DDCET

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Subject wise analysis

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Section - 1 - Basics of Science and Engineering (DDCET)	50
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Q1. Which of the following is a vector quantity?

A. Temperature
B. Mass
C. Distance
D. Force

Correct Ans: D

Solution :

Vector quantity:

⇒ A vector quantity is a type of physical quantity that has both magnitude and direction.

⇒ Examples: Displacement, Velocity, Acceleration, Force, and Momentum, etc.

Scalar quantity:

⇒ A scalar quantity is a type of physical quantity that have only magnitude and no specific direction.

⇒ Examples: Mass, Time, Volume, Speed, Temperature, Distance, etc.

Therefore, from the above explanation the correct option is (D): Force.

Q2. If a measurement has an absolute error of 0.02 cm and the measured value is 2.5 cm, what is the relative error?

A. 0.01
B. 0.04
C. 0.008
D. 0.08

Correct Ans: C

Solution :

Given data:

⇒ Absolute Error = 0.02 cm

⇒ Measured Value= 2.5 cm

$$\text{Relative Error} = \frac{\text{Absolute Error}}{\text{Measured Value}}$$

$$\text{Relative Error} = \frac{0.02}{2.5} = 0.008$$

Q3. If the length of an object is measured using a Vernier caliper with a least count of 0.01 cm, what is the precision of the measurement?

A. 1 mm
B. 0.1 mm
C. 0.01 mm
D. 100 mm

Correct Ans: B

Solution :

⇒ The precision of a measurement is related to the smallest possible difference between two measurements.

⇒ The Vernier caliper's least count refers to the smallest measurement that can be directly read from the scale, indicating the instrument's precision.

⇒ The measurement precision is 0.01 cm since the least count of the Vernier caliper is 0.01 cm=0.1 mm.

Vernier caliper :

⇒ The vernier caliper was invented by the French mathematician and instrument maker Pierre Vernier in 1631.

⇒ The vernier caliper is a widely used tool for making precise measurements of lengths and diameters and thicknesses of larger objects in fields such as physics, engineering, and manufacturing, such as diameter of solid cylinder, internal and external diameter of a hollow cylinder.

Least count (LC):

⇒ The least count (LC) of a measuring instrument, such as a vernier caliper, is the smallest measurement that can be read directly from the scale. It is an important factor in determining the precision of the instrument. The smaller the least count, higher the precision of the instrument

$$\Rightarrow \text{LC} = \frac{\text{Value of 1 division on main scale}}{\text{number of total division on vernier scale}}$$

Errors:

Negative error: If the vernier scale zero division lies left of the main scale zero division, the error is called negative error.

Positive error: If the vernier scale zero division lies right of the main scale zero division, the error is called positive error.

Zero error: If the vernier scale zero division and the main scale zero division exactly coincide with each other, the error is called zero error.

Q4. The screw gauge has a pitch of 0.5 mm and 100 divisions on the circular scale. What is the least count of the screw gauge?

A. 0.05 mm
B. 0.005 mm
C. 0.005 cm
D. 0.5 cm

Correct Ans: B

Solution :

Given data:

⇒ Pitch distance of screw =0.5 mm

⇒ Number of total division on circular scale = 100

$$\Rightarrow \text{LC} = \frac{\text{pitch distance of screw}}{\text{number of total division on circular scale}}$$

$$\Rightarrow \text{LC} = \frac{0.5}{100} = 0.005\,\text{mm}$$

Q5. In a measurement, if the measured value is 30 cm and the absolute error is 0.2 cm, what is the range of possible values?

A. 29.8 cm to 30.2 cm
B. 29.5 cm to 30.5 cm
C. 28 cm to 32 cm
D. 28.2 cm to 30.2 cm

Correct Ans: A

Solution :

Given data:

⇒ Absolute Error = 0.2 cm

⇒ Measured Value = 30 cm

⇒ The measured value can be used to determine the range of possible values by

adding and subtracting the absolute error.

