store any more charge. There is no change in charge with time. Current is the rate of change of charge, hence it becomes zero, or stops.

30). Calculate the capacitance of a capacitor that stores 40microC of charge and has a voltage of 2V.
    a) 20F   b) 20microF
    c) 10F   d) 10microF

View Answer b

Explanation: Q is directly proportional to V. The constant of proportionality in this case is C, that is, the capacitance. Hence C=Q/V.   C=40microC/2V=20microF.

31). What happens to the capacitance when the voltage across the capacitor increases?

a) Decreases
b) Increases
c) Becomes 0
d) No effect

View Answer d

Explanation: Q is directly proportional to V. The constant of proportionality in this case is C, that is,the capacitance. Capacitance is a constant so it will not change on changing voltage

*32). A power factor of a circuit can be improved by placing which, among the following, in a circuit?

a) Inductor
b) Capacitor
c) Resistor
d) Switch

View Answer b

Explanation: Power factor = Real power/Apparent power = kW/kVA   By adding a capacitor in a circuit, an additional kW load can be added to the system without altering the kVA. Hence, the power factor is improved.

33). When the supply frequency increases, what happens to the capacitive reactance in the circuit?

a) Increases
b) Decreases
c) Remains the same
d) Becomes zero

View Answer b

Explanation: The expression for capacitive reactance is: $X_c=1/(2 x pi x f x C)$. This relation Shows, that frequency is inversely related to capacitive reactance. Hence, as supply frequencyincreases,the capacitive eactance decreases.

34). Calculate the time constant of a series RC circuit consisting of a 100microF capacitor in series with a 100 ohm resistor.

a) 0.1 sec
b) 0.1 m sec
c) 0.01 sec
d) 0.01 m sec

View Answer c

Explanation: The time constant of a RC circuit= R x C= $100 \times 10^{-6} \times 100 = 0.01$ sec

35). Capacitors charge and discharge in _____ manner.

a) Linear
b) Constant
c) Square
d) Exponential

View Answer d

Explanation: Capacitors charge and discharge in an exponential manner because of the relation: $X_c=1/(2\pi f C)$ and Q=CV ∴ $Q=V/(2\pi f X_c)$ X_c is complex which can be written in the form of exponent through ruler formula.

36). Air has a dielectric constant of _____

a) Unity
b) Zero
c) Infinity
d) Hundred

View Answera

Explanation: Dielectric constant of air is the same as that of a vacuum which is equal to unity. Dielectric constant of air is taken as the reference to measure the dielectric constant of all other materials

37). What is the value of capacitance of a capacitor which has a voltage of 4V and ha 8C of charge?

a) 2F
b) 4F
c) 6F
d) 8F

View Answera

Explanation: Q is directly proportional to V. The constant of proportionality in this case is C, that is, the capacitance. Hence Q=CV. From the relation, C=Q/V= 8/4=2F.

38). Unit of capacitance is_____
  a) Volts   b) Farad
  c) Henry   d) Newton
  View Answer b
  Explanation: Volts is the unit of voltage, Henry for inductance and Newton for a force. Hence the unitfor capacitance is Farad

39). What will happen to the capacitor just after the source is removed?
  a) It will not remain in its charged state   b) It will remain in its charged state
  c) It will start discharging   d) It will become zero
  View Answer b
  Explanation: As soon as the source is removed, the capacitor does not start discharging it remains in the same charged state.

40). Which among the following equations is incorrect?
  a) Q=CV   b) Q=C/V
  c) V=Q/C   d) C=Q/V
  View Answer b
  Explanation: Q is directly proportional to V. The constant of proportionality in this case is C, that is, the capacitance. Hence Q=CV. From the given relation we can derive all the equations except for Q=C/V.

41). Capacitance is directly proportional to_____
a) Area of cross section between the plates   b) Distance of separation between the plates
  c) Both area and distance   d) Neither area nor distance
  View Answer a
  Explanation: The relation between capacitance, area and distance between the plates is:C=epsilon XA/D. According to this relation, the capacitance is directly proportional to the area.

42). What is the total capacitance when three capacitors, C1, C2 and C3 are connected in parallel?
  a) $C_1/(C_2+C_3)$ b) $C_1+C_2+C_3$
  c) $C_2/(C_1+C_3)$ d) $1/C_1+1/C_2+1/C_3$
  View Answer b
  Explanation: When capacitors are connected in parallel, the total capacitance is equal to the sum of the capacitance of each of the capacitors. Hence C $_{total}$=C1+C2+C3.

43). Calculate the total capacitance.
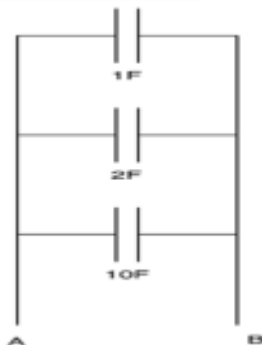
  a) 10F   b) 15F
  c) 13F   d) 20F
  View Answer c
  Explanation: The equivalent capacitance when capacitors are connected in parallel is the sum of all the capacitors= 1+2+10= 13F.

44). Calculate the voltage across AB if the total charge stored in the combination is 13C.

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

View Answer a

Explanation: The equivalent capacitance when capacitors are connected in parallel is the sum of all the capacitors= 1+2+10= 13F. V=Q/C= 13/13=1V.
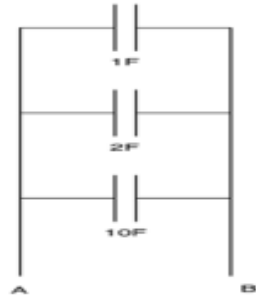
45). Calculate the charge in the 2F capacitor.

    a) 200C   b) 100C
    c) 300C   d) 400C

View Answer a

Explanation: Since the capacitors are connected in parallel, the voltage across each is the same, it does not get divided. Q=CV= 2*100=200C.

46). Calculate the charge in the 1F capacitor.

    a) 200C   b) 100C
    c) 300C   d) 400C

View Answer b

Explanation: Since the capacitors are connected in parallel, the voltage across each is the same, it does not get divided. Q=CV= 1*100=100C.

47). Calculate the total charge of the system.

    a) 200C   b) 100C
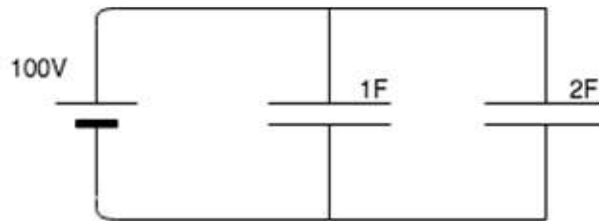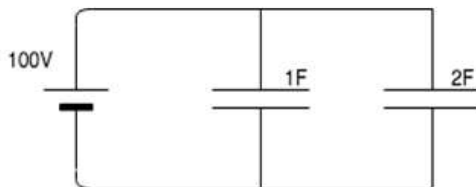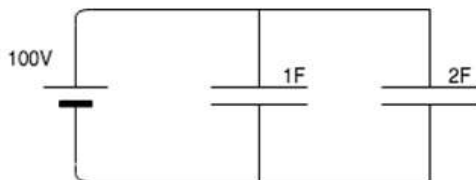   c) 300C   d) 400C

Explanation: The equivalent capacitance when capacitors are connected in parallel is the sum of all the capacitors=1+2=3F. Q=CV= 3*100= 300V.

48). When capacitors are connected in parallel, the total capacitance is always _____ the individual capacitance values.

a) Greater than

b) Less than

c) Equal to

d) Cannot be determined

Explanation: When capacitors are connected in parallel, the total capacitance is equal to the sum of the capacitance of each of the capacitors. Hence $C_{total}=C_1+C_2+C_3$. Since it is the sum of all the capacitance values, the total capacitance is greater the individual capacitance values.

49). When capacitors are connected in parallel, what happens to the effective plate area?

a) Increases

b) Decreases

c) Remains the same

d) Becomes zero

Explanation: When capacitors are connected in parallel, the top plates of each of the capacitors are connected together while the bottom plates are connected to each other. This effectively increases the top plate area and the bottom plate area.

50). Three capacitors having a capacitance equal to 2F, 4F and 6F are connected in parallel. Calculate the effective parallel.

a) 10F

b) 11F

c) 12F

d) 13F

Explanation: When capacitors are connected in parallel, the total capacitance is equal to the sum of the capacitance of each of the capacitors. Hence $C_{total}=C_1+C_2+C_3= 2+4+6=12F$

51). Two capacitors having capacitance value 4F, three capacitors having capacitance value 2F and 5 capacitors having capacitance value 1F are connected in parallel, calculate the equivalent capacitance.

a) 20F

b) 19F

c) 18F

d) 17F

Explanation: When capacitors are connected in parallel, the total capacitance is equal to the sum of the capacitance of each of the capacitors. Hence $C_{total}=4+4+2+2+2+1+1+1+1+1=19F$.

52). What is the total capacitance when two capacitors C1 and C2 are connected in series?

a) $(C_1+C_2)/C_1C_2$

b) $1/C_1+1/C_2$

c) $C_1C_2/(C_1+C_2)$

d) C_1+C_2

Explanation: When capacitors are connected in series, the equivalent capacitance is:

$1/C_{total}=1/C_1+1/C_2$, therefore $C_{total}= C_1C_2/(C_1+C_2)$.

53). N capacitors having capacitance C are connected in series, calculate the equivalent capacitance.

a) C/N

b) C

c) CN

d) N/C

Explanation: When capacitors are connected in series, the equivalent capacitance is:

$1/C_{total}= 1/C+1/C+1/C+........N$ times.

$1/C_{total}=N/C$.

$C_{total}=C/N$.

54). When capacitors are connected in series, the equivalent capacitance is _____ eachindividual capacitance.

a) Greater than
b) Less then
c) Equal to
d) Insufficient data provided

View Answer b

Explanation: When capacitors are connected in series, the equivalent capacitance is: $1/C_{total}=1/C1+1/C2$. Since we find the reciprocals of the sum of the reciprocals, the equivalent capacitance is lessthan the individual capacitance values.

55). What is the equivalent capacitance?

a) 1.5F
b) 0.667F
c) 2.45F
d) 2.75F

View Answer b

Explanation: When capacitors are connected in series,
$1/C_{total} = 1/C_1+1/C_2 = 1/2+1 = 3/2$
$C_{total} = 2/3 = 0.667F$.

56). When capacitors are connected in series _____ remains the same.

a) Voltage across each capacitor
b) Charge
c) Capacitance
d) Resistance

View Answer b

Explanation: When capacitors are connected in series, the charge remains the same because the same amount of current flow exists in each capacitor.

57). When capacitors are connected in series _____ Varies

a) Voltage across each capacitor
b) Charge
c) Capacitance
d) Resistance

View Answera

Explanation: When capacitors are connected in series, the voltage varies because the voltage drop across each capacitor is different.

58). Four 10F capacitors are connected in series, calculate the equivalent capacitance.

a) 1.5F
b) 2.5F
c) 3.5F
d) 0.5F

View Answer b

Explanation: When capacitors are connected in series,
$1/C_{total}=1/C_1+1/C_2+1/C_3+1/C_4=1/10+1/10+1/10+1/10=4/10F$.
$C_{total}=10/4=2.5F$.

59). Calculate the charge in the circuit.
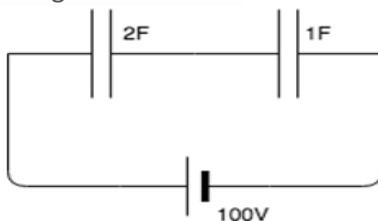
a) 66.67C
b) 20.34C
c) 25.45C
d) 30.45C

View Answera

Explanation: When capacitors are connected in series, the equivalent capacitance is:

$1/C_{total}=1/C_1+1/C_2= 1/2+1=3/2$ $\qquad$ $C_{total}=2/3$ F

$Q=CV=(2/3)*100 = 200/3$ $C=66.67C$

60). Calculate the voltage across the 1F capacitor.
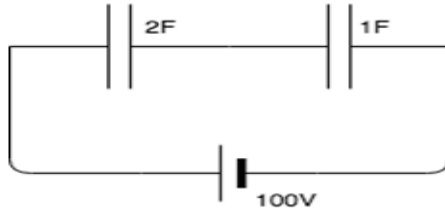
a) 33.33V

b) 66.67V

c) 56.56V

d) 23.43V

View Answer b

Explanation: When capacitors are connected in series, $1/C_{total}=1/C_1+1/C_2= 1/2+1=3/2$

$Q = CV = (2/3)*100 = 66.67C.$ $\quad$ V across the 1F capacitor $= 66.67/1 = 66.67V$

61). Calculate the voltage across the 2F capacitor.
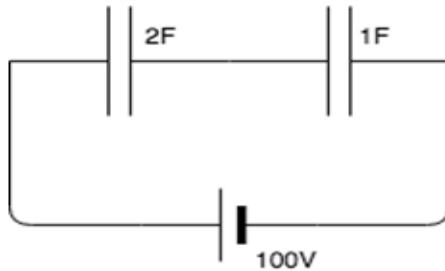
a) 33.33V

b) 66.67V

c) 56.56V

d) 23.43V

View Answer a

Explanation: When capacitors are connected in series,

$1/C_{total}=1/C_1+1/C_2 = 1/2+1 = 3/2...$

$Q = CV = (2/3)x100 = 66.67C.$

V across the 2F capacitor $= 66.67/2 = 33.33V.$

*62). The total voltage drop across a series of capacitors is _____

a) The voltage drop across any one of the capacitors

b) The sum of the voltage drop across each of the capacitors

c) The product of the voltage drop across each of the capacitors

d) Zero

View Answer b

Explanation: The total voltage drop across a series of capacitors is equal to the sum of the voltage drop across each of the capacitors because when capacitors are connected in series, the voltage drops across each capacitor

63). Capacitors C_1, C_2 and C_3 have voltage drops 2V, 3V and 5V respectively. Calculate the total voltage in the circuit.

a) 10V

b) 2V

c) 5V

d) 0V

View Answer a

Explanation: When capacitors are connected in series: $V_{total}=V_1+V_2+V_3= 2+3+5=10V.$

64). What is the voltage across the 2F capacitor?
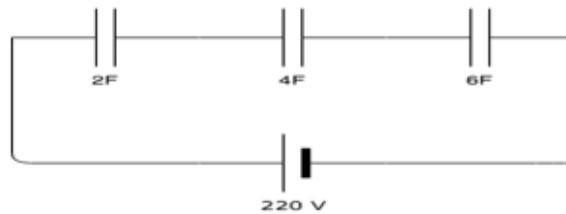
a) 240V   b) 200V
c) 220V   d) 120V

View Answer d

Explanation: Capacitors are in series.
1/C=1/2+1/4+1/6, therefore, C=(12/11)F.
Q = C x V = 220x(12/11) = 240C.
V across 2F capacitor = Q/C = 240/2 = 120V.

65). What is the voltage across the 4F capacitor?
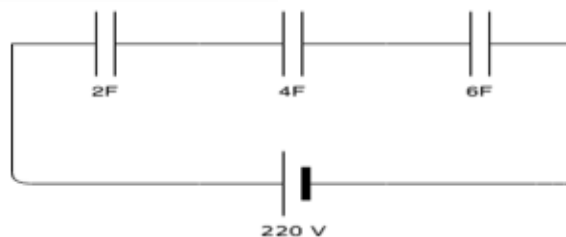
a) 120V   b) 60V
c) 100V   d) 220V

View Answer: b

Explanation: Capacitors are in series.
1/C=1/2+1/4+1/6, therefore, C=(12/11)F.
Q = C x V = 220x(12/11) = 240C.
V across 4F capacitor = Q/C = 240/4 = 60V.

66). Calculate the voltage across the 6F capacitor.
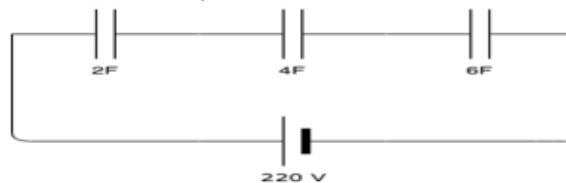
a) 120V   b) 60V
c) 40V   d) 220V

View Answer c

Explanation: Capacitors are in series.
1/C=1/2+1/4+1/6, therefore, C=(12/11)F.
Q = C x V = 220x(12/11) = 240C.
V across 6F capacitor = Q/C = 240/6 = 40V.

67). When capacitors are connected in series, which of the following rules are applied?
a) Voltage divider   b) Current divider
c) Both voltage divider and current divider   d) Neither voltage divider nor current divider

View Answera

Explanation: Voltage divider is the rule applied when capacitors are connected in series because when capacitors are connected in series, the voltage is different across each capacitor.

68). A capacitor does not allow sudden changes in _____
a) Current
b) Voltage
c) Resistance
d) Inductance

View Answer b

Explanation: Capacitor does not allow sudden changes in voltage because these changes occur in zero time which results in the current being infinity, which is not possible.

69). Which of the following expressions is correct with respect to the voltage across capacitors in series?
a) $V_1/V_2=C_2/C_1$
b) $V_2/V_1=C_2/C_1$
c) $V1 \times V_2=C_1 \times C_2$
d) $V_1/C_1=V_2/C_2$

View Answera

Explanation: When capacitors are connected in series, the charge across each capacitor remains thesame whereas the voltage across each varies. When two capacitors are connected in series: Q=V1C1; Q=V2C2. Thus: V1/V2=C2/C1.

70). Two 4F capacitors are connected in series, calculate the voltage across each if the total voltage is 20V.
a) 10V
b) 5V
c) 20V
d) 0V

View Answer: a

Explanation: The two capacitors have the same capacitance, hence the voltage gets divides equally. V across each=Total voltage/2= 20/2= 10V.r

71). Two capacitors having voltage 2F and 4F are connected in series. This combination is connected to a 100Vsupply, calculate the voltage across the 2F capacitor.
a) 66.67V
b) 33.33V
c) 100V
d) 0V

View Answer: a

Explanation: $C_{total} = 2 \times 4/(2+4) = 4/3F$, $Q = CV = (4/3) \times 100 = 400/3$ C.
V across 2F capacitor = Q/C = (400/3)/2 = 200/3 = 66.67F

72) Work done in charging a capacitor is _____
a) QV
b) $\frac{1}{2}QV$
c) 2QV
d) QV^2

View Answer: b

Explanation: We know that work done= $Q^2/2C$. Substituting C as Q/V, we get work done= Q/2V.

73). Energy stored in 2000mF capacitor charged to a potential difference of 10V is?
a) 100J
b) 200J
c) 300J
d) 400J

View Answer: a

Explanation: From the expression: WD = $CV^2/2$= 100J.

74). When do we get maximum energy from a set of capacitors?
a) When they are connected in parallel
b) When they are connected in series
c) Both in series and parallel
d) Insufficient information provided

View Answer: a

Explanation: We get maximum energy when capacitors are connected in parallel because the equivalent capacitance is larger than the largest individual capacitance when connected in parallel. The relation between capacitance and energy is: Energy=$CV^2/2$, hence as the capacitance increases, the energy stored in it also increases.

75). If the charge stored in a capacitor is 4C and the value of capacitance is 2F, calculate the energy stored in it.
a) 2J
b) 4J
c) 8J
d) 16J

Explanation: The expression for finding the value of energy is:

$U=Q^2/2C= 4 \times 4/(2 \times 2)= 4J$.

76). If the charge in a capacitor is 4C and the energy stored in it is 4J, find the value of capacitance.

a) 2F

b) 4F

c) 8F

d) 16F

Explanation: The expression for finding the value of energy is: $U=Q^2/2C$. Substituting the values of U and Q   , we get C=2F.

78). If the charge in a capacitor is 4C and the energy stored in it is 4J, calculate the voltage across its plates.

a) 2V

b) 4V

c) 8V

d) 16V

Explanation: The expression for finding the value of energy is: $U=Q^2/2C$. Substituting the values of U and Q, we get C=2F. V=Q/C, hence V=4/2=2V.

79). Calculate the energy in the 2F capacitor.

a) 8.6Kj

b) 64kJ

c) 64J

d) 6.4kJ

Explanation: From the expression: WD= $CV^2/2$= $2 \times 80^2/2$=6400J=6.4kJ.

80). Calculate the energy in the 4F capacitor.

a) 128kJ

b) 1.28kJ

c) 12.8kJ

d) 1280J

Explanation: From the expression: WD= $CV^2/2$= $4 \times 80^2/2$=12800J=12.8kJ.

81). Calculate the energy stored in the combination of the capacitors.
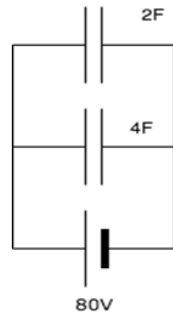
    a) 192kJ   b) 1.92kJ

    c) 19.2kJ   d) 1920J

View Answer: c

Explanation: The equivalent capacitance is: $C_{eq}=4+2=6F$. From the expression:
WD= $CV^2/2=80^2/2=19200J=19.2kJ$.

82). Calculate the capacitance if the dielectric constant=4, area of cross section= $10m^2$ and the
distance of separation between the plates is 5m.

    a) $7.08 \times 10^{-11}F$ b) $7.08 \times 10^{11}F$

    c) $7.08 \times 10^{-12}F$ d) $7.08 \times 10^{-10}F$

View Answer: a

Explanation: The expression to find capacitance when a dielectric is introduced between
the plates is: C=ke0A/d. Substituting the given values in the equation, we get C= $7.08 \times 10^{-11}F$.