Upper Limit: 30 cm + 0.2 cm = 30.2 cm Lower

Limit: 30 cm - 0.2 cm = 29.8 cm

So, the range of possible values is 29.8 cm to 30.2 cm

Q6. If a measurement is 5.00 m with a precision of 0.01 m, how many significant figures are in the measurement?

A. 1
B. 2
C. 3
D. 4

Correct Ans: C

Solution :

⇒ According to Rule-1, Rule-4, In the number 5.00, the digit 5 and trailing zero (0, 0) are significant means 5.00 has 3 significant figure.

Significant Figures:

⇒ Counting significant figures is a way of expressing the precision of measured or calculated values.

Common rules for counting significant figures:

Rule 1: Non-zero digits

⇒ All non-zero digits are considered significant.

⇒ For example, in the number 12345, all the digits (1, 2, 3, 4, 5) are significant.

Rule 2: Zeros between significant figures:

⇒ Zeros between significant figures are considered significant.

⇒ For example, in the number 7004, all the digits (7, 0, 0, and 4) are significant.

Rule 3: Leading zeros

⇒ Leading zeros (zeros to the left of the first non-zero digit) are not considered significant.

⇒ For example, in the number 0.00456, only the digits 4, 5, and 6 are significant.

Rule 4: Trailing zeros in a decimal number:

⇒ Trailing zeros in a decimal number are considered significant.

⇒ For example, in the number 12.300, all the digits (1, 2, 3, and the trailing zeros) are significant.

Rule 5: Trailing zeros in a whole number without a decimal point:

⇒ Trailing zeros in a whole number without a decimal point are not considered significant.

⇒ For example, in the number 1200, only the digits 1 and 2 are significant."

Q7. The force that acts on an object moving in a circular path and is directed outward from the centre is called:

A. Centrifugal force
B. Centripetal force
C. Frictional force
D. Tension force

Correct Ans: A

Solution :

Centrifugal Force:

⇒ Centrifugal force is a force that acts on an object moving in a circular path, directed outward from the center around which the object is moving.

Centripetal Force:

⇒ Centripetal force is a force that acts on an object moving in a circular path, directed toward the center around which the object is moving.

Q8. The equation for kinetic energy (KE) is: A.

KE = $(1/2)mv^2$
B. KE = mgh/t
C. KE = Fdt
D. KE = P/t

Correct Ans: A

Solution :

Kinetic Energy (KE):

⇒
The energy that an object possesses due to its motion is called "Kinetic Energy".

Formula:

$KE = \frac{1}{2}mv^2$

Where,

KE is the kinetic energy in Joule

m is the mass of the object in kg

v is the velocity of the object in m/s

Q9. The energy an object possesses due to its motion is called:

A. Potential energy
B. Kinetic energy
C. Elastic energy
D. Mechanical energy

Correct Ans: B

Solution :

Kinetic Energy (KE):

$\Rightarrow$
The energy that an object possesses due to its motion is called "Kinetic Energy".

Formula:

$KE = \frac{1}{2}mv^2$

Where,

KE is the kinetic energy in Joule

m is the mass of the object in kg

v is the velocity of the object in m/s

Q10. In circular motion, which force is responsible for keeping an object moving in a circular path?

A. Gravitational force
B. Centripetal force
C. Centrifugal force
D. Frictional force

Correct Ans: B

Solution :

$\Rightarrow$In circular motion, Centripetal Force is responsible for keeping an object moving in a circular path?

Note:

Centripetal Force:

$\Rightarrow$Centripetal force is a force that acts on an object moving in a circular path, directed toward the center around which the object is moving.

The formula for Centripetal Force (F_c):

$F_c = \frac{mv^2}{r}$ $\left(\because F_c = \text{mass} \times \text{acceleration} = m \times \frac{v^2}{r}\right)$

We know that $v = r \times \omega$

$F_c = \frac{mv^2}{r} = \frac{m(r\times\omega)^2 r}{} = mr\omega^2$

Note:

Relation between Angular velocity (ω) and Linear velocity (v)

$\Rightarrow v = r\omega$

Where,

ω - Angular Velocity in rad/second

v - Linear Velocity in m/s

r - radius of circle in meter "

Q11. If a force of 10 N is applied to an object for 5 seconds, what is the impulse of force?

A. 2 N s
B. 50 N s
C. 2 N
D. 50 N

Correct Ans: B

Solution :

Given data:

$\Rightarrow$ Force $F = 10$ N

$\Rightarrow$ Time $t = 5$ s

Impulsive force = force × time Impulsive force $= 10 \times 5 = 50$ Ns

Note:

Impulse (Impulsive force):

$\Rightarrow$ The force acts on body for a short time, it is called impulsive force.

⇒ Formula: Impulsive force = force × time

⇒ SI unit: newton-second (N s) or $kg\ ms^{-1}$

⇒ CGS unit: dyne-second.

⇒ It is a vector quantity.

Q12. The linear momentum of an object is defined as:

A. Mass × Acceleration
B. Mass × Velocity
C. Acceleration × Velocity
D. Mass / Volume

Correct Ans: B

Solution :

Linear Momentum:

⇒ It is defined as the product of the mass of the body and its velocity.

⇒ Formula: Momentum = mass × velocity

⇒ SI unit: $kg\ ms^{-1}$

⇒ CGS unit: $g\ cms^{-1}$.

⇒ It is a vector quantity.

Q13. Two capacitors, $C_1 = 3\ \mu F$ and $C_2 = 2\ \mu F$, are connected in series. Calculate the equivalent capacitance.

A. 1.2 μF
B. 5 μF
C. 6 μF
D. 1.5 μF

Correct Ans: A

Solution :

Given data:

⇒ $C_1 = 3\ \mu F$

⇒ $C_2 = 2\ \mu F$

Equivalent capacitance for capacitors joined in series (C)

$\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}$

$C = \frac{C_1 \times C_2}{C_1 + C_2} =$

$C = \frac{3 \times 2}{3+2} = 1.2\ \mu F$

Note:

Formula for equivalent capacitance for capacitors joined in series:

$\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}$

Formula for equivalent capacitance for capacitors joined in parallel:

$C = C_1 + C_2$

Q14. A wire has a resistance of $8\ \Omega$. If the current flowing through the wire is 2 A, calculate the voltage across the wire.

A. 4 V
B. 16 V
C. 4 W
D. 16 W

Correct Ans: B

Solution :

Given data:

$\Rightarrow R = 8\ \Omega$

$\Rightarrow I = 2\ A$

Voltage across the wire $V = I \times R = 2 \times 8 = 16\ V$

Voltage across the wire $V = 2 \times 8 = 16\ V$

Q15. A charge of $2\ \mu C$ is placed in an electric field of intensity 500 N/C. Calculate the force experienced by the charge.

A. 0.001 N
B. 0.01 N
C. 1000 N
D. 250 N

Correct Ans: A

Solution :

Given data:

$\Rightarrow$ Charge $q = 2\ \mu C = 2 \times 10^{-6}\ C$

$\Rightarrow$ Electric field of intensity $E = 500\ N/C$

The force (F)) experienced by a charged particle in an electric field

$F = qE$

$F = 2 \times 10^{-6} \times 500 = 0.001\ N$

Q16. Two point charges, $Q_1 = +5\ \mu C$ and $Q_2 = -4\ \mu C$, are placed 2 meters apart. Calculate the magnitude of the force between them. ($k = 9 \times 10^9\ Nm^2/C^2$)

A. 0.045 N
B. 0.45 N
C. 20 N
D. 10 N

Correct Ans: A

Solution :

Given data:

$\Rightarrow Q_1 = +5\ \mu C$

$\Rightarrow Q_2 = -4\ \mu C$

$\Rightarrow d = 2\ m$

According to Coulomb's law

The magnitude of the electrostatic force (F) between two point charges

$F = k\frac{Q_1 Q_2}{d^2}$

$F = (9 \times 10^9)\frac{(5\times10^{-6})(-4\times10^{-6})}{(2)^2}$

$F = 45 \times 10^{-3}\ N = 0.045\ N$

Q17. The property of a material to oppose the flow of electric current is called:

A. Resistance
B. Conductance
C. Capacitance
D. Susceptance

Correct Ans: A

Solution :

Resistance:

⇒ The property of a material to oppose the flow of electric current is called "resistance".