83). A dielectric is basically a _____

    a) Capacitor   b) Conductor

    c) Insulator   d) Semiconductor

View Answer: c

Explanation: A dielectric is basically an insulator because it has all the properties of an insulator.

84). What happens to the potential difference between the plates of a capacitor as the thickness of
the dielectric
slab increases?

    a) Increases   b) Decreases

    c) Remains the same   d) Becomes zero

View Answer: b

Explanation: When a dielectric is introduced between the plates of a capacitor, its potential
difference decreases. New potential difference= potential difference without dielectric-potential
difference of dielectric. Hence as the thickness of the dielectric slab increases, a larger value is
subtracted from the original potential difference.

85). Which of the following depends on charging and discharging rate of a capacitor?

    a) Time constant   b) Current

    c) Power   d) Voltage

View Answer: a

Explanation: The time constant in a circuit consisting of a capacitor is the product of
the resistance and the capacitance. Smaller the time constant, faster is the charging and
discharging rate and vice versa.

86). What is the initial current while charging a capacitor?

    a) High   b) Low

    c) 0   d) Cannot be determined

Explanation: The initial current of a capacitor is very high because the voltage source will transport charges from one plate of the capacitor to the other plate.

87). What is the final current while charging a capacitor?

a) High

b) Zero

c) Infinity

d) Low

Explanation: The final current is almost equal to zero while charging a capacitor because the capacitor is charged up to the source voltage.

88). A capacitor is charged to a voltage of 400V and has a resistance of 20ohm. Calculate the initial value ofcharging current.

a) 10A

b) 0A

c) Infinity

d) 20A

Explanation: When the capacitor is charging the initial value if the current is V/R=400/20 = 20A.

89). A capacitor is charged to a voltage of 400V and has a resistance of 20ohm. Calculate the initial value of the discharge current.

a) 10A

b) 0A

c) Infinity

d) 20A

Explanation: When the capacitor is discharging the value of the initial current is zero.

90). A capacitor is charged to a voltage of 400V and has a resistance of 20ohm. Calculate the final value of the discharge current.

a) 10A

b) 0A

c) Infinity

d) 20A

Explanation: In a discharging circuit, the final voltage is equal to zero for capacitor. For a resistor, final voltage   is 400V.So,final current = V/R = 400/20 = 20A.

91). When will be capacitors fully charged?

a) When voltage is zero

b) When the supply voltage is equal to the capacitor voltage

c) When voltage is infinity

d) When capacitor voltage is equal to half the supply voltage

Explanation: When the capacitor voltage is equal to the source voltage, it means that all the charges have moved from one plate of the capacitor to the other.

92). What happens to the capacitor when the capacitor voltage is equal to the source voltage?

a) The charging phase of the capacitor is over

b) The discharging phase of the capacitor is over

c) The capacitor is switched off

d) The capacitor is switched on

Explanation: When the capacitor voltage is equal to the source voltage, it means that all the chargeshave moved from one plate of the capacitor to the other. Hence the capacitor is fully charged and we say it gets switched off.

93). A capacitor is charged to a voltage of 400V and has a resistance of 20ohm. Calculate the final value of charging current.

a) 10A   b) 0A   c) Infinity   d) 20A

Explanation: When the capacitor is charging, the final voltage of the capacitor becomes equal to the voltage of source. Hence, the current becomes equal to zero.

94). A capacitor which is also known as a condenser is an arrangement of two conductors separated by- -------

a) Conductor   b) semiconductor

c) **Insulator**   d)silver

95) The electric field between the conductors of capacitors is proportional to the----------

a) current 'I   b) charge 'Q'

c) area 'A'   d)distance 'd'

96). Potential difference between two metal plates is defined as ----- in bringing unit positive charge from plate B to plate A against electric field.

a) work done   b) force applied

c)time taken   d) efforts taken

97). Potential difference between two metal plates of capacitor is---------- strength of the charge 'Q' on conductor.

a) directly proportional to   b) inversely proportional to

c) not proportional to   d) equal to

98). Capacitance of capacity of a conductor is defined as the (CO1)

a) ratio of potential to charge   b) sum of potential and charge

c) Product of charge and potential   d) ratio of charge to potential

99). Capacitance of a capacitor is given by------

a) C =V/Q   b) C =Q/v

c) C = QV   d) V = QC

100). capacitor of large capacitance holds----------

a) small amount of charge at small potential   b)large amount of charge at large potential

c) large amount of charge at small potential   d) small amount of charge at large potential

101) The maximum electric field that a dielectric medium can withstand without breakdown is called as - -----

a) saturation field   b) dielectric strength

c) utmost field   d) optimized field

102). For a capacitor to store large amount of charge without leakage its capacitance should be high but- -----

a) potential difference (electric field) should be within breakdown limit.

b) potential difference (electric field) should not be less than certain limit.

c) potential difference (electric field) should be equal to certain limit.

d) none of these

103). Capacitor stores ---------

a) large charge at lower potential   b)small charge at higher potential

c) small charge at small potential   d)large charge at higher potential

104). Capacity of parallel plate condenser is given by

a) C = ε_0kAd   b) C=$\dfrac{kA}{\varepsilon_0 d}$

c) C=$\dfrac{\varepsilon_0 kA}{d}$ d) C=$\dfrac{\varepsilon_0 kd}{A}$

105). Capacitance of a condenser is directly proportional to-----
a) area of metal plate
b) distance between two plates
c) potential difference between plates
d) current through the circuit.

106). Capacitance of a condenser is directly proportional to-----
a) distance between two plates
b) dielectric material between them
c) potential difference between plates
d) current through the circuit.

107). Capacitance of a condenser is inversely proportional to-----
a) area of metal plate
b) dielectric material between them
c) potential difference between plates
d) current through the circuit

108).Dipole moment produced in dielectric material does not cancel external electric field but--------
a) only reduces it
b)increases it
c) maintains it
d)none of these

109) Capacitance of Capacitor with dielectric material 'k' is -------- capacitance of a capacitor
Without dielectric {i.e. air}
a) K times more than
b) k times less then
c) Equal to
d) twice

110) Law of condensers in series states that reciprocal of equivalent capacitance of series combination is equal to----
a) sum of reciprocal of capacitances of condensers in series
b) sum of capacitances of condensers in series
c) product of capacitances of condensers in series
d) ratio of capacitances of condensers in series

111). Equivalent capacitance of series combination is given by--------
a) $C_s = C_1 + C_2 + C_3$
b) $C_s = \frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3}$
c)) $\frac{1}{Cs} = \frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3}$
d) $\frac{1}{Cs} = \frac{1}{C1xC2xC3}$

112). Law of condensers in parallel states that reciprocal of equivalent capacitance of parallel combination is equal
to----
a) sum of capacitances of condensers
b) product of capacitances of condensers
c) sum of reciprocals of individual capacitances
d) ratio of individual capacitances

113). Equivalent capacitance of parallel combination is given by--------
a) $C_p = C_1 + C_2 + C_3$
b) $C_p = \frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3}$
c)) $\frac{1}{Cp} = \frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3}$
d) $\frac{1}{Cp} = \frac{1}{C1xC2xC3}$

114). Energy of charged condenser is given by ……….
a) $E=2CV^2$
b) $E=1/2 \, CV$
c) $E=1/2 \, CV^2$
d) $E=1/2 \, C^2 V$

115). Energy of charged condenser is given by ……….
a) $E=2Q^2/C$
b) $E= Q^2/2 \, C$
c) $E=Q/2 \, C^2$
d) $E=1/2QC$

116) E.M.F of a cell is defined as the potential difference between two terminals of the cell when ……….

a) The circuit is close   b) the circuit is open

c) High current is drawn   d) low resistance is connected

117) The opposition offered by electrolyte to flow of charges from negative electrode to positive electrode of a cell through electrolyte is called as…………

       a) External resistance   b) circuit resistance

       c) Internal resistance of cell   d) none of these

118). Kirchhoff's 1st Law or junction rule state that in any network of conductor in an electrical circuit ………

       a) Product of current is 0   b) algebraic sum of potential is 0

       c) Algebraic sum of current is 0   d) product of potential is 0

119). Kirchhoff's 2nd Law or loop rule state's that in a close loop of network of conductor , the algebraic sum of product of current and resistance of each part of close loop is …………

       a)product of e. m. f. in the circuit   b) ratio of e. m. f. in the circuit

       c) algebraic sum of e. m. f. in the circuit   d)sum of currents

120). Balancing condition of wheatstone's network with R_1, R_2, R_3 and R_4 in cyclic order is……………..

       a)$\frac{R_1}{R_2} = \frac{R_3}{R_4}$ b)$\frac{R_1}{R_2} = \frac{R_4}{R3}$

c)$\frac{R_1}{R_4} = \frac{R_3}{R_2}$ d) $R_1R_2 = R_3R_4$

121). Principle of potentiometer is fall of potential is……………..

       a) directly proportional to length of wire   b) inversely proportional to length of wire

       c) directly proportional to area of wire   d) inversely proportional to area of wire

122). If area of metal plates of capacitor with capacitance C is doubled then capacitance will become—

       a) C   b) 2C

       c) 3C   d) C/2

123). If area of metal plates of capacitor with capacitance C is reduced to half then capacitance will become—

       a) C   b) 2C

       c) 3C   d) C/2

124). If distance between two metal plates of capacitors with capacitance C is doubled then capacitance will become—

       a) C   b) 2C

       c) 3C   d) C/2

125). If distance between two metal plates of capacitors with capacitance C is halved then capacitance will become—

       a) C   b) 2C

       c) 3C   d) C/2

126).A capacitor of capacitance 'C' having air as a dielectric is taken , Now dielectric material of dielectric constant k=3 is introduced between two metal plates, then capacitance will become-----

    a)C/3   b) 3C   c)C/6   d) 6C

127).If area of parallel plat condenser is $1m^2$ and distance between plates is 0.1mm then capacitance

of condenser if its dielectric constant is 5 and = 8.9 will be……………..

    a) 44.5   b) 44.5   c) 44.5   d) 44.5

128) If two capacitors of capacitance 6 µF each are connected in series then its equivalent capacitance will be……

    a) 1 µF   b) 2µF

    c) 3µF   d) 4µF

129) If three capacitors of capacitance 9 µF each are connected in series then its equivalent capacitance will be……

    a) 1 µF   b) 2µF

    c) 3µF   d) 4µF

130). If two capacitors of capacitance C each are connected in series then its capacitance will be……

    a) C   b) C/3

    c) C/2   d) C/4

130). If three capacitors of capacitance C each are connected in series then its capacitance will be……

    a) C   b) C/3

    c) C/2   d) C/4

130). If four capacitors of capacitance C each are connected in parallel then its equivalent capacitance will be……

    a) 1 C   b) 2C

    c) 3C   d) 4C

131). If a capacitor of capacity 20µF is connected across 10v battery then charge drawn by a capacitor will be…….

    a) 50µC   b) 100 µC

    c) 200 µC   d) 300 µC

132) Two condensers have equivalent capacitance of 8 µF when connected in parallel and 2 µF when connected in series then individual capacitances will be……………

    a) 2 µF, 4 µF   b) 4µF, 4µF

    c) 1µF, 8µF   d) 1µF, 1µF

133). If a battery of e.m.f.10v is connected across a resistance of 100 ohm drop a resistance observed across aresistance is 9.8v, then internal resistance of a cell will be…..

    a)2 ohm   b) 5ohm

    c) 10ohm   d) 20ohm

134). When a number of capacitances connected in series then effective capacitance……..

    a) Increases   b) decreases

    c) remain same   d) Increases or decreases

135). A 10 µF capacitor is connected to 10v battery, electrostatic energy stored in the capacitor will be…

a) $100\times 10^{-6} J$ b) $500\times 10^{-6} J$

c) $1000 \times 10^{-6} J$ d) $250 \times 10^{-6} J$

136). Two capacitance 4µF and 8µF are first connected in series and then parallel their equivalent capacitanceare _____ and _____ respectively.

        a) 2.66µF, 12 µF   b) 12µF, 2.66 µF

        c) 4µF, 12µF   d) 12µF, 4µF

137) Three capacitors each of capacity C are connected. The resultant capacity (2C/3) can be obtained byconnecting _____.

        a) all of them in series

        b) all of them in parallel Option

        c) Two of them in parallel and third in series with this combination

        d) Two of them in series and third in parallel across this

138) If the area of metal plates of capacitor with capacitance C is doubled, then capacitance will become _____.

        a). C   b) 2C

        c) 4C   d) C/2

139). A capacitor of capacity 50µF is connected across a supply of 5V. Find the energy stored in the capacitor.

        a) 625 µJ   b) 6.25 J

        c) 62.5 J   d) 125 µJ

140). When condensers are connected in parallel, _____ gets divided into a number of parts.

        a) charge   b). current

        c) Both (A) and (B)   d) potential

141).The algebraic sum of voltages around any closed path in network is equal to _____.

        a) Infinity   b) -1

        c) 0   d) +1

142). The unit for dielectric strength is _____

        a) V/m^2 b) MV/m^2

        c) MV/m   d) Vm

Answer: c

Explanation: Dielectric strength is the potential gradient required to cause a breakdown in the material. Potential gradient is the ratio of voltage and length, its unit is MV/m.

143) If the Voltage increases, what happens to dielectric strength?

            a) Increases   b) Decreases

            c) Remains the same   d) Becomes zero

Answer: a

Explanation: Dielectric strength is the potential gradient required to cause a breakdown in the material. Potential gradient is the ratio of voltage and length. Hence as potential increases, dielectric strength also increases.

144). If the potential difference in a material is 4MV and the thickness of the material is 2m, calculate the dielectric strength.

            a) 2MV/m   b) 4MV/m

            c) 6MV/m   d) 8MV/m

Answer: a

Explanation: Dielectric strength is the potential gradient required to cause a breakdown in the material. Potential gradient is the ratio of voltage and thickness. Dielectric strength= V/t= 4/2= 2MV/m.

145). If the dielectric strength of a material is 4MV/m and its potential difference is 28MV, calculate the thickness of the material.

a) 4m
b) 7m
c) 5m
d) 11m

Answer: b

Explanation: Dielectric strength is the potential gradient required to cause a breakdown in the material. Potential gradient is the ratio of voltage and thickness. V/dielectric strength= t= 28/4=7m.

146). If the thickness of the material increases, what happens to the dielectric strength?

a) Increases
b) Decreases
c) Remains the same
d) Becomes zero

Answer: b

Explanation: Dielectric strength is the potential gradient required to cause a breakdown in the material. Potential gradient is the ratio of voltage and thickness. Hence as thickness increases, dielectric strength decreases.

147). The thickness of a material having dielectric strength 10MV/m is 5m, calculate the potential difference.

a) 2MV
b) 10MV
c) 50MV
d) 100MV

Answer: c

Explanation: Dielectric strength is the potential gradient required to cause a breakdown in the material. Potential gradient is the ratio of voltage and thickness. V=t*dielectric strength= 5*10=50MV.

148). Which medium has the highest dielectric strength?

a) Water
b) Mica
c) Air
d) Glass

Answer: c

Explanation: The better material is to prevent electrical conductivity, higher the dielectric strength. And the air is the best insulator so it has high dielectric strength.

149). Leakage in capacitors is primarily caused by _____

a) Transistors
b) Resistors
c) Inductors
d) DC motors

View Answer: a

Explanation: Leakage is primarily caused due to electronic devices, such as transistors, connected to the capacitors. Transistors conduct a small amount of current even when they are turned off, hence they are responsible for leakage current.

150). What is the conduction current when a capacitor is fully charged?

a) Infinity
b) Zero
c) 100A
d) 1000A

Answer: b

Explanation: When a capacitor is fully charged, there is no conduction of electrons from one plate of the capacitor to another, hence there is no conduction current and conduction current is equal to zero.

151). The flow of electrons in dielectric is due to _____

a) Conduction
b) Potential difference
c) Breakdown
d) Resistance

Answer: c

Explanation: There is, under normal circumstance, no flow of electrons in a dielectric since a dielectric is basically an insulator. Hence, there is a flow of electrons in a dielectric only at breakdown voltage.

152). The flow of electrons which does not pass through the battery is known as _____
       a) Displacement current   b) Leakage current
       c) Either displacement or leakage current d) Neither displacement nor leakage current

Answer: a

Explanation: Displacement current is the flow of electrons from the positive plate of the capacitor to the negative plate of the capacitor, not through the battery. Hence the type of current which flows without passing through the battery is displacement current.

153). The free electrons in practical dielectrics is due to _____
       a) There are no free electrons   b) Conductors
       c) Impurities   d) Both conductors and impurities

Answer: c

Explanation: Ideally, dielectrics are insulators and do not contain any free electrons. But no dielectric is a perfect dielectric, hence the free electrons are due to impurities present in each dielectric.

154). The current in conductors connecting the voltage source to the plates of a capacitor is _____
       a) Conduction current   b) Leakage current
       c) Charging current   d) Zero

Answer: c

Explanation: The current in conductors connecting the voltage source to the plates of a capacitor is the charging current and not the conduction or leakage current.

155). What is the type of current where the electrons actually move?
       a) Displacement current   b) Conduction current
       c) Both conduction and displacement current   d) Neither conduction nor displacement current

Answer: b

Explanation: Conduction current is the current caused by the actual flow of electrons and displacement current is the current where no charge carriers are involved.

156). What is the type of current caused due to variations in the field?
       a) Displacement current   b) Conduction current
       c) Both conduction and displacement current   d) Neither conduction nor displacement current

Answer: a

Explanation: Displacement current is the current where no charge carriers are involved. It is caused due to variations in the electric field.

157). Under normal conditions capacitors have _____
       a) Displacement current   b) Conduction current
       c) Both conduction and displacement current   d) Neither conduction nor displacement current

Answer: a

Explanation: Under normal conditions capacitors contain an insulating material called dielectric sandwiched between the plates of the capacitor. Since insulators can carry only an electric field but not moving carriers, therefore normally a capacitor has displacement current and not conduction current.

158). If a large amount of voltage is applied to a capacitor, what is the current that flows through it?
       a) Displacement current   b) Conduction current
       c) Both conduction and displacement current   d) Neither conduction nor displacement current

Answer: b

Explanation: When a large amount of voltage is applied between the plates of a capacitor, the dielectric between the plates does not behave as an insulator anymore and starts conducting and conduction currents flow through it.

159). The current in conductors connecting the voltage source to the plates of a capacitor is _____
         a) Conduction current   b) Leakage current

c) Charging current   d) Displacement current

Answer: c

Explanation: The current in conductors connecting the voltage source to the plates of a capacitor is the charging current and not the conduction or leakage current.

160). The flow of electrons which does not pass through the battery is known as _____

        a) Conduction current   b) Leakage current

        c) Charging current   d) Displacement current

Answer: a

Explanation: Conduction current is the flow of electrons from the positive plate of the capacitor to the negative plate of the capacitor, not through the battery. Hence the type of current which flows without passing through the battery is conduction current.

161). Paper capacitor is a type of _____

        a) Fixed capacitor   b) Variable capacitor

        c) Either fixed or variable depending on its usage   d) Neither fixed nor variable

Answer: a

Explanation: Paper capacitors are fixed capacitors because, like fixed capacitors, its capacitance value remains constant. In paper capacitors, paper is used as the dielectric.

162). A capacitor using chemical reactions to store charge is _____

        a) Paper capacitor   b) Ceramic capacitor

        c) Polyester capacitor   d) Electrolyte capacitor

Answer: d

Explanation: Electrolyte capacitors use chemical processes like pyrolysis to store charge between its plates.

163). Which, among the following, is the odd one out?

        a) Ceramic capacitor   b) Electrolyte capacitor

        c) Tuning capacitor   d) Paper capacitor

Answer: c

Explanation: Ceramic capacitor, electrolyte capacitor and paper capacitor are fixed capacitors whereas tuning capacitors is a variable capacitor, hence it is the odd one out.

164). In a variable capacitor, capacitance can be varied by _____

        a) Turning the rotatable plates in or out   b) Sliding the rotatable plates

        c) Changing the plates   d) Changing the material of plates

Answer: a

Explanation: As the plates are rotated, the area of the plates between which the field exists, will vary. Capacitance depends on area, hence as area varies, capacitance also varies.

165). The simplest kind of capacitor is _____

        a) Ceramic capacitor   b) Electrolyte capacitor

        c) Tuning capacitor   d) Paper capacitor

Answer: d

Explanation: The paper capacitor consists of two strips of aluminium foil separated by sheets of waxed paper. This whole setup is rolled up into the form of a cylinder. Since the materials requires for its construction are easily available, it is the simplest kind of capacitor.

167). Capacitor preferred when there is high frequency in the circuits is _____

        a) Electrolyte capacitor   b) Mica capacitor

        c) Air capacitor   d) Glass capacitor

Answer: b

Explanation: Mica capacitors are preferred for high frequency circuits because they have low ohmic losses and less reactance.

168). The type of capacitors used in communication transmitters are?

a) Electrolyte capacitor
b) Variable capacitor
c) Air capacitor
d) Glass capacitor

Answer: b

Explanation: Variable capacitor is used to tune all the circuits to same frequency i.e. resonance frequency so they are used in communication transmitters.