⇒ Symbol - R

⇒ Unit - Ω or ohm

Q18. The reciprocal of resistance is known as:

A. Impedance
B. Conductance
C. Capacitance
D. Susceptance

Correct Ans: B

Solution :

Conductance:

⇒ It is a measure of a material's ability to conduct electric current.

⇒ The reciprocal of resistance is known as "conductance".

⇒ Symbol - G

⇒ Formula - $G = \frac{1}{R}$

⇒ Unit - ʊ or mho

Q19. Which of the following is a mode of heat transfer that does not require a medium?

A. Conduction
B. Convection
C. Radiation
D. Expansion

Correct Ans: C

Solution :

Heat Transfer

⇒ There are three methods of heat transfer: (1) Conduction, (2) Convection, and (3) Radiation.

Radiation:

⇒ Radiation is the mode of heat transfer in which heat is radiated or transmitted from one place to another in the form of rays or waves like electromagnetic waves.

⇒ In this method of heat transfer that does not require a medium for transmission.

⇒ Example: The sun's energy reaches the earth due to radiation."

Q20. The transfer of heat through the bulk movement of a fluid is known as:

A. Conduction
B. Convection
C. Radiation
D. Expansion

Correct Ans: B

Solution :

⇒ The transfer of heat through the bulk movement of a fluid is known as "convection."

Note:

Heat Capacity

⇒ There are three methods of heat transfer: (1) Conduction, (2) Convection, and (3) Radiation.

(1) Conduction:

⇒ Conduction is the transfer of heat through a material without any movement of the material itself like solid materials.

(2) Convection:

⇒ Convection involves the transfer of heat by the movement of fluids (liquids or gases) .

(3) Radiation:

⇒ Radiation is the transfer of heat through electromagnetic waves like the sun's energy reaches the earth.

Q21. Which temperature scale is an absolute temperature scale?

A. Celsius
B. Fahrenheit
C. Kelvin
D. Rankine

Correct Ans: C

Solution :

⇒ The Kelvin (K) scale is considered an absolute temperature scale.

⇒ 0 K (—273.15°C) is defined as absolute zero temperature.

Note:

Relation between Kelvin scale and Celsius scale:

$T_K = T_C + 273.15$

Where,

T_K = Temperature on Kelvin scale

T_C = Temperature on Celsius scale.

Q22. Specific heat is the heat capacity per unit

A. Volume
B. Mass
C. Area
D. Temperature

Correct Ans: B

Solution :

Specific heat:

$\Rightarrow \text{Specific heat} = \frac{\text{Heat Capacity}}{\text{Mass}}$

$\Rightarrow \text{Unit: } JK^{-1}kg^{-1}$

Q23. Linear thermal expansion is most applicable to:

A. Gases
B. Liquids
C. Solids
D. Plasma

Correct Ans: C

Solution :

⇒ Linear thermal expansion is most applicable to solids.

⇒ Primary cause of linear thermal expansion in solids is vibrational motion of atoms and molecules.

Q24. Which material would generally have the highest thermal conductivity?

A. Wood
B. Rubber
C. Aluminium
D. Styrofoam

Correct Ans: C

Solution :

⇒ Metals, such as copper and aluminum, typically have high thermal conductivity. This means they are efficient at transferring heat.

⇒ In contrast, materials like rubber, wood, and plastic often have lower thermal conductivity, making them relatively poor conductors of heat.

Q25. The distance between two successive points in a wave in the same phase is called:

A. Wavelength
B. Frequency
C. Amplitude
D. Periodic time

Correct Ans: A

Solution :

Wavelength

⇒ The distance between two successive points in a wave that are in the same phase is called the "wavelength."