169). Which capacitors relatively costly?

a) Electrolyte capacitor
b) Mica capacitor
c) Air capacitor
d) Glass capacitor

Answer: b

Explanation: Mica capacitors are relatively expensive because it consists either of alternate layers of mica and metal foil clamped tightly together, or of thin films of silver on the two sides of a mica sheet. Silver is an expensive metal, hence mica capacitors are expensive.

170). _____ capacitors usually have a colour code to find its value.

a) Electrolyte capacitor
b) Variable capacitor
c) Polyester capacitor
d) Glass capacitor

Answer: c

Explanation: Polyester capacitors usually come with a colour code because they are very small and their values cannot be printed on its body.

180). _____ capacitors have a high leakage voltage.

a) Electrolyte capacitor
b) Variable capacitor
c) Air capacitor
d) Polyester capacitor

Answer: d

Explanation: Polyester capacitors can operate at high voltages, that is, a few thousand volts and the leakage resistance is high, that is, usually 100 M.

181) Find the current in the circuit.
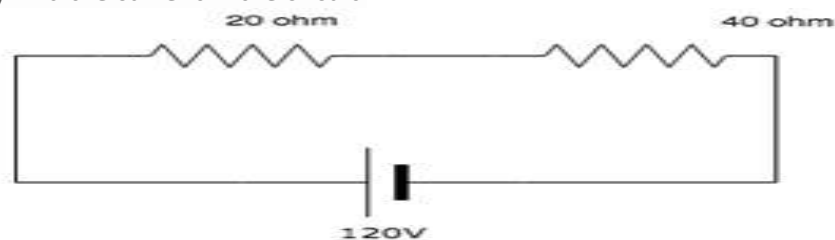
a) 1 A
b) 2 A
c) 3 A
d) 4 A

Answer: b

Explanation: I=V/R. Total resistance R = 20+40=60ohm. V=120V. I=120/60=2A.

182). In a series circuit, which of the parameters remain constant across all circuit elements such as resistor, capacitor and inductor etcetera?

a) Voltage
b) Current
c) Both voltage and current
d) Neither voltage nor current

Answer: b

Explanation: In a series circuit, the current across all elements remain the same and the total voltage of the circuit is the sum of the voltages across all the elements.

183). Voltage across the 60ohm resistor is_____

60 ohm
40 ohm

120V

    a) 72V   b) 0V

    c) 48V   d) 120V

Answer: b

Explanation: The 60ohm resistance is shorted since current always choses the low resistance path. Voltage across short circuit is equal to zero, hence voltage across the resistor is 0.

184). Find the voltage across the 6 ohm resistor.

6 ohm
15 ohm

12ohm

150V

    a) 150V   b) 181.6V

    c) 27.27V   d) 54.48V

Answer: c

Explanation: Total current I=150/(6+12+15)=(150/33)V.

V across 6 ohm = 6*I = 6*(150/33)V = 27.27V.

185). If there are two bulbs connected in series and one blows out, what happens to the other bulb?

        a) The other bulb continues to glow with the same brightness

        b) The other bulb stops glowing

        c) The other bulb glows with increased brightness

        d) The other bulb also burns out

Answer: b

Explanation: Since the two bulbs are connected in series, if the first bulb burns out there is a break in the circuit and hence the second bulb does not glow.

186). What is the value of x if the current in the circuit is 5A?

5 ohm
x ohm

10 ohm

150V

| a) 15 ohm | b) 25 ohm |
| c) 55 ohm | d) 75 ohm |

Answer: a

Explanation: Total voltage=sum of voltages across each resistor. =>150=10*5+5*5+5*x. Solving the equation, we get x=15 ohm.

187). A voltage across a series resistor circuit is proportional to?

a) The amount of time the circuit was on for

b) The value of the resistance itself

c) The value of the other resistances in the circuit

d) The power in the circuit

Answer: b

Explanation: V=IR hence the voltage across a series resistor circuit is proportional to the value of the resistance.

188). Many resistors connected in series will?

a) Divide the voltage proportionally among all the resistors

b) Divide the current proportionally

c) Increase the source voltage in proportion to the values of the resistors

d) Reduce the power to zero

Answer: a

Explanation: In a series circuit, the current remains the same across all resistors hence the voltage divides proportionally among all resistors.

189). What is the voltage measured across a series short?

| a) Infinite | b) Zero |
| c) The value of the source voltage | d) Null |

Answer: b

Explanation: A short is just a wire. The potential difference between two points of a wire is zero hence the voltage measured is equal to zero.

190). What happens to the current in the series circuit if the resistance is doubled?

| a) It becomes half its original value | b) It becomes double its original value |
| c) It becomes zero | d) It becomes infinity |

Answer: a

Explanation: I=V/R. If R becomes 2R then I becomes I/2 i.e. half of its original value.

191). If two bulbs are connected in parallel and one bulb blows out, what happens to the other bulb?

a) The other bulb blows out as well

b) The other bulb continues to glow with the same brightness

c) The other bulb glows with increased brightness

d) The other bulb stops glowing

Answer: b

Explanation: If one bulb blows out, it acts as an open circuit. Current does not flow in that branch but it continues to flow in the other branch of the parallel circuit. Hence the other bulb continues to glow. Also the voltage across other bulb remains the same due to which power delivered to it remains the same so it continues to glow with the same brightness.

192). Calculate the current across the 20 ohm resistor.

20 ohm

10 ohm

30 ohm
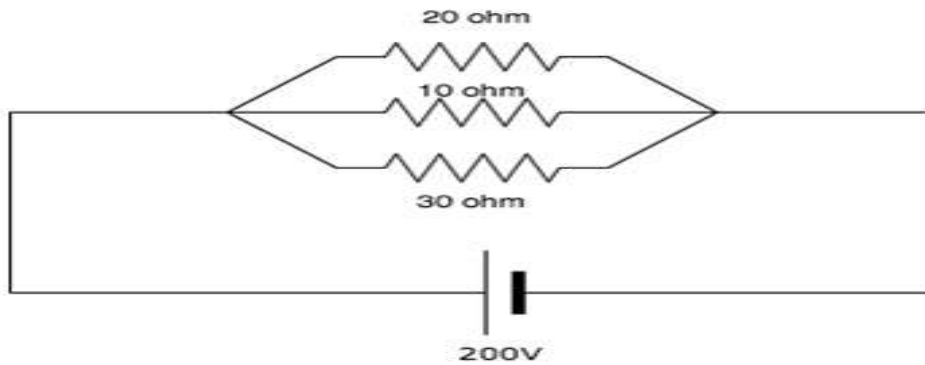
200V

a) 10A   b) 20A
c) 6.67A   d) 36.67A

Answer: a

Explanation: I=V/R. Since in parallel circuit, voltage is same across all resistors. Hence across the 20 ohm resistor, V=200V so I=200/20=10A.

193) In a parallel circuit, with a number of resistors, the voltage across each resistor is _____

a) The same for all resistors   b) Is divided equally among all resistors
c) Is divided proportionally across all resistors   d) Is zero for all resistors

Answer: a

Explanation: In parallel circuits, the current across the circuits vary whereas the voltage remains the same.

194). The current in each branch of a parallel circuit is proportional to _____

a) The amount of time the circuit is on for   b) Proportional to the value of the resistors
c) Equal in all branches   d) Proportional to the power in the circuit

Answer: b

Explanation: I=V/R. In a parallel circuit, the voltage across each resistor is equal, hence the value of the current is proportional (inversely) to the value of the resistance.

195). Calculate the total current in the circuit.

2 ohm

4 ohm

3 ohm

1 ohm

120 V
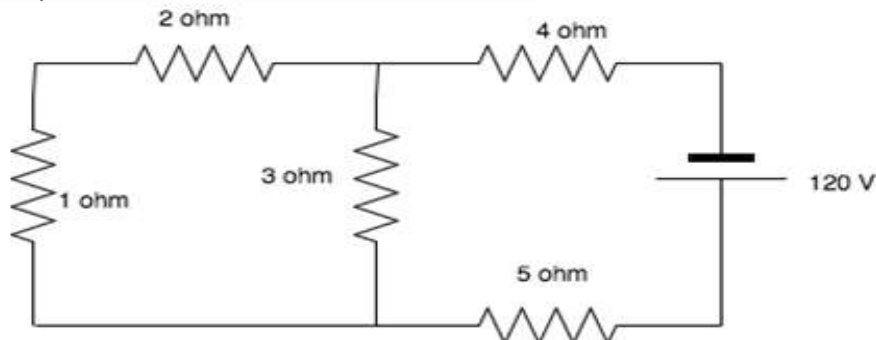
5 ohm

a) 20 A   b) 10 A
c) 11.43 A   d) 15 A

Answer: c

Explanation: The 1 ohm and 2 ohm resistor are in series which is in parallel to the 3 ohm resistor. The equivalent of these resistances (3/2 ohm) is in series with the 4 ohm and 5 ohm resistor. Total R = 21/2 ohm. I=V/R=120/(21/2)=240/21=11.43 A.

196). The voltage across the open circuit is?
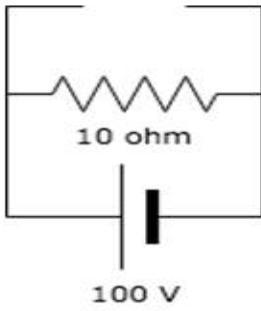
10 ohm

100 V

a) 100V   b) Infinity
c) 90V   d) 0V

Answer: a

Explanation: The voltage across all branches in a parallel circuit is the same as that of the source voltage. Hence the voltage across the 10 ohm resistor and the open circuit is the same=100V.

197). The voltage across the short is?

12 ohm
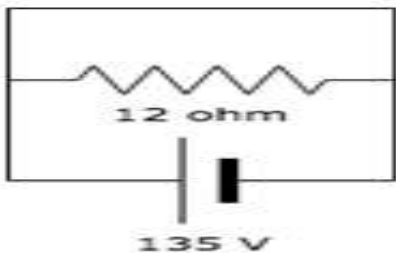
135 V

a) 135V   b) Infinity
c) Zero   d) 11.25V

Answer: c

Explanation: The voltage across a short is always equal to zero whether it is connected in series or parallel.

198). If the current through x ohm resistance in the circuit is 5A, find the value of x.

x ohm
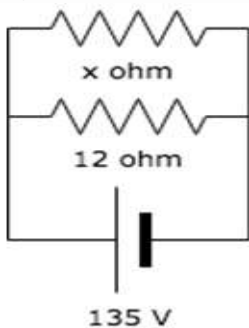
12 ohm

135 V

a) 27 ohm   b) 5 ohm
c) 12 ohm   d) 135 ohm

Answer: a

Explanation: R=V/I. In this circuit I=5A and V=135V. Therefore, R=135/5=27 ohm.

199). The currents in the three branches of a parallel circuit are 3A, 4A and 5A. What is the current leaving it?

a) 0A   b) Insufficient data provided
c) The largest one among the three values   d) 12A

Answer: d

Explanation: The total current leaving a node is the same as the current that enters it. Total
I=I1+I2+I3=3+4+5=12A.
200). The total resistance between A and B are?
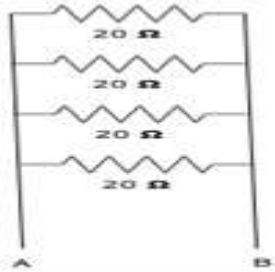
a) 20 ohm   b) 5 ohm
c) 80 ohm   d) 0 ohm

Answer: b
Explanation: The resistors are connected in parallel, hence the equivalent resistance =
1/(1/20+1/20+1/20+1/20)=5A.
201). It is preferable to connect bulbs in series or in parallel?

a) Series   b) Parallel
c) Both series and parallel   d) Neither series nor parallel

Answer: b
Explanation: Bulbs are connected in parallel so that even if one of the bulbs blow out, the others
continue to get a current supply.
202). Calculate the total resistance between the points A and B.
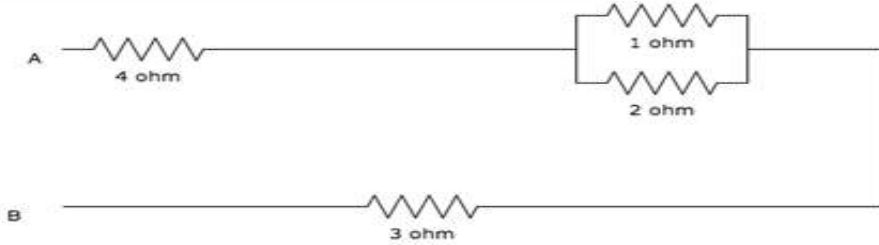
a) 7 ohm   b) 0 ohm
c) 7.67 ohm   d) 0.48 ohm

Answer: c
Explanation: 1 ohm in parallel with 2 ohm give 2/3 ohm equivalent which is in series with 4 ohm and 3
ohm so total resistance between A and B = 4 + 2/3 + 3 = 23/3 = 7.67 ohm.
203). Calculate the equivalent resistance between A and B.
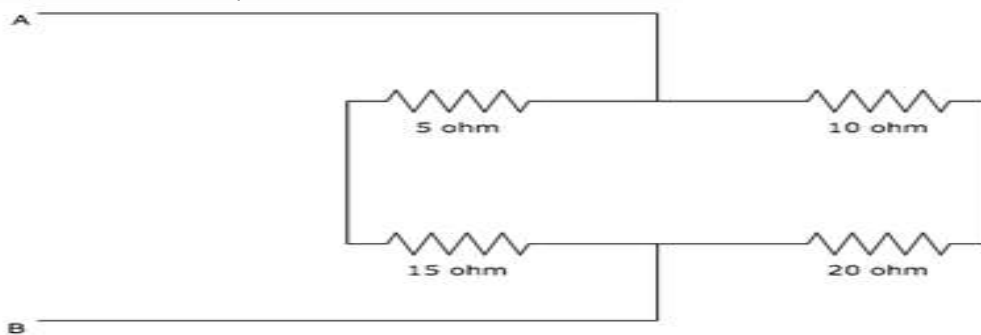
a) 60 ohm   b) 15 ohm
c) 12 ohm   d) 48 ohm

Answer: c

Explanation: 5 ohm and 15 ohm are connected in series to give 20 ohm.10ohm and 20 ohm are connected in series to give 30 ohm. Now both equivalent resistances (20ohm and 30 ohm) are in parallel to give equivalent resistance 20*30/(20+30) = 12 ohm.

204). Calculate the resistance between A and B.
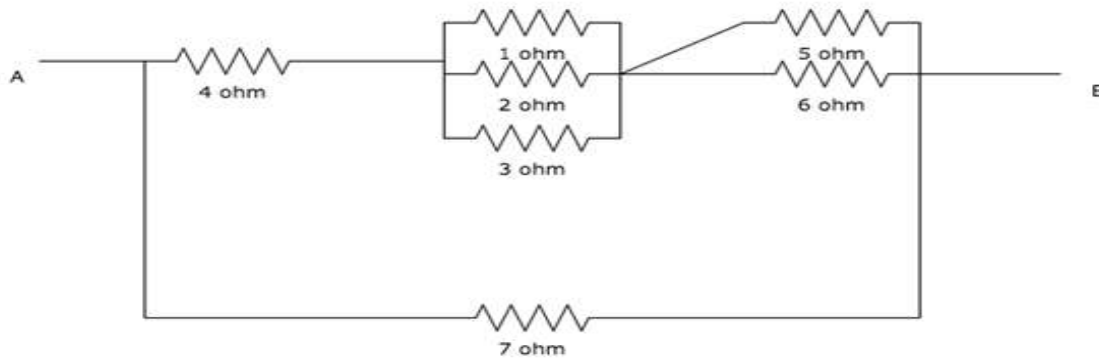
  a) 3.56 ohm   b) 7 ohm
  c) 14.26 ohm   d) 29.69 ohm

Answer: a

Explanation: The 1 ohm, 2 ohm and 3 ohm resistors are connected in parallel. Its equivalent resistance is in series with the 4 ohm resistor and the parallel connection of the 5 ohm and 6 ohm resistor. The equivalent resistance of this combination is 80/11 ohm. This is in parallel with 7 ohm to give equivalent resistance between A and B is 3.56 ohm.

205). Batteries are generally connected in_____

  a) Series   b) Parallel
  c) Either series or parallel   d) Neither series nor parallel

Answer: a

Explanation: Batteries are generally connected in series so that we can obtain the desired voltage since voltages add up once they are connected in series.

206). In a _____ circuit, the total resistance is greater than the largest resistance in the circuit.

  a) Series   b) Parallel
  c) Either series or parallel   d) Neither series nor parallel

Answer: a

Explanation: In series circuits, the total resistance is the sum of all the resistance in the circuit, hence the total is greater than the largest resistance.

207). In a _____ circuit, the total resistance is smaller than the smallest resistance in the circuit.

  a) Series   b) Parallel
  c) Either series or parallel   d) Neither series nor parallel

Answer: b

Explanation: in a parallel circuit, the equivalent resistance=1/sum of the reciprocals of all the resistances in the circuit. Hence it is smaller than the smallest resistance in the circuit.

208). Which is the most cost efficient connection?

  a) Series   b) Parallel
  c) Either series or parallel   d) Neither series nor parallel

Answer: a

Explanation: The advantage of series-connections is that they share the supply voltage, hence cheap low voltage appliances may be used.

209). Calculate the equivalent resistance between A and B.
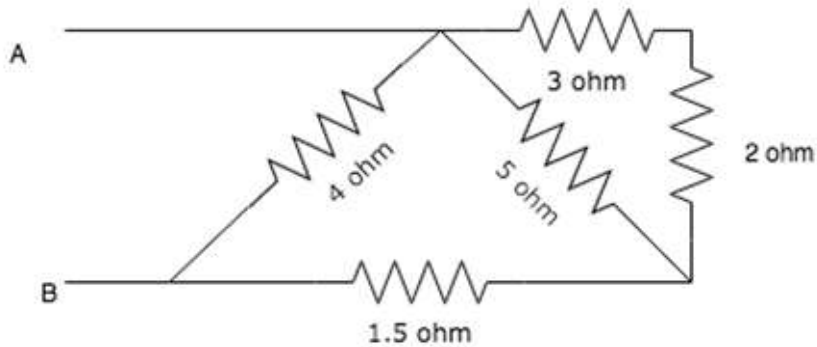
a) 2 ohm	b) 4 ohm
c) 6 ohm	d) 8 ohm

Answer: a

Explanation: R=((2+3)||5)+1.5)||4. The 2 and the 3 ohm resistor are in series. The equivalent of these two resistors is in parallel with the 5 ohm resistor. The equivalent of these three resistances is in series with the 1.5 ohm resistor. Finally, the equivalent of these resistances is in parallel with the 4 ohm resistor.

210). Calculate the equivalent resistance between A and B.
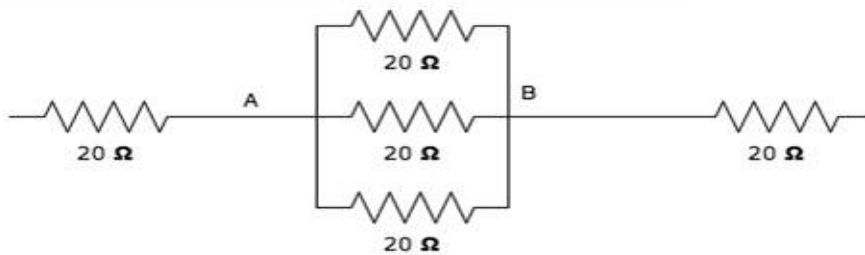
a) 6.67 ohm	b) 46.67 ohm
c) 26.67 ohm	d) 10.67 ohm

Answer: a

Explanation: R=20||20||20=6.67 ohm. The three 20 ohm resistors are in parallel and re-sistance is measured across this terminal.

211). Calculate the current A.
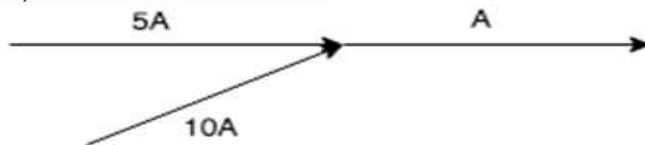
a) 5A	b) 10A
c) 15A	d) 20A

Answer: c

Explanation: KCl states that the total current leaving the junction is equal to the current entering it. In this case, the current entering the junction is 5A+10A=15A.

212). Calculate the value of I3, if I1= 2A and I2=3A.
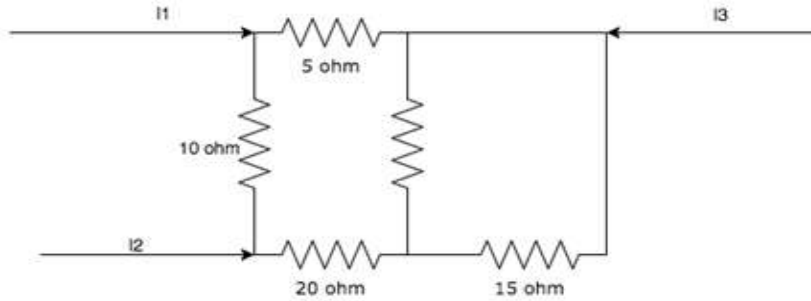
    a) -5A   b) 5A

    c) 1A   d) -1A

Answer: a

Explanation: According to KCl, $I1+I2+I3=0$. Hence $I3=-(I1+I2)=-5A$.