⇒ Symbol - λ

⇒ Unit - meters, centimeters, or nanometers, depending on the scale of the wave.

Q26. If the frequency of a wave is 50 Hz, what is its periodic time?

A. 0.02 s
B. 0.04 s
C. 0.5 s
D. 2 s

Correct Ans: A

Solution :

Given data:

⇒ $f = 50\ Hz$

$f = \frac{1}{T}$

$T = \frac{1}{f} \implies T = \frac{1}{50} = 0.02\ s$

Note: Periodic

time:

⇒ In a wave motion, the time required to complete one cycle is called periodic time.

⇒ It is denoted by T

⇒ Unit: second (s)

Frequency:

⇒ It is the number of oscillations or cycles of a wave that occur in a unit of time.

⇒ It is denoted by f

⇒ Unit: hertz (Hz), cycle per second (c/s)

Relation between T and f

$f = \frac{1}{T}$

Q27. Which property of a wave is related to its loudness in the case of sound waves?

A. Amplitude
B. Frequency
C. Wavelength
D. Periodic time

Correct Ans: A

Solution :

⇒ In the case of sound waves, the property related to its loudness is the amplitude.

Q28. The SI unit of amplitude is:

A. Hertz
B. Watt
C. Meter
D. Decibel

Correct Ans: C

Solution :

Amplitude

⇒ The amplitude of a wave is the maximum displacement of particles from their equilibrium.

⇒ Wave's magnitude means Amplitude of a wave.

⇒ The SI unit of amplitude is meter.

Q29. The change in direction of a wave when it crosses the boundary between two different media is called:

A. Reflection
B. Refraction
C. Diffraction
D. Absorption

Correct Ans: B

Solution :

Refraction

⇒ The change in direction of a wave when it crosses the boundary between two different media is called refraction.

Q30. According to Snell's Law, the angle of incidence is related to the angle of refraction by:

A. $n_1 \sin(\theta_1) = n_2 \sin(\theta_2)$
B. $n_1 \cos(\theta_1) = n_2 \cos(\theta_2)$
C. $n_1 \cot(\theta_1) = n_2 \cot(\theta_2)$
D. $n_1 \tan(\theta_1) = n_2 \tan(\theta_2)$

Correct Ans: A

Solution :

Snell's Law:

⇒ Snell's Law describes the relationship between the angle of incidence (θ_1) and the angle of refraction (θ_2) When a wave passes from one medium to another with a different refractive index.

⇒ The law is expressed as: $n_1 \sin(\theta_1) = n_2 \sin(\theta_2)$

Where,

n_1 - Refractive index of the first medium

n_2 - Refractive index of the second medium

θ_1 - Angle of Incidence

θ_2 - Angle of Refraction

Q31. On burning magnesium ribbon in air, it produces _____ flame.

A. Blue
B. Yellow
C. Dazzling white
D. Red

Correct Ans: C

Solution :

⇒ When a magnesium ribbon is burnt it produces dazzling white flumes and changes into a white powder.
⇒ This powder is magnesium oxide.
⇒ The chemical equation of this reaction can be written as : $Mg + O_2 \rightarrow MgO$

Q32. Which of the following is a balanced chemical equation?

A. $HNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + H_2O$
B. $NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$
C. $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + HCl$
D. $NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$

Correct Ans: D

Solution :

$$NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$$

⇒ This equation is balanced as the atoms of each element are the same on both sides.

Q33. Which one of the following processes involve chemical reactions?

A. Storing of oxygen gas under pressure in a gas cylinder
B. Liquefaction of air
C. Keeping petrol in a china dish in the open
D. Heating copper wire in presence of air at high pressure

Correct Ans: D

Solution :

⇒ A chemical reaction occurs when one chemical substance transforms into another substance.
⇒ When copper is heated to high temperatures in the presence of air, it undergoes oxidation and forms copper oxide.
⇒ The chemical equation can be given as :

$$2Cu + O_2 \rightarrow 2CuO$$

Q34. The chemical formula of hydrochloric acid is .