213). Find the value of i2, i4 and i5 if i1=3A, i3=1A and i6=1A.
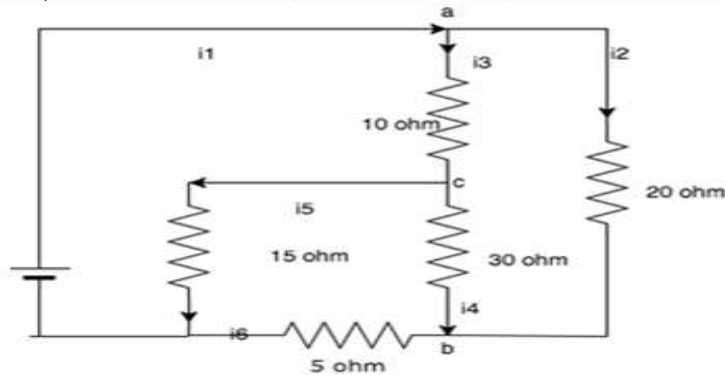
    a) 2,-1,2   b) 4,-2,4

    c) 2,1,2   d) 4,2,4

Answer: a

Explanation: At junction a: i1-i3-i2=0. i2=2A.

At junction b: i4+i2-i6=0. i4=-1A.

At junction c: i3-i5-i4=0. i5=2A.

214). What is the value of current if a 50C charge flows in a conductor over a period of 5 seconds?

    a) 5A   b) 10A

    c) 15A   d) 20A

Answer: b

Explanation: Current=Charge/Time. Here charge = 50c and time = 5seconds, so current = 50/5 = 10A.

215). KCL deals with the conservation of?

    a) Momentum   b) Mass

    c) Potential Energy   d) Charge

Answer: d

Explanation: KCL states that the amount of charge entering a junction is equal to the amount of charge leaving it, hence it is the conservation of charge.

216). KCL is applied at _____

    a) Loop   b) Node

    c) Both loop and node   d) Neither loop nor node

Answer: b

Explanation: KCL states that the amount of charge leaving a node is equal to the amount of charge entering it, hence it is applied at nodes.

217). KCL can be applied for _____

    a) Planar networks   b) Non-planar networks

    c) Both planar and non-planar   d) Neither planar nor non-planar

Answer: c

Explanation: KCL is applied for different nodes of a network whether it is planar or non-planar.

218). What is the value of the current I?
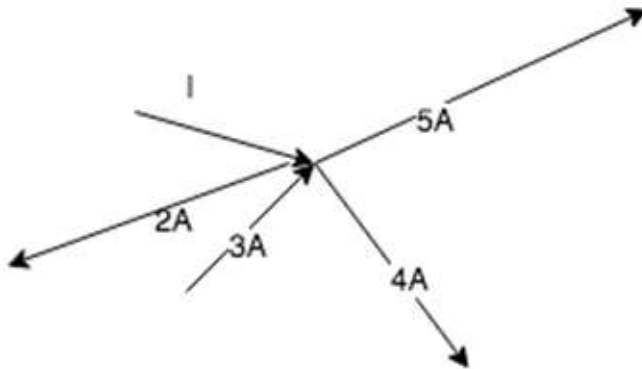
    a) 8A   b) 7A

    c) 6A   d) 5A

Answer: a

Explanation: At the junction, I-2+3-4-5=0. Hence I=8A.

219). Calculate the value of V1 and V2.
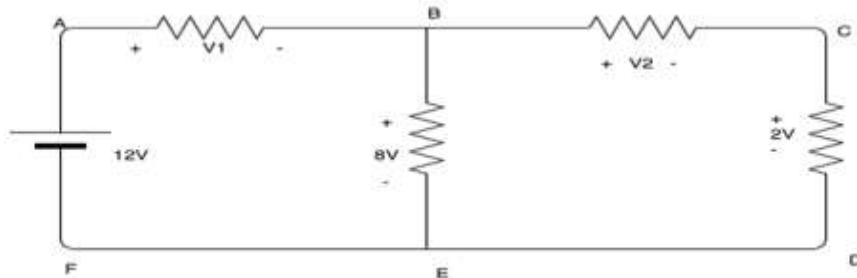
    a) 4V, 6V   b) 5V, 6V

    c) 6V, 7V   d) 7V, 8V

Answer: a

Explanation: Using KVL, 12-V1-8=0. V1= 4V.

8-V2-2=0. V2=6V.

220). KVL deals with the conservation of?

    a) Mass   b) Momentum

    c) Charge   d) Energy

Answer: d

Explanation: KVL states that the sum of the potential energy and taken with the right sign is equal to zero, hence it is the conservation of energy since energy doesn't enter or leave the system.

221). Calculate the voltage across the 10 ohm resistor.
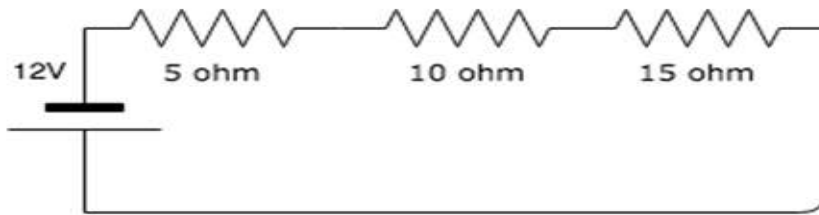
 a) 12V   b) 4V
 c) 10V   d) 0V

Answer: b

Explanation: Total resistance = 5+10+15 = 30 ohm. Current in the circuit is 12/30 A.
Voltage across 10 ohm resistor is 10*(12/30) = 4V.

222). Find the value of the currents I1 and I2.
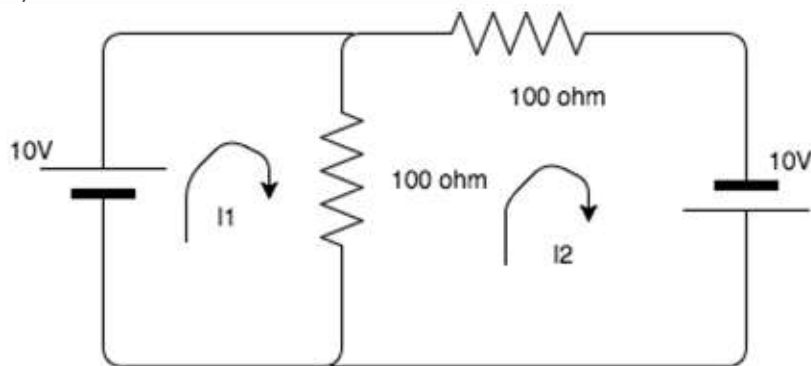
 a) 0.3, 0.1   b) -0.1, -0.3
 c) -0.3, -0.1   d) 0.1, 0.2

Answer: d

Explanation: Using KVL in loop 1, 10-100 i1=0. i1=0.1A
Using KVL in outer loop, -100i2+20=0 i2=0.2A.

223). The sum of the voltages over any closed loop is equal to _____
                a) 0V   b) Infinity
                c) 1V   d) 2V

Answer: a

Explanation: According to KVL, the sum of the voltage over any closed loop is equal to 0.

224). What is the basic law that has to be followed in order to analyze the circuit?
        a) Newton's laws   b) Faraday's laws
        c) Ampere's laws   d) Kirchhoff's law

Answer: d

Explanation: Kirchhoff's laws, namely Kirchhoff's Current Law and Kirchhoff's Voltage law are the basic
laws in order to analyze a circuit.

225). Every_____ is a _____ but every _____ is not a _____
        a) Mesh, loop, loop, mesh   b) Loop, mesh, mesh, loop
        c) Loop, mesh, loop, mesh   d) Mesh, loop, mesh, loop
        Answer: a

Explanation: According to Kirchhoff's Voltage Law, Every mesh is a loop but every loop is not a mesh.
Mesh is a special case of loop which is planar.

226). Calculate VAB.
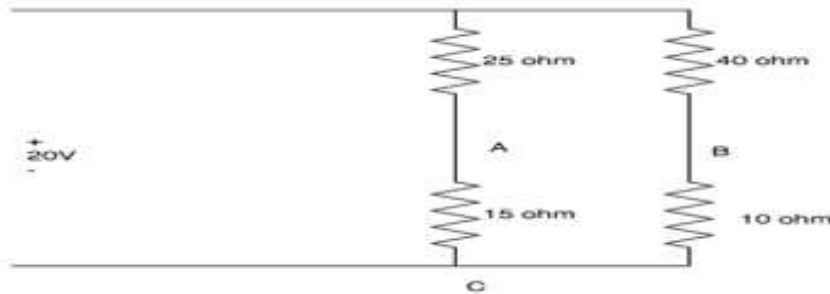
     a) 3.5V   b) 12V
     c) 9.5V   d) 6.5V

Answer: a

Explanation: For branch A: VAC=15*20/(25+15)=7.5V

For branch B: VBC= 10*20/(10+40)=4V

Applying KVL to loop ABC:

VAB+VBC+VCA=0

VAB=3.5V.

227). KVL is applied in _____

     a) Mesh analysis   b) Nodal analysis
     c) Both mesh and nodal   d) Neither mesh nor nodal

Answer: a

Explanation: Mesh analysis helps us to utilize the different voltages in the circuit as well as the IR products in the circuit which is nothing but KVL.

228). Wheatstone bridge is a _____

     a) a.c. bridge   b) d.c. bridge
     c) high voltage bridge   d) power dissipation bridge

Answer: b

Explanation: The Wheatstone bridge is a d.c. bridge that is used for the measurement of medium resistance. Schering bridge is used for measurement of high voltages. AC bridges comprise of Anderson bridge, Maxwell Bridge etc.

229). Wheatstone bridge is used to measure resistance in the range of _____

     a) 1Ω to a few mega-ohms   b) 10kΩ to a few mega-ohms
     c) 100MΩ to a few gega-ohms   d) 100Ω to a few tera-ohms

Answer: a

Explanation: Wheatstone bridge is the simplest form of bridge circuit. It is basically used for the measurement of medium resistances in the range of 1Ω to a few mega-ohms.

230). Wheatstone bridge is used to measure the d.c. resistance of various types of wires for

     a) determining their effective resistance b) computing the power dissipation
     c) quality control of wire   d) maintaining a source of constant e.m.f

Answer: c

Explanation: Wheatstone bridge is used to measure the d.c. resistance of various types of wires for controlling the quality of the wires. Voltage source maintains a constant e.m.f in the bridge circuit.

231). Telephone companies make use of the Wheatstone bridge for _____

     a) measuring the telephone resistance   b) computing the line strength
     c) maintaining dialtone   d) locating the cable faults

Answer: d

Explanation: Cable faults in telephones can be located by telephone companies by making use of a

Wheatstone bridge. Telephonic resistances are determined using suitable techniques. Dialtone is maintained through optical fiber technology.

232). By using the variations on a Wheatstone bridge we can

       a) measure quantities such as voltage, current and power

       b) measure high resistance values

       c) measure quantities such as complex power

       d) measure quantities such as capacitance, inductance and impedance

Answer: d

Explanation: In its simplest form a Whetstone bridge consists of resistive arms. A Wheatstone bridge is used for the measurement of quantities such as capacitance, inductance and impedance by making use of the variations.

233). One of the simplest applications of a Wheatstone bridge is _____

       a) voltage measurement   b) current measurement

       c) light measurement   d) power measurement

Answer: c

Explanation: Wheatstone bridge consists of simple resistances in the ratio arms. One of the simplest applications of a Wheatstone bridge is the measurement of light by making use of a photoresistive device.

234) EMF is an abbreviation of

  a) electromotive force

  b) electrical motive force

  c) electronic motive force

  d) both a and b

235) Electromotive force of a battery can be defined with formula of

  a) E = IR

  b) E = IR + I

  c) E = IR + r

  d) E = IR + Ir

236) Potential difference of a battery is 2.2 V when it is connected across a resistance of 5 Ω, if suddenly potential difference falls to 1.8 V, its internal resistance will be

  a)1 Ω

  b)1.1 Ω

  c) 2 Ω

  d)2.1 Ω

237). What property of sound waves acts like the principle of ultrasound?

       a) Reflection and Refraction   b) Reflection only

       c) Refraction only   d) Propagation

Answer: a

Explanation: The ultrasound works on the principle of reflection and refraction. While it is necessary that sound waves need a medium to travel, so we can say propagation is important but it is only because the sound wave gets refracted when the medium changes and are reflected back that the image is formed. Thus, the principle for ultrasound is reflection and refraction.

UNIT-2-Radioactivity

1). The process of spontaneous emission of radioactive substance is known as…………

    a) Photoelectric emission   b) thermo emission

    c) radioactivity   d) LASER

2). The process by which an unstable atomic nucleus losses energy by emitting radiations, such as radiations is known as

    a) Photoelectric emission   b) thermo emission

    c) radioactivity   d) LASER

3). which of the following is not an example of radioactive substance-----

    a)uranium   b)Radium

    c) Thorium   d) Calcium

4). which of the following is not an example of radioactive substance-----

    a) polonium   b)Boron

    c) Radon   d) Actinium

5).All naturally occurring element whose atomic number are greater than ……..are radioactive.

    a) 12   b) 32

    c) 52   d) 82

6) Doubly ionized helium atoms are…………..

    a) Particles   b) particles

    c) particles   d) photons

7). Photons having higher frequency (energy) i. e. higher penetration power than X-ray are known as-----

    a) Radio waves   b) micro waves

    c) -rays   d) infra rays

8). Which of the following is not a property of radioactive radiation ()----

    a) highly penetrating   b) affect photographic plate

    c)produce scintillations on florescent screen   d) produce elasticity

9). When radioactive element radiate radiations then it get converted into new element which is………

    a) Also radioactive   b) not a radioactive

    c) compound   d) a mixture

10). when a radioactive element radiates radiation then it gets converted into new element which Is also radioactive. This change is ………………

    a) Reversible   b) irreversible

    c) stimulated   d) none of these

11). The emission of radiation in radioactivity is --------

    a) Stimulated   b) spontaneous

    c) reversible   d)rechargeable

12). The emission of radiation from radioactive element is -------- process.

    a) instantaneous   b) short time

    c) not instantaneous i.e. prolonged   d)momentary

13).-rays are heavily charged particles with----

      a) one negative charge   b) one Positive charge

      c)Two negative charge   d) two Positive charge

14). The mass of Particles is………

      a) $6.645 \times 10^{-27} kg$ b) $6.645 \times 10^{27} kg$

      c) $2.2 \times 10^{-10} kg$ d) $2.2 \times 10^{10} kg$

15).The charge of Particles is………

      a) $3.2 \times 10^{19} C$ b) $3.2 \times 10^{-19} C$

      c) $3.2 \times 10^{14} C$ d) $3.2 \times 10^{-14} C$

16). Particles are represented as…………..

      a) $_1He^2$ b) $_2He^3$

      c) $_2He^4$ d) $_2He^2$

17).-rays are…….

      a) negatively charged   b) Positively charged

      c) neutral   d) none of these

18). Speed of Particles ranges from---------- to ------- of speed of light.

      a) $\frac{1}{100}$ th, $\frac{1}{10}$ th   b)$10^{th},100^{th}$

      c)2,3   d) $\frac{1}{2},\frac{1}{3}$

19).Penetrating power of Particles is less and it is …… times than particles.

      a) 10   b) 100

c) $\frac{1}{10}$ d) $\frac{1}{100}$

20). Penetrating power of Particles is less and it is …… times than particles.

      a) 10   b) 100

      c) $\frac{1}{10,000}$ d) $\frac{1}{100}$

21).The range of Particles is…… Particles, its range in air at N.T.P.is 1meter.

      a) Equal to   b) less than

      c) more than   d) less than or equal to

22). γ-rays have-rays are…….

      a) Positively charged   b) negatively charged

      c) more than   d) none of these

23). γ-rays have-rays have…….penetrating power.

      a)poor   b) very less

      c) very high   d) no

24)γ-rays have.-rays shoes the phenomenon of -------

      a) less production   b) high production

      c) no production   d) pair production

25) The range of Particles is…… Particles, its range in air at N.T.P.is 1meter.

      a) Equal to   b) less than

      c) more than   d) less than or equal to

26) The spontaneous breaking up of the nucleus is known as-----

a) radioactive disintegration   b) radioactive integration

c) fusion   d) refusion

27). When radioactive element emits Particle then it converts into other element with mass number ----
and atomic number -----

a) less by 2, less by 1   b)more by 4,more by 1

c) less by 4, less by 2   d) more by 4,more by 2

28) As per law of radioactive disintegration (decay), there is --- of atom of radioactive element and
 it converts intonew radioactive element.

a) Stimulated disintegration   b) spontaneous disintegration

c) stimulated integration   d) spontaneous integration

29). As per law of radioactive disintegration (decay) which atom will disintegrate first is…….

a) not predicted   b) accurately predicted

c) estimated   d) roughly calculated

 30) As per law of radioactive disintegration (decay), the number of atoms that disintegrate in
 one second (per second)is----- to the number of reaming radioactive atoms.

a) directly proportional   b) inversely proportional

c) not proportional   d) equal

31) The Radioactive disintegration--- physical as well as chemical condition i.e. pressure,
temperature andchemical combination.

a) directly proportional   b) inversely proportional

c) does not depend on   d) depend on

32) The rate of decay of radioactive atoms is ……. Number of atoms present.

a) Equal to   b) inversely proportional

c) Directly proportional   d) not proportional

33).Radioactive disintegration equation is……..

a)$\frac{dt}{t}$ = -λdN   b) $\frac{dt}{dt}$ = -λ dN

c)$\frac{dN}{N}$ = λ dt   d)$\frac{dN}{N}$ = -λdt

34). Radioactive disintegration equation is-------

a) $t = t_o e^{-\lambda N}$ b) $t = t_o e^{\lambda N}$

c) $N = N_o e^{-\lambda t}$ d)) $N = N_o e^{\lambda t}$

35)The number of radioactive substance decreases …… with time.

a) exponentially   b)linearly

c) speedily   d) slowly

36).The ratio of amount of radioactive substance disintegrated in unit time to the amount of
 substance present is called------

a)Rutherford constant   b)radioactive decay constant

c)Rutherford's ratio   d) Soddy's constant

37). The decay constant is defined as the reciprocal of that time duration in which the number of
atoms of radioactive substance falls to……….. of its original value.

a) 12%   b) 25%

c) 37%   d) 50%

41) The time in which half of the radioactive sustenance is disintegrated is called as………..

   a) Reduced life   b) life time

   c) double life period   d) half-life period

42).Half-life period of radioactive substance is given by$T_{1/2}$ is equal to…,,,,,

a)$\frac{0.693}{\lambda}$ b)$\frac{\lambda}{0.693}$ c)$\frac{\lambda}{2}$ d)$\frac{2}{\lambda}$

44) Longitudinal sound wave travel in the form of alternate ………..

   a) Crest and trough   b) compression and rarefactions

   c) crest and compression   d) trough and rarefaction

45). The maximum displacement of particle (in S.H.M.) from its mean position is called as------

   a) Frequency   b) period

   c) wavelength   d) amplitude

46).The number of oscillations performed by a particle (in S.H. M.) in one second is called----
of oscillation.

   a) Frequency   b) period

   c) wavelength   d) amplitude

45) The time taken by a particle to complete one oscillation is called as …………. Of oscillation.

   a) Frequency   b) period

   c) wavelength   d) amplitude

46) The distant between the center of to successive cooperation is called as…………….

   a) frequency   b) period

    c) wavelength   d) amplitude

47). The distance covered by the disturbance or wave in one second called as-------- of wave.

   a) frequency   b)period

   c) wavelength   d) velocity

48). The relation between velocity, frequency and wavelength is……..

   a) n= v λ   b) v= n λ

   c)v= n/λ   d) v=λ/n

49). The relation between velocity, period and wavelength is……..

   a) λ = v/T   b) v= T/ λ

   c)v= λ/T   d) T =v λ

50). Ultrasonic are the sound waves having frequency-----

   a) more than 20 kHz   b) more than 20 Hz

   c) less than 20 Hz   d) less than 20 kHz

51) The sound wave of frequency less than 20 Hz are known as-------

   a)infrasonic   b) audible sound

   c)ultrasonic   d)supersonic

52) The sound wave of frequency between 20 Hz to 20 kHz is known as-------

   a)infrasonic   b) audible sound

   c)ultrasonic   d)supersonic

53)The sound wave of frequency more than 20 Hz are known as-------

   a)infrasonic   b) audible sound

c)ultrasonic   d)supersonic

54)The normal healthy human ear can hear the sound wave of frequency----------
    a) less than 20 Hz   b) 20 Hz to 20kHz
    c) more than 20 kHz   d) more than 50kHz

55) which of the following is not a property of ultrasonic waves----
    a) has shorter wavelength   b) carry high amount of sound energy
    c) show negligible diffraction d) travel with considerable loss

56)Jacques and Peirre Curie found that crystal like quartz develop electric charges across their faces when mechanical Pressure is applied to it is called----
    a)Piezo-electric effect   b) converse piezo-electric effect
    c)pressure effect   d) electric effect

57). When electric field is applied across quartz crystal then dimension of crystal change across and
 if alternating P. D. is applied then crystal sets into vibrations which is called as--------
    a)Piezo-electric effect   b) converse piezo-electric effect
    c)pressure effect   d) vibration effect

58) Piezo-electric effect is ------
    a)reversible   b)irreversible
    c)reversible under high pressure   d)irreversible under high pressure

59) The direct piezo-electric effect is used to--------
    a) generates photoelectrons   b)detect photoelectric current
    c)generate ultrasound   d)detect ultrasound