A. HCl
B. H_2SO_4
C. HNO_3
D. CH_3COOH

Correct Ans: A

Q35. Which of the following is an example of strong base?

A. NH_4OH
B. $Ca(OH)_2$

C. Both A and B
D. NaOH

Correct Ans: D

Solution :

⇒ The compound at the core splits up to form hydroxide ions when it's in a solution.
⇒ A strong base splits up completely when it's in a solution.
⇒ When you dissolve solid sodium hydroxide ($NaOH$) in water, it splits up into equal amounts of sodium ions (Na^+) and hydroxide ions (OH^-).

Q36. Which of the following is an example of weak acid?

A. Hydrochloric acid
B. Acetic acid
C. Sulphuric acid
D. Nitric acid

Correct Ans: B

Solution :

⇒ Weak acids are acids that do not fully break apart or only partially break apart into ions when dissolved in water.
⇒ For example, acetic acid (CH_3COOH), formic acid ($HCOOH$), etc.

Q37. Which gas is produced by the reaction of acid with metal?

A. Hydrogen
B. Oxygen
C. Carbon dioxide
D. Nitrogen

Correct Ans: A

Solution :

⇒ Most metals react with acids to form salt and release hydrogen gas.

Q38. Which of the following oxides of iron would be obtained on the prolonged reaction of iron with steam?

A. FeO
B. Fe_2O_3
C. Fe_3O_4
D. Fe_2O_3 and Fe_3O_4

Correct Ans: C

Solution :

⇒ Iron on prolonged reaction with steam produces Iron oxide and Hydrogen gas.

$$2Fe + 4H_2O \longrightarrow Fe_3O_4 + H_2$$

Q39. Which of the following is the correct property for ionic compounds?

A. Low melting and boiling points
B. High melting point and low boiling point
C. High melting and boiling points
D. Low melting point and high boiling point

Correct Ans: C

Solution :

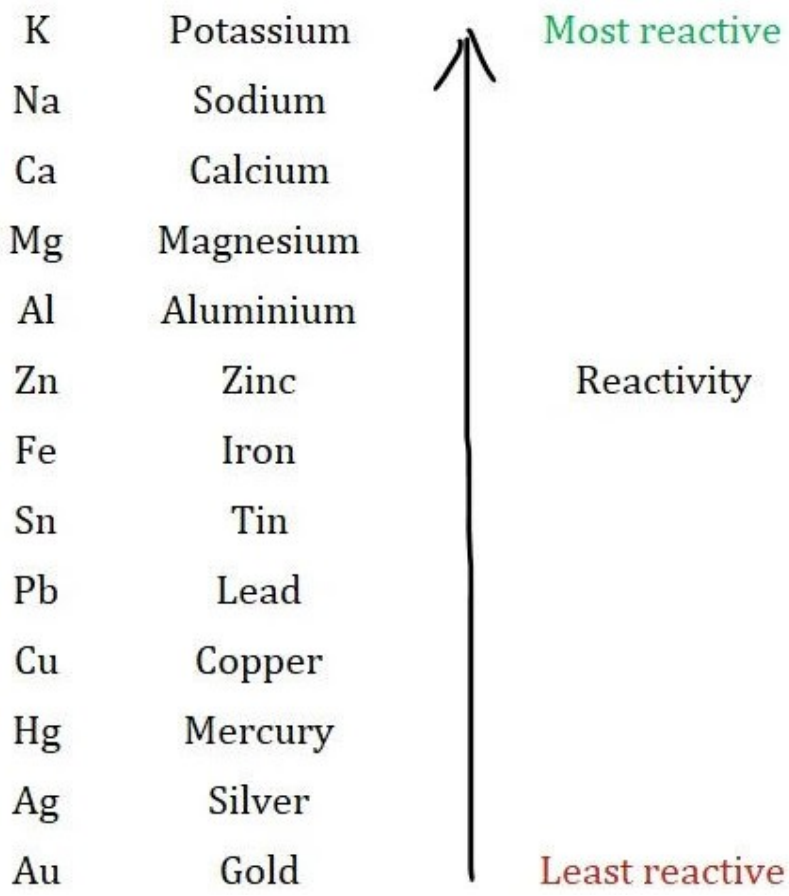
$\Rightarrow$ Ionic compounds exhibit high melting and boiling points primarily because breaking the strong inter-ionic attraction demands a substantial amount of energy.

Q40. The arrangement for Copper, Tin, Lead and Mercury, according to the reactivity series, is ..... .

A. Tin > Lead > Copper > Mercury
B. Lead > Copper > Mercury > Tin
C. Copper > Mercury > Tin > Lead
D. Mercury > Tin > Lead > Copper

Correct Ans: A

Solution :



⇒ Figure shows the reactivity of various metals.
⇒ From given metals mercury is the least reactive and tin is the most reactive.

Q41. What is the full form of CPU?

A. Computer Processing Unit
B. Computer Principle Unit
C. Central Processing Unit
D. Control Processing Unit

Correct Ans: C

Q42. What is smallest unit of the information?

A. Byte
B. Bit
C. MB
D. GB

Correct Ans: B

Solution :

⇒ 8 bit = 1 Byte
⇒ 1024 Byte = 1 KiloByte (KB)
⇒ 1024 KiloByte (KB) = 1 MegaByte (MB)
⇒ 1024 MegaByte (MB) = 1 GigaByte (GB)
⇒ 1024 GigaByte (GB) = 1 TeraByte (TB)

Q43. What does the abbreviation HTML stand for?

A. Hyper Text Markup Language
B. Hyper Type Markup Language
C. Hyper Text Markdown Language
D. High Text Markup Language

Correct Ans: B

Q44. Which of the following is MS Office Suite's software program?

A. Microsoft Word
B. Microsoft Excel
C. Microsoft PowerPoint
D. All of the above

Correct Ans: D

Q45. What is the default extension of a Microsoft Excel file?

A. msxcl
B. xcl
C. xlsx
D. xlsm

Correct Ans: C

Q46. Which one of the following is an aquatic ecosystem?

A. Wetland
B. Desert
C. Mountain
D. Island

Correct Ans: A

Solution :

⇒ Aquatic ecosystems encompass a diverse range of environments, comprising oceans, lakes, rivers, streams, estuaries, wetlands, swamps, bays, and marshes.

→ Aquatic ecosystems play a vital role in both human well-being and economies, harboring organisms reliant on water for their existence, including plants, fish, and microorganisms.

Q47. Which one of the following is the indirect use of forests?

A. Medicinal plants
B. Checking soil erosion
C. Building material
D. Grazing

Correct Ans: B Solution

:

⇒ Forests serve various indirect purposes such as mitigating soil erosion, regulating climate, enhancing soil fertility, conserving biodiversity, purifying water and groundwater, offering recreational and aesthetic value, and reducing both sound and atmospheric pollution.

Q48. Gardens are examples of

A. Natural ecosystems
B. Artificial ecosystems
C. Ecology
D. Environment

Correct Ans: B Solution

:

⇒ Gardens represent human-created artificial ecosystems.

→ Gardens encompass cultivated or landscaped spaces, usually adorned with a diverse array of flowers, plants, vegetables, or herbs, designed for aesthetic, recreational, or practical uses. Ranging from compact residential plots to expansive public parks, gardens fulfill multiple roles, offering beauty, sustenance, and a retreat for leisure and relaxation.

Q49. Which of the following is a non-renewable energy resource?

A. solar
B. methane
C. hydroelectric
D. coal

Correct Ans: D

Solution :

⇒ Non-renewable energy sources comprise fossil fuels such as coal, oil (petroleum), and natural gas, along with nuclear energy derived from materials like uranium used in nuclear power plants.

Q50. Which of the following are the primary causes of water pollution?