60) The converse piezo-electric effect is used to------
    a) generates photoelectrons   b)detect photoelectric current
    c)generate ultrasound   d)detect ultrasound

61) Which of the following is not a piezo-electric material?
    a) quartz   b) Rochelle Salt
    c) topaz   d) Uranium

62) Which of the following is not a natural piezo-electric material?
    a) quartz   b) Rochelle Salt
    c) topaz   d) Gallium phosphate

63) Which of the following is not an application of ultrasonic?
    a)material analysis   b)detection of flaws of material
    c)SONAR   d) sonography

64) SONAR is abbreviation of
    a)small navigation and random   b)sky navigation and ranging

    c)sun nuclear ranging   d)**sound navigation and ranging**

65) Sound waves are
    a)**Longitudinal**   b)Transverse
    c)Electromagnetic   d)Only magnetic

66) Sound waves are produced by---
    a)linear motion   b)circular motion
    c)**vibrating bodies**   d)transitional motion

67) Speed of sound varies with-------

    a)humidity   b)temperature

    c)**both humidity and temperature**   d)none of the above

68). Which of the following is not an application of ultrasonic?

    a) to detect and locate submarine objects   b) alcohol detector

    c) to break stones in kidney   d) to determine depth of sea

69).There is an apparent change in frequency (pitch) of a note (siren) because of the relative motion between observer and source of sound is known as-----

    a)Piezo-electric effect   b) converse piezo-electric effect

    c)Doppler's effect   d) Sabine's effect

70).If sound source and observer both are stationary then apparent frequency------ true frequency.

    a) is more than   b) is less than

    c) is equal to   d) is less than or equal to

71).If sound source or observer or both are moving towards each other then apparent frequency------true frequency.

    a) is more than   b) is less than

    c) is equal to   d) is less than or equal to

72).If sound source or observer or both are moving away from each other then apparent frequency------true frequency.

    a) is more than   b) is less than

    c) is equal to   d) is less than or equal to

73).General formula for apparent frequency considering Doppler effect is------

a) $n' = n \times \dfrac{v-vo}{v-vs}$ b) $n' = n \times (v-v_0) \times (v-v_s)$

    c) $n' = n \times \dfrac{v+vo}{v+vs}$ d) $n' = n \times (v_0-v_s)$

74). Which of the following is not an application of Doppler effect?

    a)to calculate velocity of moving aeroplanes and submarines

    b) in estimating the speed of distant stars and planets

    c) to measure speed of cars an highway

    d) to detect flaws in aeroplanes

75). A tunning fork of frequency 480 Hz produces a wave of 68 cm, velocity of sound in air will be------

    a) 235.5m/s   b)280.82m/s

    c)326.4 m/s   d) 420.20m/s

76). A tunning fork vibrates with a frequency of 512Hz if the velocity of the wave is 330m/s, distance travelled in 5 vibrations will be---

    a)1.2m   b)3.2m

    c)5.2m   d)7.2m

77).A siren producing a pitch of 330Hz is moving towards the observer with a velocity of 150m/s The velocity of sound is 330m/s The frequency of sound heard by a stationary observer is------

    a)550Hz   b)600Hz

    c) 650Hz   d) 700Hz

78)). A tunning fork of frequency 90 Hz is sounded and moved towards stationary observer with a velocity equal to $(1/10)^{th}$ of the velocity of sound, the note heard by the observer will have frequency---

    a)25Hz   b)50Hz

    c) 75Hz   d) 100Hz

79). An observer is moving towards siren of frequency 400Hz with a velocity of 150m/s The velocity ofsound is 330m/s The frequency of sound heard by observer will be------

    a)581.8Hz   b)540Hz

    c) 600.5Hz   d) 620.5Hz

80)A siren producing a pitch of 330Hz is moving away from stationary observer with a velocity of 100m/s The velocity of sound is 330m/s, The pitch of sound heard by observer is------

    a)120Hz   b)180Hz

    c) 230.2Hz   d) 260.5Hz

81) An observer is moving away from siren of frequency 350Hz with a velocity of 150m/s The velocity of soundis 330m/s The frequency of sound heard by observer will be------

    a)125.50Hz   b)150.25Hz

    c) 175.5Hz   d) 190.9Hz

82)A siren producing a frequency of 400Hz is moving towards observer with a velocity of 100m/s and An observer is moving towards siren with a velocity of 50m/s The velocity of sound is 330m/s
The frequency of sound heard by observer will be------

    a)555.5Hz   b)575.5Hz

    c) 660.86Hz   d) 725.5Hz

83)A siren producing a frequency of 400Hz is moving away from the observer with a velocity of 50m/s and the observer is moving away from the siren with a velocity of 100m/s The Velocityof sound is 330m/s The frequency of sound heard by observer will be------

    a)180Hz   b)200Hz

    c) 220Hz   d) 242Hz

84). _____ have the same mass number, but different nuclear charge

    a) Isotones   b) Isobars

    c) Isotopes   d) Isoemtropic

View Answer: b

Explanation: Isobars have the same mass number, but different nuclear charge.

85). Atoms with same number of neutrons, but different number of nucleons are called

    a) Isobars   b) Isotones

    c) Isotopes   d) Isoters

View Answer: b

Explanation: Atoms with same number of neutrons, but different number of nucleons are called Isotones.

86). Percentage of U-238 in natural uranium is around

a) 29.71

b) 99.29

c) 0.015

d) 0.71

View Answer: c

Explanation: Natural Uranium contains around 0.015% of U-238.

87).. A radioactive isotope undergoes decay with respect to time following _____ law

a) logarithmic

b) exponential

c) inverse square

d) linear

View Answer: b

Explanation: A radioactive isotope undergoes decay with respect to time following exponential law.

88).. U-235 content in enriched uranium, that is normally used in power reactors (e.g., at Tarapur atomic power plant), is about _____ percent.

a) 50

b) 3

c) 85

d) 97

View Answer: b

Explanation: U-235 content in enriched uranium, that is normally used in power reactors (e.g., at Tarapur atomic power plant), is about 3 percent.

89). The half-life period of a radioactive element is 100 days. After 400 days, one gm of the element will be reduced to _____ gm.

a) ½

b) 1/4

c) 1/8

d) 1/16

View Answer: d

Explanation: The half-life period of a radioactive element is 100 days. After 400 days, one gm of the elementwill be reduced to1/16 gm.

90) Who of the following is associated with radioactivity?

a) Henry Becquerel

b) Issac Newton

c) Albert Einstein

d) C. V. Raman

91) The half-life period of a radioactive element is 5 years. If the number of atoms present initially (at t=0 years) is 20,000; how many atoms would remain after 20 years?

a) 10,000

b) 7,500

c) 5,000

d) 20,000

92) Half-life period of a radioactive element is given by T =_____ where all symbols have usual meanings.

     a) $0.693/\lambda$ b) $0.693\ \lambda$

     c) $0.693/N$ d) $0.693\ N$

93) Which wave has same frequency and periodic time as wave A
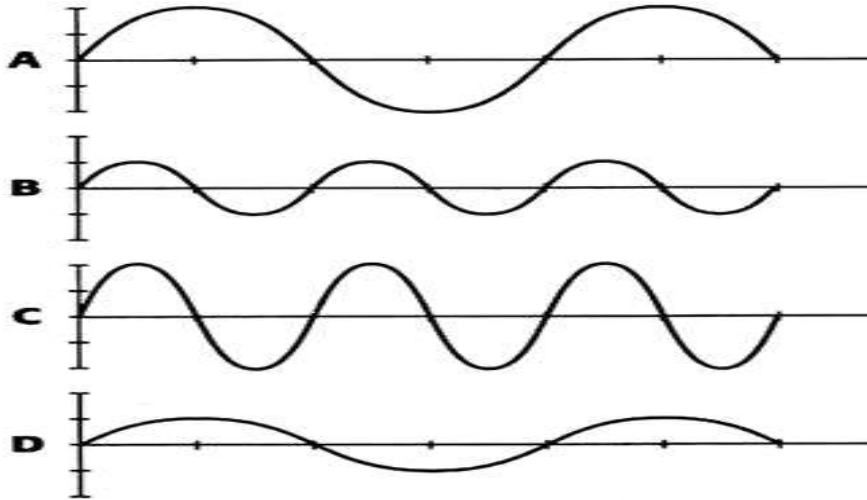
     a) Wave B   b) Wave C

     c) Wave D   d) Both (B) and (C)

94) Which of the following statement is not true?

a) When the observer moves away from the stationary source, then the pitch of sound decreases

b) When the observer moves towards the stationary source, then the pitch of sound increases

c) When the source moves away from stationary observer then the pitch of the sound decreases

d) When the source moves towards the stationary observer then the pitch of the sound decreases

95) A siren of police car emits pure tone at a frequency of 640 Hz. Find the frequency that a stationary person would hear when the car approaches him. The police car is moving towards him at 20 m/s. (Velocity of sound in air =340 m/s)

     a)680 Hz   b) 604.45 Hz

     c)1360 Hz   d) 1208.89 Hz

96). Ultrasound is also useful for _____
i. detecting fault in metal sheets
ii. imaging marine depths
iii. looking for metals beneath the earth's surface
iv. detecting distances v. detecting earthquakes
a) ii, iii, vb) i, iv, vc) i, ii, ivd) ii, iii

Answer: c

Explanation: Ultrasound is used for detecting the fault in metal sheets, imaging marine depths and detecting distances. If the metal sheets have faults like cracks or deformity, the reflected sound waves will not be uniform. SONAR and RADAR are used to detect distances and work on the principle of ultrasound.

97). A piezoelectric crystal is used to produce the ultrasound waves. What kind of ultrasound is produced?

a) Pressure wave ultrasoundb) Electrical wave ultrasound

c) Sound wave ultrasoundd) Simple ultrasound

Answer: a

Explanation: A piezoelectric crystal is a special transducer which converts mechanical energy into electrical energy and vice-versa. Thus, when the electrical impulses are given to the transducer, it is converted into mechanical energy. The transducer starts vibrating causing a pressure difference and the ultrasound waves are produced.

98). Which of the following relations are true?

a) γ increases, penetration of sound increases, resolution decreases

b) γ increases, penetration of sound decreases, resolution decreases

c) γ increases, penetration of sound decreases, resolution increases

d) γ decreases, penetration of sound increases, resolution increases

Answer: a

Explanation: When the frequency (γ) of the sound waves increases, it gains more energy to overcome the impedance barrier and so is able to penetrate deeper. However, the penetration may not be uniform in all places and reflection may be uneven thus it affects the resolution of the image

99)What type of waves are Sound Waves?

    a). Latitudinal wavesb). Longitudinal waves

    c). Latitudinal mechanical wavesd). Longitudinal waves

    Ans. d

    Sound Waves are longitudinal mechanical waves.

100). Which of the following is/ are not applications of Ultrasonic Waves?

(a) For measuring the depth of Sea.(b) In sterilizing of a liquid.

(c) In Ultrasonography(d) In sterilizing a needle.

Options are:

A. Both (a) and (b) Only (b)B. Only (d)

C. Both (c) and (d)D. Only (b)

Ans. B

Applications of Ultrasonic Waves are: sending signals, for measuring the depth of sea, for cleaning cloths, aeroplanes, machinery parts of clocks, for removing lamp-shoot from the chimney of factories, in sterilizing of liquid and in Ultrasonography.

101). What is the speed of sound in air?

a). 330 m/sb). 332 m/sc). 334 m/sd). 336 m/s

Ans. B

The speed of Sound in Air (0C) is 332 m/s and in Air (20C) is 343 m/s.

102). What will be the effect of temperature on speed of sound?

a). The speed of sound decreases with the increases of temperature of the medium.

b). The speed of sound decreases with the decrease of temperature of the medium.

c). The speed of sound increases with the decrease of temperature of the medium.

d). The speed of sound increases with the increase of temperature of the medium.

Ans. D

The speed of sound increases with the increase of temperature of the medium. The speed of sound in air increases by 0.61 m/s when the temperature is increased by1C.

103}. Due to which phenomena sound is heard at longer distances in nights than in day?

a). Reflection b). Refractionc). Interference of soundd). Diffraction of sound

Ans. B

Due to refraction, sound is heard at longer distances in nights than in day.

104). When a motor boat in a sea travels faster than sound, then waves just like shock-waves are produced on the surface of water. These waves are called ....

a). Shock wavesb). Doppler's wavesc). Refracted wavesd). Bow waves

Ans. D

When a motor boat in a sea travels faster than sound, then waves just like shock-waves are produced on the surface of water. These waves are called bow waves.

105). What is Intensity of Sound?

a). It is inversely proportional to the square of the distance of point from the source.

b). It is directly proportional to the square of amplitude of vibration, square of frequency
 anddensity of the medium.

c). Both A and B

d). Neither A nor B

Ans. C

Intensity of any sound at any point in space is the amount of energy passing normally per unit area held around that point per unit time. S.I unit of intensity is watt/m^2.

106) . What is the unit of loudness?

a). Belb). Phonc). Decibeld). All of the above

Ans D

The sensation of a sound perceived in a ear is measured by another term called loudness which depends on intensity of sound and sensitiveness of the ear. Unit of loudness is bel. A practical unit of loudness is decibel (dB) which is 1/10th of bel. Another unit of loudness is phon.

107). Which of the following statement is or are correct about longitudinal mechanical waves?

a). The longitudinal mechanical waves which lie in the frequency range 20 Hz to 20000Hz
 are called audible or sound waves.

b). The longitudinal mechanical waves having frequencies less than 20 Hz are called infrasonic.

c). The longitudinal mechanical waves having frequencies greater than 20,000 Hz are called ultrasonic waves.

d). All of the above are correct

Ans. D

Sound or Audible waves are sensitive to human ear and are generated by the vibrating bodies like tuning fork, vocal cords etc. Infrasonic waves are produced by sources of bigger size such as earth quakes, volcanic eruptions, ocean waves etc. Human ear cannot detect Ultrasonic waves. But dog, cat, bat etc can detect these waves. Bat not only detect but also produce ultrasonic waves.

108) When a wave travels through a medium _____.

1.	particles are transferred from one place to another
2.	energy is transferred in a periodic manner
3.	**energy is transferred at a constant speed**

4.	none of the above statements is applicable

109)The minimum distance between the source and the reflector, so that an echo is heard is approximately equal to _____.

a).   10 m

b).   **17 m**

c)   34 m

d).   50 m

110):   Bats detect the obstacles in their path by receiving the reflected _____.

a). infrasonic waves

b). radio waves

c). electro-magnetic waves

d). ultrasonic waves

111):   When sound travels through air, the air particles _____.

a). vibrate along the direction of wave propagation

b). vibrate but not in any fixed direction

c). vibrate perpendicular to the direction of wave propagation

d). do not vibrate

112)The relation between wave velocity 'v', frequency 'f ', and wavelength 'l' is _____.

a). $v = \dfrac{f}{\lambda}$

b). $v = f\lambda$

c). $v = \dfrac{\lambda}{f}$

d). $v = \dfrac{1}{f\lambda}$

113).Thefrequency of a wave travelling at a speed of 500 ms^{-1} is 25 Hz. Its time period will be ----

a).   **20 s**

b).   0.05 s

c).   25 s

d).   **0.04 s**

114)   The amplitude of a wave is _____.

a). the distance the wave moves in one second

b). the distance the wave moves in one time period of the wave

c). the maximum distance moved by the medium particles on either side of the mean position

d). the distance equal to one wave length

115):   Which of the following is not a characteristic of a musical sound?

a).   Pitch

b).   Wavelength

c).   Quality

d).   Loudness

116)   Sound waves do not travel through

a). solids

b). liquids

c). gases

d). vacuum

117) The physical quantity, which oscillates in most waves, is

a). mass

b). energy

c). amplitude

d). wavelength

118)Sound waves are

    a) longitudinal

    b). transverse

    c). partly longitudinal and partly transverse

    d). sometimes longitudinal and sometimes transverse

119) The frequency which is not audible to the human ear is

a) 50 Hz

b) 500 Hz

c) 5000 Hz

d) 50000 Hz

120) The speed of sound in medium depends upon

a)   amplitude

b).   frequency

c).   wavelength

d).   properties of the medium

121) Which of the following will remain unchanged when a sound wave travels in air or in water?

a).   Amplitude

b).   Wavelength

c).   Frequency

d).   Speed

122) A sound source sends waves of 400 Hz. It produces waves of wavelength 2.5 m. The velocity of sound waves is

a). 100 m/s

b). 1000 m/s

c). 10000 m/s

d). 3000 km/s

123) The time period of a vibrating body is 0.05 s. The frequency of waves it emits is

a). 5 Hz

b). 20 Hz

c). 200 Hz

d). 2 Hz

124) A source of frequency of 500 Hz emits waves of wavelength 0.4 m, how long does the waves take to travel 600 m?

a). 3 s

b). 6 s

c). 9 s

d). 12 s

125) Sound and light waves both

a). have similar wavelength

b). obey the laws of reflection

c). travel as longitudinal waves

d). travel through vacuum

126): The method of detecting the presence, position and direction of motion of distant objects by reflecting a beam of sound waves is known as _____.

a). RADAR

b). SONAR

c). MIR

d). CRO

127) The technique used by bats to find their way or to locate food is _____.

a) SONAR

b) RADAR

c) Echolocation

d) Flapping

128) An ultrasonic wave is sent from a ship towards the bottom of the sea. It is found that the time interval between the sending and receiving of the wave is 1.6 s. What is the depth of the sea, if the velocity of sound in the seawater is 1400 m/s?

a) 1120 m

b) 560 m

c) 1400 m

d) 112 m

129)An example for mechanical wave.

a) Radio wave

b) Light wave

c) Infrared radiation

d) Sound wave

130) Which of the following quantities is transferred during wave propagation?

a) Speed

b) Mass

c) Matter

d) Energy

131) If a vibrator strikes the water 10 times in one second, then the frequency of wave is _____.

a) 10 Hz

b) 0.5 Hz

c) 5 Hz

d) 0.1 Hz

132) Unit of wavelength is _____.

a) newton

b) erg

c) dyne

d) angstrom

133) The distance between a compression and the next rarefaction of a longitudinal wave is _____.

a) $\dfrac{\lambda}{4}$

b) 2l

c) $\dfrac{\lambda}{2}$

d) $\dfrac{\lambda}{8}$

134) SI Unit of time period is _____.

a) second

b) hour

c) minute

d) nanosecond

135) The vibrations or the pressure variations inside the inner ear are converted into electrical

signals by the_____.

a) cochlea

b) tympanic membrane

c) pinna

d) anvil

136)Vibrations inside the ear are amplified by the three bones namely the _____ in the middle ear.

a) hammer, anvil and stirrup

b) hammer, anvil and pinna

c) hammer, cochlea and stirrup

d) auditory bone, anvil and stirrup

137) The persistence of audible sound due to the successive reflections from the surrounding

objects even after the source has stopped to produce that sound is called _____.

a) reflection

b) echo

c) reverberation

d) rarefaction

UNIT-3-Photo electricity

1).In photoelectric effect ------- energy converted in to -------energy.

    a) light, electrical   b)electrical, light

    c) light, chemical   d) light, heat

2). photoelectric effect was detected by------

    a) Hertz   b) Henry

    c) Planck   d)Einstein

3). When the light of suitable frequency is incidence on metallic surface, then electrons

    are emitted from the metal surface, this effect is know as-------

    a)Thermoelectric effect   b) photoelectric effect

    c)heating effect of electric current   d)Seebeck effect

4). According to Plank's theory energy is not emitted and absorbed continuously, but in

    a discrete units or packets (bundle) These energy packets are called --------

    a)Electrons   b) protons

    c)photons   d) neutrons

5).Photons (quanta) are electrically ----------

    a)positive   b)negative

    c)neutral   d) none of these

6). Photons travel with a speed of ----

    a) of sound   b)of light

    c) less than sound   d) less than light

7). Energy 'E' associate with a photon is given by-------

    a) $E=\dfrac{h}{\nu}$ b)$h = E\nu$

    c)$E = h + \nu$ d)$E = h\nu$

8).The value of 'h' planks constant have value ----- x 10^{-34}

    a)3.36 x 10^{-34}js   b)6.63 x 10^{34}js

    c)6.63 x 10^{-34}js   d) none of these

9). Photon is-----------

    a) invisible entity   b) divisible entity

    c) electrical entity   d)electrically negative

10).Photons -------

a) deflected by electric field	b) deflected by magnetic field
c) do not ionize	d) ionize

11).As per Einstein's theory of relativity--------

a) $E= \dfrac{m}{c^2}$ 　　　　　　　　　　　　b) $E = mc^2$

c)$E = mc$ 　　　　　　　　　　　　　　　d)$E=m/c$

12). Mass of photon is given by---------

a)$m = hc\lambda$ 　　　　　　　　　　　　b) $m = hc/\lambda$

c)$m = \lambda/hc$ 　　　　　　　　　　　d) $m=h/c\lambda$

13).During the process of photoelectric emission, photon colloids with the atom and atom absorbs energy 'hv' Atom utilizes this energy in two ways----

a)part of energy is used to separate electron from atom and remaining energy to throw electron

b)part of energy to heat atom and remaining energy to throw electron

c)part of energy to separate electron and remaining to heat atom.

d)part of energy is used to attract proton and remaining to throw electron.

14).The amount of energy required to separate electron from atom is called as-------

a) kinetic energy 　　　　　　　　　　　b) photoelectric work function

c) potential energy 　　　　　　　　　　d) light energy

15). The value of photoelectric work function W_0 depends on-------

a) nature of metal 　　　　　　　　　　　b)Speed of photons

c) medium 　　　　　　　　　　　　　　d) area of metal plate

16).Threshold frequency v_o of a metal is the ----- frequency of the incident light at which -----

a) minimum, emission does not take place 　　b)maximum, emission does not take place

c) minimum, emission just take place 　　　　d)maximum, emission just begins

17)). The value of photoelectric work function W_0 and Threshold frequency v_o changes from-------

a)place to place 　　　　　　　　　　　b) time to time

c)one point to other 　　　　　　　　　d) metal to metal

18).The emission of photoelectron take place if------

a)$v <v_o$ 　　　　　　　　　　　　　　b) $v_o>v$

c) $v >v_o$ 　　　　　　　　　　　　　d) v v_o

19).The negative potential given to the photoelectric cell at which photoelectric current becomes zero is called as-----

a)photo potential 　　　　　　　　　　　b)light potential

c)stopping potential   d)zero potential

20). photoelectric current is directly proportional to-------

        a)Speed of photon   b)energy of photon

        c) frequency of light   d) intensity of incident light.

21). The velocity of photoelectron is directly proportional to---------

        a) Speed of photon   b)intensity of light

        c) frequency of light   d) temperature of metal

22). A metal emits photoelectrons only when --------

        a) intensity of light is high   b) Speed of photon is high

        c) Frequency of incident light is less than threshold frequency v_o

        d) Frequency of incident light is greater than threshold frequency v_o

23). For a given metal surface, stopping potential is-----

        a) directly proportional to the intensity of light

        b) directly proportional to the frequency of incident light

        c) inversely proportional to the intensity of light

        d) inversely proportional to the frequency of incident light

24).which of the following is not a characteristics of photoelectric effect?

        a) this process is instantaneous

        b)emission take place only if frequency of incident light is greater than threshold frequency v_o

        c) photoelectric current is directly proportional to intensity of light

        d) rate of emission of photoelectrons is directly proportional to temperature

25) Einstein's photoelectric equation is given by--------

        a) $\frac{1}{2}mv^2 = h(v_o - v)$ b) $\frac{1}{2}mv^2 = 2h(v - v_o)$

        c) $\frac{1}{2}mv^2 = h(v - v_o)$ d) $\frac{1}{2}mv^2 = h / (v - v_o)$

26). In Einstein's equation $\frac{1}{2}mv^2 = h(v - v_o)$ if $v < v_o$ then ------

        a) emission just begins   b) emission take place

        c)no emission   d) rate of emission is high

27).In Einstein's equation $\frac{1}{2}mv^2 = h(v - v_o)$ if $v = v_o$ then ------

        a) emission just begins   b) emission take place

        c)no emission   d) rate of emission is high

28). In Einstein's equation $\frac{1}{2}mv^2 = h(v - v_o)$ if $v > v_o$ then ------

a) emission just begins   b) emission take place

c) no emission   d) rate of emission is high

29). In Einstein's equation $\frac{1}{2}mv^2 = h(v - v_o)$ as v increases------

    a) K. E. decreases   b) velocity of photoelectrons decreases

    c) velocity of photoelectrons increases   d) mass of photoelectrons increases

30). As per the principle of photoelectric cell---------

a) electrical energy converted into light energy b) light energy converted into electrical energy

    c) light energy converted into kinetic energy   d) light energy converted into heat energy

31). Frequency below which no electrons are emitted from metal surface is

    a)minimum frequency   b)angular frequency

    c)maximum frequency   c)threshold frequency

32).Energy absorbed by electron is used in

    a)escaping the metal   b)increasing kinetic energy

    c) both A and B   d)increasing frequency

33). In photoelectric effect, electrons should be removed from the

    a)inner shells   b)surface

    c)rom core   d) the nucleus

34).The ratio of photon energy to its frequency is _____

    a) its speed Option   b) its velocity Option

    c) its wavelength Option   d) plancks constant

35) The work function of a substance is 1.6 eV. Find the longest wavelength of light that can produce photoemission from the substance.

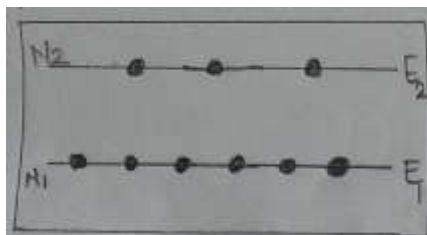   a) 2900 A°   b) 3867 A°
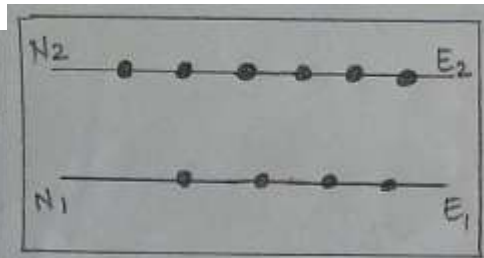
    c) 5800 A°   d) 7734 A°
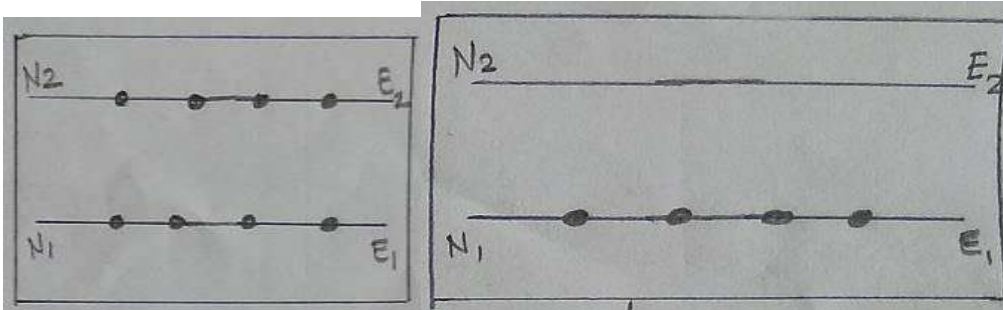
36) Out of the following which diagram explains population inversion --------

    Option A   Option B

Option C   Option D

:

37).LASER light is coherent _____

       a) All the waves have same frequency   b) All the waves are exactly in the same phase
       c) All the waves have same wavelength d) All the waves are exactly in the opposite phase

38) In He-Ne LASER, the tube is filled with_____

       a) 10 % He and 90 % Ne   b)20 % He and 80 % Ne
       c) 90 % He and 10 % Ne   d) 80 % He and 20 % Ne

39) The conductivity of LDR increases as ----------

       a)intensity of light increases   b) intensity of light decrease
       c) wavelength of light increases   d) None of the above

40) In photoelectric effect, by increasing the intensity of incident light on the surface of the metal, --- increase

      a) photoelectric current   b) penetration power
      c) ionizing power   d) stopping potential

41) The photoelectric work function of the metal is 3.3eV. Then the threshold frequency of the metal will be-------------

       a) 7.96×10^{14}Hz   b) 8.96×10^{14}Hz
       c) 7.96×10^{15}Hz   d) 8.96×10^{15}Hz

42) Which of the following are properties of the photon?

       a) indivisible entity   b) travels with speed of light
       c) Does not get deflected by electric or magnetic field   d) All of the above

43) The wavelength of 1 keV photon is 1.24 × 10-9 m, then frequency of 1 MeV photon is _____.

       a) 1.24×10^{15}Hz   b) 2.4×10^{15}Hz
       c) 1.24×10^{20}Hz   d) 2.4×10^{20}Hz

44) In He-Ne laser, He atom transfer their energy to Ne atom through _____

       a) elastic collision   b) inelastic collision
       c) absorption   d) emission

45) A laser consists of active medium of collection of _____

       a)atoms   b) molecule
       c) ions   d) All of these

46). In most of the application of photoelectric cell, the property used is--------

       a)speed of photoelectrons frequency of light   b) photoelectric current frequency of light
       c) photoelectric current intensity of light   d) none of these

47). Which of the following is not the application of photoelectric cell,-------
    a)Burglar alarm   b) lux meter
    c) automatic street light controller   d)to cure diseases like cancer

48). The principle of LDR is----
    a) its resistance decrease as intensity of incident light increase
    b)number of photoelectrons increases with increase in intensity of light
    c) its resistance increases with intensity of light
    d) its resistance increases with frequency of light

49). Which of the following is not the application of LDR?
    a) used in security alarms   b)used as smoke detector
    c)used in dental surgery   d) street light controller

50). The energy of photoelectron is 2.4eV. its frequency will be----
    a) 2.4×10^{14}Hz   b) 5.79×10^{14}Hz
    c) 8×10^{14}Hz   d) 9.59×10^{14}Hz

51).An accelerated electron emits a quantum of radiation with a frequency 9.59×10^{19} cycle per second. Energyof photon will be ----
    a) 5.97×10^{-14}J   b) 2.34×10^{-14}J
    c) $7.6 \times^{-14}$J   d) 9.59×10^{-14}J

52).The photoelectric work function of a certain metal is 6×10^{-19}J. It's threshold frequency is-----
    a) 2×10^{14}Hz   b) 6×10^{14}Hz
    c) 9×10^{14}Hz   d) 12×10^{14}Hz

53).The threshold frequency for a metal is 1.2×10^{15}Hz. It's threshold wavelength will be------------.
    a) 6×10^{-7}m   b) 6×10^{7}m
    c) 2.5×10^{-7}m   d) 2.5×10^{-7}m

54). The threshold frequency for a metal is 1×10^{15}Hz.If a light of frequency 2×10^{15}Hz is made incident on the Metal plate, then the maximum K.E. of the ejected photoelectron is--------
    a) 1×10^{-19}J   b) 6.63×10^{-19}J
    c) 9.5×10^{-19}J   d) 12.5×10^{-19}J

55). The threshold wavelength for silver 3800 A°. It's photoelectric work function will be-----
    a) 5.2×10^{-19}J   b) 1.1×10^{-19}J
    c) 7.2×10^{-19}J   d) 9.5×10^{-19}J

56). The threshold wavelength for silver 4000 A° When ultraviolet light of wavelength 2000 A° is incident on it, thenthe energy of photoelectrons will be-------
    a) 1.23×10^{-19}J   b) 4.97×10^{-19}J
    c) 8.23×10^{-19}J   d) 9.23×10^{-19}J

57).If photoelectric work function of a certain metal is 2×10^{-19}J.then It's threshold frequency will be----
    a) 3×10^{12}Hz   b) 3×10^{13}Hz
    c) 3×10^{14}Hz   d) 3×10^{15}Hz

58). The energy of photon is 6×10^{-19}J. its wavelength will be----
    a) 3.3×10^{-9}m   b) 3.3×10^{-8}m
    c) 3.3×10^{-6}m   d) 3.3×10^{-7}m

59). X-rays are electromagnetic waves of very short wave length in the order of-----

a) 10^{-10}m to 10^{-11}m   b) 10^{-2}m to 10^{-3}m

c) 10^{-5}m to 10^{-6}m   d) 10^{5}m to 10^{6}m

60). when fast moving electrons (or cathode rays) are suddenly stopped then -------

     a) laser are produced   b) current are produced

     c) X-rays are produced   d) none of these

61).Metal filament is surrounded by molybdenum metal cylinder kept at negative potential to thefilament. Because of this electrons emitted from filament are---------

     a)sprinkled all around   b) concentrated into fine beam

     c) Accelerated   d) deaccelerated

62).In Coolidge X-ray tube, the target (T) material should have some properties. Which of the following property is not required?

     a) target (T) material should have high melting point

     b) target (T) material have high atomic weight

     c)) target (T) material have high thermal conductivity

     d)) target (T) material have high ductility

63). In Coolidge X-ray tube, electrons are produce due to process known as-------

     a) photoelectric emission   b) thermionic emission

     c) ultrasonic emission   d) hydraulic emission

64).In the process of x-ray production, the electrons produced from the cathode are accelerated by application of---

     a) high voltage between anode and cathode

b) low voltage between anode and cathode

     c) electronic motor

d) high current from cathode to anode

65). In the process of x-ray production, the intensity of x-ray can be controlled by----

     a) adjusting filament current   b) adjusting P.D. between cathode and anode

     c) adjusting angle of target   d) adjusting cooling rate

66). In the process of x-ray production, the penetration of x-ray (hard x-rays or soft x-rays) can be adjusted by----

     a) adjusting filament current   b) adjusting P.D. between cathode and anode

     c) adjusting angle of target   d) adjusting cooling rate

67). Which of the following is not a property of x-rays------

     a) have high penetrating power   b)produce photoelectric effect

     c)affect photographic plates   d)get deflected by magnetic or electric field

68). X-rays travel with speed of light. X-rays produce ionization in the gases------

     a) True, True   b) True, False

     c) False, True   d) False, False

69). Which of the following is not the application of x-rays-----

     a)used to detect cracks in the body of aero plane

b)used to detect smuggling gold at airport

     c) used as a sensor in atomization industry

     d) to detect cracks in the bridge

70). Which of the following is not the application of x-rays-----
        a)used to detect bone fracture in the body   b)used in eye surgery
        c) used to destroy tumors   d) used to cure diseases like cancer

71) Which of the following is not the application of x-rays-----
        a)used in speedometer of vehicle   b)used to study crystal structure
        c) used in chemical analysis   d)used to study structure of substances like rubber, plastic

72). The energy of x-ray photon is 3×10^{-16}J. its frequency is----
        a)0.497×10^{16}Hz   b) 18.52×10^{18}Hz
        c) 18.52×10^{16}Hz   d) 0.497×10^{18}Hz

73).Calculate operating voltage of x-ray tube which emits x-ray of wavelength 0.25A°--------
        a)25kV   b)30.6kV
        c)35.7kV   d)49.6kV

74). Which of the following is a unique property of laser?

        a) Directional   b) Speed

        c) Coherence   d) Wavelength

        View Answer c

        Explanation: Coherence is an important characteristic of laser beam because in laser beams, the

        Wave trains of the same frequency are in phase/ Due to high coherence it results in

        an extremely high power.

75). Which of the following is an example of optical pumping?

        a) Ruby laser   b) Helium-Neon laser

        c) Semiconductor laser   d) Dye laser

        View Answer: a

        Explanation: The atoms of Ruby are excited with the help of photons emitted with the help
of photons emitted by an external optical source. The atoms absorb energy from photos and
 raises to excited state. Therefore Ruby laser is an example of optical pumping.

76). When laser light is focused on a particular area for a long time, then that particular area alone will be heated.

        a) True   b) False

        View Answer: a

        Explanation: Laser beam has very high intensity, directional properties and coherence. When
it is focussed on a particular area for a long time, then the area alone will be heated and the
other area will remain as such. This is called thermal effect.

77). What is the need to achieve population inversion?

        a) To excite most of the atoms   b) To bring most of the atoms to ground state

c) To achieve stable condition   d) To reduce the time of production of laser

View Answer: a

Explanation: When population inversion is achieved, the majority of atoms are in the excited state. This causes amplification of the incident beam by stimulated emission. Thus the laser beam is produced.

78). Laser is called as a non-material knife.

a) False   b) True

View Answer: b

Explanation: In laser surgery, without knife, bloodless operation, cutting tissues etc can be made, hence laser Is called non-material knife.

79). DVD uses the laser.
a) True   b) False
View Answer: a
Explanation: A DVD player contains a laser. By moving the lens longitudinally, different depths can be reached in the disc. In order to make room for a lot of information on every disc, the beam has to be focused on as small an area as possible. This cannot be done with any other light source.

80). He-Ne laser is a
a) **three level laser**   b) four level laser
c) two level laser   d) five level laser

81). The pumping source in He-Ne laser
a) optical   **b) electric discharge**
c) chemical   d) mechanical

82).The ratio of He to Ne in He-Ne laser is
a) 1:10   b) 2:13
c) 10:1   d) 3:15

83). The active medium in He-Ne laser is
a) He   **b) Ne**
c) He-Ne   d) All correct

84). The role of He in He-Ne laser is
a) He is an active medium   b) population inversion takes place in He
c) Stimulated emission takes place in He   **d) He atoms help in exciting Ne atoms**

85). The reason for narrow tube in He-Ne laser
a) atomic collision with tube wall increases   b) atomic collision with tube wall decreases
c) there is no effect of narrow tube on He-Ne Laserd) atomic collision with tube wall constant

86).Population inversion in laser means
a) number of atoms in ground state are more than number of atoms in excited state
b) **number of atoms in ground state are less than number of atoms in excited state**
c) number of atoms in ground state is equal to number of atoms in excited state
d) none

87). Metastable state has life time approximately

       a) 10^{-3} s   b) 10^{-8} s

       c) 10^{-10} s   d) 10^{-12} s

88). An excited state (except metastable state)has life time about

       a) 10^{-3} s   **b) 10^{-8} s**

       c) 10^{-15} s   d) 10^{-20} s

89). LASER is a short form of

       a) Light Amplification by Spontaneous Emission of Radiation.

       b). **Light Amplification by Stimulated Emission of Radiation.**

       c). Light Absorption by Stimulated Emission of Radiation.

       d). Light Absorption by Spontaneous Emission of Radiation.

90). Laser beam is made a of

       a) Electrons   **b) Highly coherent photon**

       c). Elastic particles   d) Excited atoms

91). The material in which the population inversion is achieve is called as

       a) **Active medium**   b) metastable state

       c) passive medium   d) stable states

92).The life time of metastable state when compared to excited state is

       a) Smaller   **b)Greater**

       c)Equal

93). In population inversion process the number of atoms in metastable state is comparison to the ground state is

       a)Smaller   **b)Greater**

       c)Equal

94). The population inversion process is due to the existence of

       a) Metastable state   b)Excited stase

       c)Ground state   d) Underground state

95). In lasing action, the light amplification is due to

       a)Stimulated emission   b)Spontaneous emission

       c)Stimulated Absorption   d) spontaneous absorption

96). In Laser, stimulated emission depends on

       a)Number of atoms present in meta stable state   b)The intensity of incident light

       c)Both are correct   d) Both are wrong.

97).Which of the following is not a property of laser light?

       a)is coherent   b)is monochromatic

       c)beam is extreme intense   d)high penetration power

98).LASER light is coherent means-----

       a) all the wave have same frequency or wavelength

       b) all the waves are exactly in same phase

       c)all the waves are exactly in opposite phase

       d)all the waves are carry same energy

99). LASER light is monochromatic means-----

a) all the wave have same frequency or wavelength

b) all the waves are exactly in same phase

c)all the waves are exactly in opposite phase

d)all the waves are carry same energy

100). Atom in the ground state absorbs energy of incident photon and get excited towards higher energy level. This process is known as -------

a)Spontaneous emission
b)Stimulated emission

c)Stimulated Absorption
d) photon collision

101). After completion of life time, the excited atom comes to lower energy state on it's own emitting a photon. This is known as-------

a)Spontaneous emission
b)Stimulated emission

c)Stimulated Absorption
d) photon collision

102) when an atom is in excited state and before coming to ground state if the atom is triggered due to an action of incident photon. The interaction between the excited atom and incident photon can trigger excited atom to make transition to ground state. This process is called as----

a)Spontaneous emission
b)Stimulated emission

c)Stimulated Absorption
d) photon collision

103). An atom remains in excited state for very very small time (10^{-8} sec) and comes to the ground state immediately. This state is known as--------

a) short excited state
b)temporary excited state

c)metastable excited state
d)ordinary excited state

104). life time of hydrogen is-------

a) 10^{-3} sec
b) 10^{-8}) 10^{-3} s

c) 10^3 sec
d) ten years

105) The relaxation time for metastable state is--------

a)ten years
b)1 year

c) 10^2 to 10^4 sec
d) 10^{-6} sec to10^{-3} sec

106). Which of the following is not a application of LASER------

a)used for engraving and embossing
b) used for cutting and drilling metals

c) used for chemical analysis
d) used for computer printers

107).Making population of higher level more than that of ground state is called---

a) population hiker
b) population inversion

c)crowd maker
d) none of these

108).A system in which population inversion achieved is called-----

a) inverse system
b) active system

c)perfect system
d) none of these

109). The process of raising atom from lower energy level(state) to higher energy state (level) is called----

a)lifting
b)hiking

c)gaining   d) pumping

110).Which of the following is not a pumping method in LASER----

    a) optical pumping   b) electrical pumping

    c) chemical pumping   d) jet pumping

111).In the case of He-Ne LASER, pumping method used is--------

    a) optical pumping   b) electrical pumping

    c) inelastic atom-atom collision   d) chemical pumping

112). Proper lasing action can be produced using-------

    a) one energy level laser system   b)Two energy level laser system

    c) three energy level laser system   d) none of these

113). The advantages of gas laser are-----

    a) high monochromaticity and stability of frequency

b)low monochromaticity and stability of frequency

    c) high speed of lasers

d)low monochromaticity as well as high speed

114).In He-Ne laser, the tube is filled with-------

    a) 50%He and 50% Ne   b)90%He and 10% Ne

    c) 10%He and 90% Ne   d) 60%He and 40% Ne

115). In He-Ne LASER,Metastable states of He and Ne where energy transfer through collision takes place are----

    a)20.61eV and 20.66eV   b) 18.7eV and 20.66eV

    c)20.66eV and 18.7eV   d)18.7eV and 18.82eV

116). In He-Ne LASER lasing atoms are-----

    a) Helium   b) Neons

    c)Hydrogens   d)Oxygens

117).Laser gain medium is a medium which can ------- the power of light.

    a)reduce   b) subtract

    c) amplify   d) decrease

118). In X-ray spectrometers, the specimen or the sample is placed after which of the following components?

a) X-ray tube

b) Monochromator

c) Collimator

d) Detector

Answer: a

Explanation: In X-ray spectrometers, the specimen or the sample is placed after the X-ray tube. The X-ray tube is the source of the X-ray.

119). Which of the following components are used to generate X-rays?

a) Meyer tube

b) West tube

c) Anger tube

d) Coolidge tube

Answer: d

Explanation: Coolidge tube is used to generate X-rays. It the source of X-rays. Coolidge tube requires stabilised current and high voltage.

120). Using which of the following components is the generated x-rays focussed upon the specimen?

a) X-ray tube

b) Monochromator

c) Collimator

d) Detector

Answer: c

Explanation: Collimator is used to focus the generated x-rays upon the specimen. The collimator is in between the specimen under analysis and the Coolidge tube.

121). The cathode in the Coolidge tube is made of which of the following elements?

a) Quartz

b) Iron

c) Tungsten

d) Barium

Answer: c

Explanation: The cathode in the Coolidge tube is made of tungsten. The anode is made of copper.

122). The cathode in the Coolidge tube is kept in an inclined manner.

a) True

b) False

Answer: b

Explanation: The anode in the Coolidge tube is kept in an inclined manner. The anode is made of copper.

123). Which of the following is not a target metal used in the Coolidge tube?

a) Rhodium

b) Cobalt

c) Gold

d) Silver

Answer: c

Explanation: Gold is not used as a target metal in the Coolidge tube. The other target metals are copper, molybdenum and chromium.

124). When x-rays emitted from molybdenum are allowed to pass through a zirconium filter, which of the following occurs?

a) It absorbs radiation of shorter wavelength

b) It absorbs radiation of longer wavelength

c) It allows radiation of shorter wavelength to pass through

d) It allows radiation in a particular band to pass through

Answer: b

Explanation: When x-rays emitted from molybdenum are allowed to pass through a zirconium filter, it absorbs radiation of shorter wavelength. It allows radiation of a stronger wavelength to pass through.

125) Which of the following crystals are not suited for x-ray grating?

a) Topaz

b) Lithium fluoride

c) Calcium fluoride

d) Sodium fluoride

Answer: d

Explanation: The crystal which is not suited for x-ray grating is sodium fluoride. Other crystals which are suitable for x-ray grating are gypsum and sodium chloride.

Sample Questions APPLIED SCIENCE (22211)

(For Term End Online Examination, there will be 25 (15 x 1Mark questions +
10 x 2Marks questions = 35 Marks) questions each on Physics and Chemistry.)
Topic 1

1) Question: - Two capacitance 4µF and 8µF are first connected in series and then parallel their equivalent capacitance are _____ and _____ respectively.
Option A: - 2.66µF, 12 µF   Option B: - 12µF, 2.66 µF
Option C: - 4µF, 12µF   Option D: - 12µF, 4µF

2) Question: - Three capacitors each of capacity C are connected. The resultant capacity (2C/3) can be obtained by connecting _____.
Option A: -   all of them in series
Option B: -   all of them in parallel
Option C: -   Two of them in parallel and third in series with this combination
Option D: - Two of them in series and third in parallel across this
3) Question: - If the area of metal plates of capacitor with capacitance C is doubled, then capacitance will become _____.
Option A: - C   Option B: - 2C

Option C: - 4C   Option D: - C/2

4) Question: - A capacitor of capacity 50µF is connected across a supply of 5V. Find the energy stored in the capacitor.

Option A: - 625 µJ   Option B: - 6.25 J

Option C: - 62.5 J   Option D: - 125 µJ

5) Question: - When condensers are connected in parallel, _____ gets divided into a number of parts.

Option A: - charge   Option B: - current

Option C: - Both (A) and (B)   Option D: - potential

6) Question: - The algebraic sum of voltages around any closed path in network is equal to _____.

Option A: - Infinity   Option B: - -1

Option C: - 0   Option D: - +1

Topic 2

7) Question: - Who of the following is associated with radioactivity?

Option A: - Henry Becquerel   Option B: - Issac Newton

Option C: - Albert Einstein   Option D: - C. V. Raman

8) Question: - The half-life period of a radioactive element is 5 years. If the number of atoms present initially (at t=0 years) is 20,000; how many atoms would remain after 20 years?

Option A: - 10,000   Option B: - 7,500

Option C: - 5,000   Option D: - 20,000

9) Question: - Half-life period of a radioactive element is given by T =_____ where all smbols have usual meanings.

Option A: - 0.693/λ Option B: - 0.693 λ

Option C: - 0.693/N   Option D: - 0.693 N

10) Question: - Which wave has same frequency and periodic time as wave A
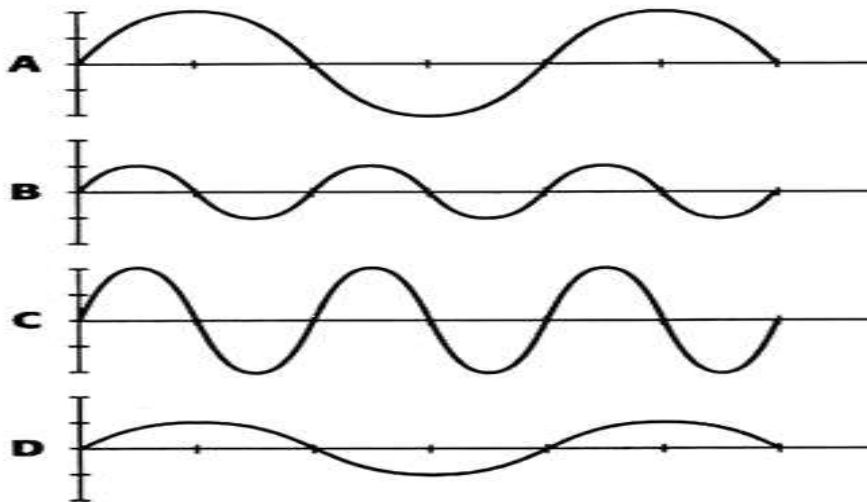
Option A: - Wave B   Option B: - Wave C

Option C: - Wave D   Option D: - Both (B) and (C)

11) Question: - Which of the following statement is not true?

Option A: -   When the observer moves away from the stationary source, then the pitch of sound decreases

 Option B: - When the observer moves towards the stationary source, then the pitch of sound increases

Option C: - When the source moves away from stationary observer then the pitch of the sound decreases

 Option D: - When the source moves towards the stationary observer then the pitch of the sound decreases

12) Question: - A siren of police car emits pure tone at a frequency of 640 Hz. Find the frequency that a stationary person would hear when the car approaches him. The police car is moving towards him at 20 m/s. (Velocity of sound in air =340 m/s)

Option A: - 680 Hz   Option B: - 604.45 Hz

Option C: - 1360 Hz   Option D: - 1208.89 HzTopic 3

13) Question: - In photoelectric effect, by increasing the intensity of incident light on the surface of the metal, _____ increases

Option A: - photoelectric current   Option B: - penentration power

Option C: - ionizing power   Option D: - stopping potential

14) Question: - The photoelectric work function of the metal is 3.3eV. Then the threshold frequency of the metal will be _____.

Option A: - $7.96 \times 10^{14} Hz$ Option B: - $8.96 \times 10^{14} Hz$

Option C: - $7.96 \times 10^{15} Hz$ Option D: - $8.96 \times 10^{15} Hz$

15) Question: - Which of the following are properties of the photon?

Option A: - indivisible entity

Option B: - travels with speed of light

Option C: -   Does not get deflected by electric or magnetic field

Option D: - All of the above

16) Question: - The wavelength of 1 keV photon is 1.24×10^{-9}m, then frequency of 1 MeV photon is _____.

Option A: - $1.24 \times 10^{15} Hz$ Option B: - $2.4 \times 10^{15} Hz$

Option C: - $1.24 \times 10^{20} Hz$ Option D: - $2.4 \times 10^{20} Hz$

17) Question: - In He-Ne laser, He atom transfer their energy to Ne atom through _____

Option A: - elastic collision   Option B: - inelastic collision

Option C: - abosrption   Option D: - emission

18) Question: - A laser consists of active medium of collection of _____

Option A: - atoms   Option B: - molecule

Option C: - ions   Option D: - All of these

19) Question: - The ratio of photon energy to its frequency is _____

Option A: - its speed   Option B: - its velocity

Option C: - its wavelength   Option D: - plancks constant

20) Question: - The work function of a substance is 1.6 eV. Find the longest wavelength of light that can produce photoemission from the substance.

Option A: - 2900 Å   Option B: - 3867 Å

Option C: - 5800 Å   Option D: - 7734 Å

21) Question: - Out of the following which diagram explains population inversion _____
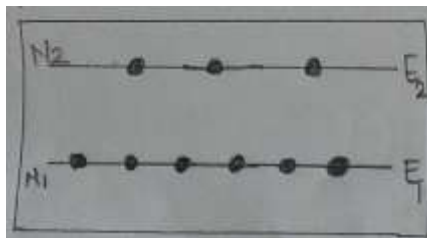
Option A   Option B
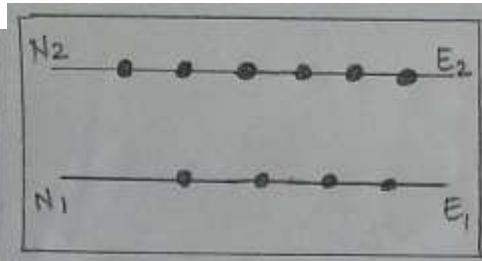
Option C   Option D

:
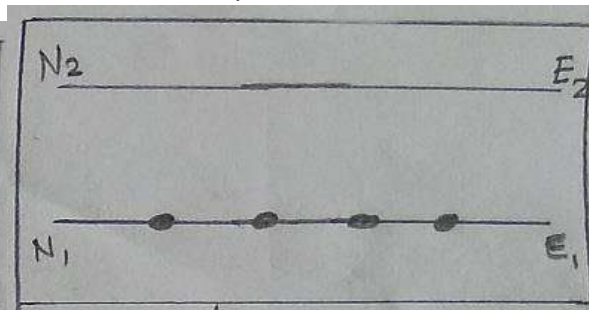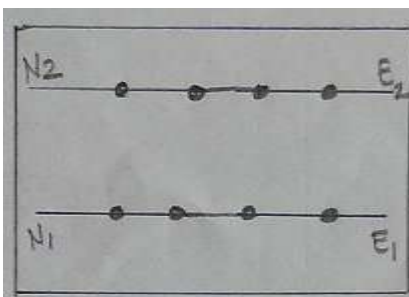
22) Question: - LASER light is coherent _____

Option A: - All the waves have same frequency

 Option B: - All the waves are exactly in the same phase

Option C: - All the waves have same wavelength

Option D: - All the waves are exactly in the opposite phase

23) Question: - In He-Ne LASER, the tube is filled with_____

Option A: - 10 % He and 90 % Ne   Option B: - 20 % He and 80 % Ne

Option C: - 90 % He and 10 % Ne   Option D: - 80 % He and 20 % Ne

24) Question: - The conductivity of LDR increases as

Option A: - intensity of light increases   Option B: - intensity of light decrease

Option C: - wavelength of light increases   Option D: - None of the above

QUESTION BANK …22211- APPLIED SCIENCE(CHEMISTRY)

MCQS:-UNIT –IV – WATER TREATMENT& ANALYSIS

1) The process of removing Ca&Mg from hard water is known as…….

    a)filtration   b)flocculation

    c) sedimentation   d)water softining'.

2)The metallic constituent of hard water are…………

    a)Mg ;Sn&Fe   b)Ca , Mg &Fe

    c)Fe, Sn&Ca   d)Mg Ca&Sn

3) Which of the following is NOT a properly of hard water?

    a)it leathers easily with soap solution   b)It has nice taste

    c)It is not good for steam generation   d)it causes scale formation in kettles

4) Zeolite SOFTINING PROCESS REMOVES….

    a)Only temporary hardness of water   b) Only permanent hardness of water

    c) Both temporary & permanent hardness of water   d) none of this..

5 Harhness of water does not….

    a) Have any bad effect in boiler   b) make cooking of foods difficult

    c) make unfit for drinking   d)causes difficulty on washing of cloths with soaps

6) Sedimentation is a physical process to remove

    a)colloidal particles   b)suspended particles

    c) MICROORGANISM   d)ALL OF THEASE .

7) permanent hardness of water be removed by the addition of

    a)Lime   b)soda ash

    c) potassium -permagnate   d)sodium bicarbonate

8) Purest form of naturally occurring water is

    a) Rain water b) river water c) lake water d)well water.

9)BOD stands for…,…

       a)biochemical oxygen demand   b) british oxygen demand

        c)) Chemical   oxygen demand   d) None of above

10)) water which does not produce leathers easily with soap is….

       a)mineral water b)hard water c)soft water d)distilled water.

11)   permanent hardness is hardness that cannot be removed..

        A)boiling b)adding lime c)coagulation d)all of these

12) The liquid waste from kitchen   ,bathrooms & wash basins are not called .

       a) liquid waste b)sludge   c) sewage d) none of these

13)) The standard BOD of water is taken for..

      a)1 day   b) 2days   c) 5 days   d)10 days.

14) permanent hardness of water is known as …

       a) carbonate hardness   b)non carbonate hardness

      c)both   a& b   d) non e of these

15)Scale in boiler are formed duo to…..

       a)deposition of CaCO3   b)deposition of CaSO4

       C)Hydrolysis OF Mg.   d) all the above

16) The most commonly used unit to express hardness is…

        a)drgree French   b)ppm

        c)degree clarks   d)gallon

17) Lime soda process uses..

        a)Ca (OH)2   b)Na2 CO3

        C)BOTH CaCO3& Na2co3   d)chloramine.

18) Residual hardness in ion exchange process is…

        a)10-15ppm   b)30-60ppm   c)15-20 ppm   d)0-2 ppm

19) Alkalinity of water is duo to

a) OH-   B)CO3   C)HCO3 D)All the above

20)COD STANDS FOR

a)chemical oxygen demand   b) biochemical oxygen demand

c)chem -oxy demand   d)all above

21)Which is not used for disinfection of water?

a) chlorination   b)elecrto- dialysis

c) ozonization   d)Addition of KM nO4

22) Acceptable pH range for drinking water is….

a)07-8.5   b)06-07   c)08-10   d)6.5 -9.2

23)Bicarbonates of calcium & magnesium cause ….

a)softness   b)permanent hardness

c)temporary hardness   d)all the above..

24) temporary hardness of water can be removed by…

a) boling   b) filtration   c)sedimentation d) solvent extraction

25) Ultraviolet rays are used in water treatment for   …

a)illumination   b)disinfection c)coagulation d) sedimentation

26) Fresh sewage may becomes Stale in….

a)one hour   b) 2-3 hours c)3-4 hours   d)6 –hours

27) FOR domestic use of water must be…

a) sparkling   b)free from salt

c) HYGNICLLLY PURE   d) free from chlorine

28)COAGULATION PROCESSS REMOVES…

a) Flotaing materials   b)suspended   particles

c)COLLIDAL PARTICLES   d)MICRO ORGANISM.

29)Sterization of water can be done for

a)chlorination b)aeration c)using UV rays   d)all the above

30) In chlorination process , the germs are killed by…

a)chlorine gas b)chlori amine c)bleaching powder d) all the above

31)In ozonization ……..is used to sterilize water …

a)oxygen gas b)ozone gas c)solid ozone d)chlorine gas

32) Areation is the process of ….

a)spraying water into droplets   b)allowing water to flow I ditch

c)STORING water in tanks   d) all the above

33)Swimming pool water should be sterilized by..

a) sedimentation b) filtration c) solvent extraction d)UV rays

34)Ozone acts as….

a)Sterilising agent   b) Decolorising agent c)deodouring agent   d)all of these

35)PH range for city water supply…

a) 1-4   b)6.6-7.5   c) 8-10   d) all the above.

36)When soap is added to hard water, a white ppt of ….is formed

a)sludge   b)flux   c)Scum   d) Scale

37)Secondary treatment uses …..to consume wastes.

a) Microorganisum   b)chemicals c) filtration   d) None   of these

38)Reverse osmosis is a water purification technic that uses…..

a)Coagulants   b)resins c)semipermeable membrane   d)lime soda.

39)Screening is the process of removing …. From water.

a)scale& sludge   b)colloidal particles

b)suspended particles   d) floating materials

40) colloidal particles are responsible   for …

a)Hardness of water   b) Turbidity of water

c)odors of water   d)ALL the above

41)Hot lime soda process produces water of   hardness of …..

a)30-60ppm   b)0-2ppm   c)15-30ppm d)5-10ppm

42) cold lime soda process produces water of   hardness of …..

a)30-60ppm   b)0-2ppm   c)15-30ppm d)50-60ppm

43)Turbidity is caused by …

a) clay   b)organic matter c)microbes   d)ALL the above

44)One ppm….

a) 0.07 fr b).7 fr c)0.1 fr d)0.01 fr

45)Select the   unit   is used to measure turbidity of water,…..

a)NTU   b)ppm   c)sec/cm2 d)ATU

46)The total dissolved solids(TDS)can be reduced by the following method….

a)Distillation   b)Reverse osmosis   c)ion exchange   d) All the above

47)The Chemical   oxygen demand   measure the…..

a)amount oxygen required for growth of microorganism in water

b) amount oxygen removed in order to oxadise to organic matter

c)) amount oxygen required to oxadiseCa present in waste water

d)none of these

49) temporary hardness of water is used in the presence of

a) chlorides of Ca& Mg   b) sulphates of Ca& Mg

c) cabonates of Ca& Mg   d)bi cabonates of Ca& Mg

50)Highly alkaline water in boiler causes

a)corrosion   b)scale & sludge formation

c)lubrication   d)priming& foaming

51)S ELECT THE COMPOUND WHICH IS USED IN THE MAIN PART OF ION EXCHANGE PROCESS

USED fOR softening of hard water

a)Brine solution b)Na- zeolite c)Resins d)all the above

52)Alum is added to water to facilitate the process of …

a)condensation b)melting

c)sedimentation d)evaporation

53)Pollution of water bodies can be controlledby…

a)releasing industrial waste into water

b)throwing plastics into water

c)dumping waste in water

d) treatement of sewage waste before disposal

54)Water that is good enough to drink is called

a)Potable water b)ground water c)surface water d)Artesian water

55)Hardness of water is duo to the of salts of …

a)Potassium b)Chlorine c)Mg d)Boron

56)Accorging to WHO ,the soft water has o to …mg per litre as $CaCO_3$…

a)30 b)60 c)90 d)129

57) Florides can be removed by…. all the above

a)Reverse osmosis b)lime- softeing c)ion exchange d) all the above

58) Which of the following ion get released from the cation exchange coloumn

a)H+ B)Na+ c)K+ D)Ca++

59) Which of the following ion get released from the anion exchange coloumn

a) co3 b)OH - C)c l- d)f-

60) ion free water get released from exchange is known as….

a)Potable water b) drinking water

c)Coagulated water   c)deminaralised water

61)The total hardness of drinking water is…

   a)500ppm   b)700ppm   c)900ppm d)1000ppm

62) THE example of brackish   water is…..

   a) Potable water   b) drinking water

   c) Sea water   d) underground water

63) Reverse osmosis is a water purification technic is known as…

   a) hyper –filtration   b) double filtration

   c) double - osmosis   d) hyper – osmosis

64) Water   is mainly used in boilers' for generation of,….

   a)power   b)elasticity   c) steam   d)current

65)Select an anion exchanger from the following…

   a) Amberlite IR 120   B) Amberlite   400

   C)DOWEX -50   d) None of these

 66) Select an   cation exchanger from the following…

   a) Amberlite   400   b) Amberlite IR 120

   c))DOWEX -50   d) triolite

67)Which one of theses not cation exchanger…..

   a) Amberlite   400   b) Amberlite IR 120

   c))DOWEX -50   d) triolite

 68)Disposal to sewage in large cities , is done in….

   a)Oxidation   b)irrigation c)dilution   d) reduction

69) the coagulant widely used for sewage tretement is…

   a)alum   b)ferric chloride c)ferric- sulphate   d)chlorine

70)Removal of oil & gas from sewage , is known as…

a)screening   b)skimming c)filtration d)) None of these

71)For the COD test of sewage , d) organic matter is oxidizedby potassium cromate ,

in the presence of   …

a)H2SO4 B) HNO3   C) HCl   d) None of these

72)Scale formation in water causes…

a) no loss of heat   b)wastage of heat   c) increase in efficiency d) None of these

73)What is chemical formula of slaked lime….

a)Ca(OH)2   b)CaO   C)CaCO3   d)CaCl2

74)The gas which may cause explosion in swage is….

a)carbon monoxide   b) carbon   dioxide   c) carbon d) METHANE

75)Flocculated particles do not change their ….

a)Size   b) shape   c)weight d) None of these

76)The detention period for plain sedimentation water tanks,

is usually …..

a)16-24 hours   b)4-8 hours   c)8-16 hours d)24-36 hours

77) The std BOD of water is taken for….

a) 2 –days   b)3- days c)1- day   d)5-days

78)Blow-down operation causes the removal of….

a)scales   b) sludges   c)Bacteria d)Turbidity

79)The formation of Wet steam in boiler is called as …

a)Foaming   B)PRIMING

C)Scale &Sludge formation   d) None of these

80) IN a nephelo turbidity n meter the light detectors are at ….

a)180   b)360   c)90   d)270

81) Which is n0t used for desalination of water…..

a)boling   b) Lime soda process

c) electrodialysis   d)flash evaporation

82) flash evaporation is a method of getting pure water from….

a)) Potable water   b) drinking water

c) Sea water   d) underground water

83) temporary hardness of water is removed by…

a) chlorination   b)electo dialysis

c)Boiling   d)sedimentation

84)UV –RAYS ARE used in water treatment for

a)sedimentation b) filtration c) solvent extraction) disinfection

85) Which of the following is n0t hazardous chemical present in water…..

a) Cadmium b) calcium   c)chromium   d)Arsenic

86)Sterilization of water can be done by using….

a)oxygen   b)hydrogen peroxide c)potash   d)ozone

87) Distilled water can be obtained by……

a)boling   b) Lime soda process

c)Zeolite process   d)Ion exchange process

88) Which of the following substances are commonly used in a filter….

a) charcoal   b) sand c) both charcoal & sand   d)alumina

89)The ultimate sources of water is

a)Rivers &lakes   b)Dew   & forests

c)Rain &snow   d)surface & ground water

90)Acidity of water is caused due to….

a) mineral acida   b)free CO2

c)iron sulphate   d)all the above

91) Turbidity   of Raw water is measure of …

   a)suspended solids   b) acidity of water

   c)microbes   d)ALL the above

92))The maximum depth of sedimentstion tank is

   a)2- m   b)6- m   c)4-m   d)5-m

93) Which one of the following is NOT   a property of water….

   a) It Boils at 80.   b)It is a good solvent

   c) density   is low   d)It clings to glass by capillary action)

94)The principle of chlorination is…..

   a) Formation OF Nasent oxygen   b) Formation of oxygen molecule

   c) Formation OF HCL   d)Formation of CHLORINE gas

95)…..is not consequence of scale & sludge formation in the boiler.

   a)Abrasion   b)wastage of fuel

   c)danger of explosion   d)decrease in efficiency

MCQS:-UNIT –V- ELECTROCHEMISTRY AND BATTTERIES

1) Sodium chloride is a…….

   a)metallic conductor   b)electrolytic conductor

   c)both   a& b   d) none of these

2)) Sodium chloride is called an electrolyte , because…..

   a)its molecules are made of charged particles

   b) it is decomposed when an E.C.is passed through it

   c)it breaks up into ions, when a current is passed through it

   d)it ionizes, when fused or dissolved in porper solvent.

3)Which of the following is an electrolyte ?

   a)benzene   b)chloroform   c)alcohol   d) Sodium chloride

4) Which one of the following is not a strong electrolyte ?

a)NaCl   b)NaOH   C)NH4OH   d)H2SO4

5) Ionisation of electrolyte in aqueous solution is due to…..

a)instability of the compound in aqueous solution

b) hydrolysis of electrolyte

c)Decrease in electrostatic force of attraction between oppositely charged ions

d) increase in electrostatic force of attraction between ions

6)) Which of the following does not conduct electricity ?

a)molecule NaCl   b)NaCl crystal

c)solution of NaCl   d) none of these

7) An ionizing solvent has……

a)Low value of dielectric constant   b) high value of dielectric constant

c) a dielectric constsnt is equal to 1   d) has high M.P.

8) NaOH is considerd as a strong base because …..

a)it is highly caustic substance   b)it is readily soluble in water

c)it ionizes completely in aq. Solution   d)highly soluble in water

9)Acetic –acid is a weak electrolyte because……

a) its molecule at weight is high   b)it is a covalent compound

c) IT does dissociate much   d)highly unstable

10)SULPHURIC ACID is stronger acid than acetic because…..

a)it dissociates completely   b) it has high molecular weight

c) IT does not ionises   d) acetic acid ionizes less

11) Sodium chloride is   abad conductor of electricity   ……

a)Contains a one molecule   b) it does not have ions

c)the ions present in it are not free   d) none of above

12) Acetic –acid is a weaker than sulphuric acid because…..

   a)) it dissociate much at low temperature

   b) it ionizes to smaller extent

   c) it is readily soluble in water

   d)It gives only one hydrogen atom

13pure water does not conduct electricity because it is….

   a)neutral   b)has low boiling point

  c)almost not ionized   d)decomposes easily

 14) Conductivity of a solution is directly proportional to its…

   a)Concentration b)number of ions c)current density d)vol. of solution

15)Specific conductance is conductance 0 f solution of volume……

  a)1cm3   b)10 cm3 c)1000cm3   d)1000cm3

16) Conductivity of an   electrolyte in   solution….

   a)increases with concentration & temperature

   b)deceases with increase of conc.& increase with increase of temperature

   c) decrease with concentration & temperature

   d)) none of above

 17)   the unit Specific conductance is..

   a)ohm cm3   b)ohm-1 cm   c)ohm cm   d)ohm-1 cm-1

18)) the unit Specific conductance of an electrolyte on dilution …....

   a)decreases   b) increase   c)remain unchanged d)) none of above

19) the unit Specific conductance is..

   a)ohm cm2   b)ohm cm   c)mhos cm -1   MHOS-1 CM

20)The electrode potential is the tendency of metal ……

   a) to gain electron   b)to lose the electron

c) either tolose or gain of electron d) none of above

21)Calomel is constructed using a solution of…..

  a)SATURATED KCl   b) SATURATED CaCl2

  c)SATURATEDNH4Cl D) SATURATED NaCl

22) A   Galvanic   cell converts…….

  a)Electrical energy into chemical energy

  b)chemical energy into   electrical energy

  c) Electrical energy into heat   energy

  d) chemical energy into   heat energy

 23) The unit EQUIVALENT conductance is..

  a)ohm -1 cm2 eq -1   b) ohm   cm2 eq -1

  c) ohm -1 cm2 eq   d) ohm -1 cm-2 eq -1

24)   EQUIVALENT conductance of a weak electrolyte on dilution…...

  a)decreases   b) increase   c)remain unchanged d)) none of above

25)Calomel is   …..

  a)Mercuric chloride b))Mercuous   chloride

  c))Mercuoussulphide   d) Mercuric iodide

26) The unit of cell constant is   …..

  a)cm-1   b)cm   c)cm2   d) none of above

27)During charging of alead acid cell…..

  a)   a voltage increases

  b) a give a out energy

  c)its cathode becomes dark brown colour

  d) Specific conductance decreases

28) During charging the specific gravity of a electrolyte of a lead acid cell…..

a)decreases   b) increase   c)remain unchanged   d)) becomes zero

29)) During discharging condition the f a lead acid cell   acts as…..

   a)Voltaic cell or galvanic cell which converts electrical energy into chemical energy.

   b)Voltameter which converts electrical energy into chemical energy

   c)both mentioned above

   d) none of above

30)) When a lead acid cell   is fully charges condition , the colour of its +ve plate   is…..

      a)dark gray   b)brown   c)dark brown   d) blue

31)The best indication about state on a lead acid cell is given by…..

    a)output voltage   b) temperature of electrolyte

    c) specific gravity of electrolyte   d) none of above

32) The storage battery generally used in electric power station is,…..

    a)Ni-cd battery b)fuel cell c)lead acid battery d)Zn-C –Battery

33)The output voltage of battery charger is….

    a)Less than the battery voltage   a) higher than the battery voltage

    c)the same as the battery voltage

34) Cells are connected in series in order to……..

    a)increase the voltage rating   b)increase the   current rating

   c) increase the   life of the cell   d) For decent appearance.

35) The capacity of battery is expressed in term of….

    a)current rating   b)voltage rating

    c) ampere –hours rating   d) none of above

36) The   lead   storage battery can be revived by…..

     a) Adding distilled water   b0 Adding so-called battery restorer

    c)A USE OF SULPHURIC ACID d) none of above

37)The substances of the cell which take active part in chemical reaction& hence produce

electricity   during charging or discharging are known as…

a)passive   b)active   c)redundant   d)inert

38) in a lead acid cell   , dil H2 SO4 approximately comprises the following..

a)one part H2O , Three Parts H2SO4

b) Two part H2O , Two Parts H2SO4

c))one part H2O ,four Parts H2SO4

d)All H2SO4.

39) It is noted that   During charging the   of a lead acid cell…..

a) voltage increases   b) energy absorbed

c) specific gravity of H2SO4 increases   d) All of above

40) It is noted that During charging the   of a lead acid cell

Following does not happen…..

a)The cell absorbs energy   b) specific gravity of H2SO4   decreases

c) Voltage of cell decreases   d) All of these

41) When a lead acid cell   is fully charges , the electrolyte assumes….. appearance.

a)dull   b)reddish   c)bright   d)milky

42) in a lead acid cell , lead is called as….

a)positive active metal b) negative active metal

c)passive metal   d)) none of above

43)) THE lead acid cell Should be charged beyond……

a)1.8 V   B)1.9V   C)2 V   D)2.1V

44)Dry cell os modification of …..

a)Daniel cell   b)lead cell   c) Leclanche cell   d) Edison cell.

45)In alkaline cell,the electrolyte is…

a)Dil H2SO4   b)Conc H2SO4   c)NaOH   d)KOH

46)A fuel cell is used to convert chemical energy into ….

a)solar energy b)mechanical energy c)electrical energy d)potential energy

47) one ampere hour change is equivalent to ……

a)36 coulombs   b)360 coulombs c)3600 coulombs   d)3600 coulombs

48)…….reference electrode is used with glass electrode in mearingpH.

a)hydrogen   b)calomel   c)copper   d) none of these

49)Which batteries are rechargeable?

a)primary   b)secondary c)solar cells   d)) none of these

50) Which battery is used in aeroplanes ?

a)Dry cell battery   b)lead acid battery

c) Ni-cd battery   d) none of these

51) Containers of storage battery are….

a) moulded hard rubber   b)ceramics

c) celluloid   d)any one of these

52)The –ve pole of dry –cell is made up of

a)carbon   b)copper   c)zinc d) mercury

53) An electrochemical cell is based upon……

a.) acid-base reaction   c). redox reaction

c). nuclear reaction   d). none of the above.

54). Which one of the following will be good conductor of electricity?

a). pure distilled water   b). molten NaCl

c.) dilute sol of glucose   d.)   chloroform

55) . Metallic conductors conduct electricity…….

a) with chemical change   b.) without any chemical change

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

56) Substances through which electric current cannot pass are called…..

   a) insulators   b) conductors   c) anode   d). cathode.

57). In lead accumulator the electrolyte H2SO4 solution is…….

   a.) 30 %   b.) 60 %   c). 80%   d) 90 %

58) When aqueous solution of NaCl is electrolyzed……

   a) Cl2 is evolved at the cathode   b) H2 is evolved at cathode

   c) Na is deposited at the cathode   d) Na appears at the anode

59) Li- ion battery is…..

   a) light weight   b) heavy weight c) medium weight d) all of these

60) **THE lead acid cell   produces ….. electrical energy b**

   a)12 v   b)14 v   c)16 v   d)20v

61) **When a lead acid cell   is fully charges , the electrolyte assumes….. appearance.**

   A)dull   b)reddish   c)bright   d) none of these

62) **Which   one of the following is not a strong electrolyte ?**

   a)NaOH   b)NaCL c)HCl d)H2C2O4

63) **Which   one of the following is not   a weak electrolyte ?**

   a)NH4OH   b)CaCL2 c)HCl d)H2C2O4

64)**Dry cell Is modification of …..**

   a)Daniel cell   b)lead cell   c) Leclanche cell   d) FUEL CELL

MCQS:-UNIT –VI- Metals, Alloys &insulators

1) The most rugged temperature   sensing element listed here is….

   a)thermocouple b)iron metal   c) glass electrode   d)all of these

2) Type K thermocouple is made of the following metals……

   a)iron &   constantan   b)chromel&alumel

c)copper & constantan   d)Al & TUNGSTEN

3)Which of the following will give the highest output for the same

value o f hot & cold junction   temperature?

a)pt-pt +Rhodium   b) iron &   constantan

c) Chromel - constantan   d) all of these

4) Which thermocouple can be usedto   measure a same temperature of aRound 1400 C

a) copper & constantan   b) chromel&alumel

c) pt-pt +Rhodium   d) none of these

5) thermocouple   is suitable for measuring………

a)Liquid temperatures onl y   b)very high temperatures onl y

c) very   low temperatures onl y   d)Both high & low temperatures

6) Chromel - constantan   make ……type   of   thermocouple   .

a) K   B)E   C) j   D) R

7)……….is not a nickel alloy.

a) alumel   b) constantan   c) Chromel   d)Amalgam

8)) constantan   is also named as…….

a)Advance   b)ferry   c)eureka   d) all of these

9)In conductors   , electron can flow because their…….

a)Iron are free   b)protons are free

c) electron are free & mobile   d)negative ions are free

10)Out of the following , which is insulating material?

a)copper   b)gold   c) mica   d)silver

11) Nichrome wire is an alloy of………

a)lead & zinc   b)Cr &Vanadium c)N i- Cr   d)copper &silver

12)Silicon –fluid is   a ……….

a)liquid   b)solid insulator   c) gaseous insulator   d)   semi solid insulator

13) Glass is a

a)transperant solid   b))transperant super cooled solid

c)   coloured solid   d) none of these

14) Which of the following monomer give the polymer neoprene on polymerization?

a)H2C   B)CCL2=Cl2   c)F2C=CF2   D)CH2-C-CH=CH2

15) Which tree give out latex to obtain natural rubber?

a)eucalyptus   b)heveabrasiliensis c)eanogessus d)astragal us

16))Which of substance is added to the dilute latex y to coagulate rubber?

a)acetic acid   b)sodium salt   c) 0il   d)water

17)) Which of the following monomer   in N.R.?

a) vinyal chloride   b)ethylene chloride

c)isoprene   d)chlorine

18)The milky sap of rubber tree is known as….

a)polymer   b)supernatent   c)latex   d)wax

19)Which type of synthetic rubber are commonly known as thiokols?

a) Polyurathane rubbers   b)poly sulphide rubbers

c)fluorocarbon rubbers   d) polyacryli rubbers

20)What are the sequential process through which rubber latex

undergo to give natural rubber.

a)tapping- dilution- coagulation   b)dilution- tapping- coagulation

c) tapping- coagulation-dilution d) coagulation-dilution-tapping

21)Which is not a polymer ?

a)plastic   b)rubber   c)Teflon   d)water

22) Natural rubber is ……

a)poly isoprene   b)thicol   c)chloroprene   d) Buna-S

23)Polymerzation in which two 0r more chemically different monomers take part,is called….

   a)addition polymerization   b)copolymerization

   c)chain polymerization   d)None of these

24) Buna-S is obtained from…..

   a)butadiene+styrene   b)adipic acid +hexadiamine

   c)urea +formaldehyde   d)chloroprene

25)Chloroprene is the repeating unit in…..

   a)polystyrene   b)neoprene   c)PVC   d)Teflon

26)Buna-S is …….

   a) polystyrene   b)neoprene

   c)styrene rubber   d)butyl rubber

27)……is used for manufacturing of motor tyres.

   a) styrene rubber   d)butyl rubber

   c)neoprene rubber   c)natural rubber

28)The material which on steretching elongated & resumes   its size on releasing the stress is….

    a)plastic   b)alloys c)elastomer   d)all of these

29)Vulcanization is the process of heating crude rubber with……

   a)sodium b)phosphorus   c)carbon d)sulpher

 30)10nm=…..m

     a)10   b)10   c)10   d)1o

31)The size of nanoparticles is between ….. nm.

   a)100 to 1000   b)0.1 to 10   c)1 to 100   d)1 to 10

32)Carbon atoms makes …. Types of bond with other carbon atoms

   a)covalent   b) ionic   c)metallic d) hydrogen

33)Fullerene or bulky ball is made of…. Carbon atoms.

   a)100   b)30   c)75   d)60

34) 1m=…nm

   a)10 b)10 c)10 d)10

35)In the structure of fullerene, each carbon atoms forms

   covalent bond with …..other carbon atoms

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

36)Who had invented the famous Geodesic dome structure?

   a)Eric Drexler   b)Buckminster fuller   c)Richard Smalley d)Faraday

37)The   compressive strength of nanotube …..its tensile strength.

   a) is less than   b)is greater than c)IS EQUAL d))None of these

38)Which of the folloeing is an approach for preparation of grapheme from graphite?

   a)etching   b)exfoliation c)lithography d)alloying

39) Polymerzation in which two 0r more chemically same monomers

   take part repetadily ,is called….

   a)addition polymerization   b)copolymerization

   c)chain polymerization   d)None of these

40)What are the advantages of nano-composite packages?

   a) lighter & biodegradable

   b)gas barrier properties

   c)enhanced T.C, mechanical strength , conductivity

   d) all of these

41) Which of the folloeing is the principle factor which causes the properties of nanomaterials to differ significally from other materials ?

   a)size distribution   b)specific surface area

   c)quantum size effect   d) all of these

42)IN a molecule of geaphene , atoms of carbon are bonded into…….

a)spherical structure   b)tube structure

c) honeycomb structure   d)) all of these

43)Most grapheme potents have been taken in the would by……

a)Samsung   b)Oceans king lighting   c)IBM   d)Nokia

44)The ability of a metal to take exast dimension of the mould is……

a)tensile strength   b)casting c)stiffness d)refractoriness

45)The property of a metal by which they can be beaten into sheet is called..,

a)malleability   b)ductility c) expansion c)stiffness

46) Which of the folloeing is a good conductor of electricity?

a)iron   b)plastic   c)wool   d)glass

47) Which metal is found in liquid state at room temperature?

a)Fe   b)Zn   c)Hg   d) Al

48) Which of the following statement s are correct?

a)all metals are ductile   b) all nonmetals are ductile

c)generally metals are ductile   c)some metals are ductile

49)…….is the process of uniting two pieces of metals by means of heat.

a)casting   b)forging   c)welding   d)brazing

50) The process of joining two thin wires by introducing a molten nonferrous alloy

Between them bellow 400c is known as………..

a)brazing   b) soldering   c)welding   d) both   a& b

51)If a metal is ….., it can be drawn into wire.

a)conductive   b) malleable   c) magnetic   d) ductile

52) …….describe the way a substance reflects light or shines.

a)Magnetism   b)brittleness c)luster   d)ductility

53)If metal breaks easily , it is said to be……..

   a)Magnetic   b)brittle   c)luster   d)ductility

54) Which of the following property is not mechanical property?

    a)brazing   b) soldering   c)welding   d) M.P.

55) Which of the following property is not shown by metals?

    a)electrical conduction   b) electrical insulation

    c)sonorous in nature   d)ductility

56) Which of the following is a good conductor of electricity?

    a)copper b) Aluminium   c)platinum   d) nickel

57) Which of the following describe metals?

    a) ductile & malleable   b)solid ,liquid & gases at room temperature

    c) dull & brittle   d) semiconductor

58)Aluminium is used for making cooking utensils, which of the following properties of Al arefor the same

   1)Good thermal conductivity   2) Good electrical conductivity

    3)ducility   4)high melting point

   a)(1) &(2)   b)91)& (3)   c)(2)&(3)   d)(1) & (4)

59)) Which of the following is a Non conductor of electricity?

   a)copper b) Aluminium   c)platinum   d) wood

60)If an object has luster , it…….

  a)reflects light   b)can be stretched into wires

  c)can conduct heat & electricity   d) is dence

61)FULLERENE is prepared by……..

  a)exfoliating graphite   b)by evaporating graphite

  c) by grinding graphite   d)) by dissolving graphite

62) Graphene is prepared by……

a)exfoliating graphite   b)by evaporating graphite

c) by   grinding graphite   d)) by dissolving   graphite

63)…… is building unit of graphite.

a)silicon   b)carbon   c)grapheme   d)fullerene

64) The equipment used to carry out distillation is…..

a) converting a solid into gas   b) evaporator   c)still   d)porcelain

65) Condensation   is a physical change in which……..

a)liquid changes to gas   b)   gas changes into liquid state

c)liquid changes to solid   d) solid changes to gaseous state

66) Distillation is the process of…….

a) converting a solid into gas   b) converting a gas into liquid

b) separating   a liquid & solid   d)separating useful components of substance

67) Unit operation of a unit process may be…..

a)physical method   b)chemical method

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

68) Mass balance   is   a ………..

a)quantity   b)energy   c)process   d)property

69) Nanoparticles are used as ………in various chemical reaction.

a)conductor   b)catalyst   c)insulator d) None of these

70)…….. have application in medicines as drug transport &biosensor.

a)magnetic materials   b) magnetic materials

c)electrical materials   d) None of these

71) FULLERENE   I s …………..

a)tough & stable   b)brittile&nonstable

c)chemicaly unstable   d) None of these

72)Buna –N   is co polymerization of…..

a) Butadine +styrene   b) Butadine +Acrylonitrile

c)) Butadine +Thiokol   d)) all of these

73)Ceramics are ………………………materials….

a)Nonmetallic material   b)Artificialy made

c)physical materials   d) None of these

74) Softening point of ceramics is…..

a)1000   b)1200   c)1800   d)1600

75) Ceramics are good …………..

a)good thermal &electrical insulator   b)nonporous

c)high B.P.   D)) None of these

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