A. Plants
B. Animals
C. Human activities

D. None of these

Correct Ans: D

Solution :

⇒ Some primary contributors to water pollution encompass industrial waste, coal plants, oil spills, gas pipelines, improper waste disposal, marine dumping, mining activities, and more.

Subject wise analysis

Subject	Number of questions
Section - 2 - Aptitude Test (Mathematics and Soft Skill) DDCET	50
Total	**50**

Q1. $\begin{vmatrix} x & 3 & 1 \\ -2 & 1 & 4 \\ 4 & 0 & 6 \end{vmatrix} = 86$, then $x =$_____

A. 0
B. 1
C. -1
D. 2

Correct Ans: B Solution :

$$\begin{vmatrix} x & 3 & 1 \\ -2 & 1 & 4 \\ 4 & 0 & 6 \end{vmatrix} = 86$$

$$\Rightarrow x(1 \times 6 - 4 \times 0) - 3((-2) \times 6 - 4 \times 4) + 1((-2) \times 0 - 4 \times 1) = 86$$

$$\Longrightarrow x(6) - 3(-28) + 1(-4) = 86$$

$$\Longrightarrow x(6) + 84 - 4 = 86$$

$$\Longrightarrow x(6) + 80 = 86$$

$$\Longrightarrow x = \frac{86-80}{6} = 1$$

Q2. If order of matrix A is 4×3 order of matrix B is 3×5 and order of matrix ABC is 4×2 then order of matrix C is

A. 4×2
B. 3×2
C. 2×2
D. 5×2

Correct Ans: D

Solution :

⇒ Matrix multiplication exists only when column of first matrix is same as rows of second and the number of rows of resultant matrix is equal to row of first matrix and number of column is equal to number of column of second matrix.

Means $A_{m\times n}B_{n\times o} = (AB)_{m\times o}$

Same way for $A_{m\times n}B_{n\times o}C_{o\times p} = (ABC)_{m\times p}$

So for $A_{4\times 3}B_{3\times 5}C_{m\times n} = (ABC)_{4\times 2}$, So by comparing it with above relation $C_{m\times n} = C_{5\times 2}$

Q3. For square matrix A if $A^{-1} = adjA$ then $|A| =$_____

A. 1
B. 0
C. -1
D. None of above

Correct Ans: A Solution :

⇒ By definition inverse of matrix A is given by:

$$A^{-1} = \frac{adj\ A}{|A|}$$

if $A^{-1} = adjA$ then $|A| = 1$

Q4. If $A = \begin{bmatrix} 4 & 6 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -3 \\ -1 & 2 \end{bmatrix}$ then $(A+B)^{-1} =$ _____

A. $\frac{1}{12}\begin{bmatrix} 3 & -3 \\ -1 & 5 \end{bmatrix}$
B. $\frac{1}{12}\begin{bmatrix} 5 & -3 \\ -1 & 3 \end{bmatrix}$
C. $\frac{1}{12}\begin{bmatrix} 5 & -1 \\ -3 & 3 \end{bmatrix}$
D. $\frac{1}{12}\begin{bmatrix} 3 & -1 \\ -3 & 5 \end{bmatrix}$

Correct Ans: A Solution :

If $A = \begin{bmatrix} 4 & 6 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -3 \\ -1 & 2 \end{bmatrix}$

$$A + B = \begin{bmatrix} 4+1 & 6-3 \\ 2-1 & 1+2 \end{bmatrix}$$

$$A + B = \begin{bmatrix} 5 & 3 \\ 1 & 3 \end{bmatrix}$$

Adjoint of any (two by two) matrix can be found by changing values of diagonal elements and changing signs of off-diagonal elements.

So $\text{adj}(A + B) = \begin{bmatrix} 3 & -3 \\ -1 & 5 \end{bmatrix}$

$$(A+B)^{-1} = \frac{\text{adj}(A+B)}{|A+B|}$$

$$= \frac{1}{15-3}\begin{bmatrix} 3 & -3 \\ -1 & 5 \end{bmatrix}$$

$$= \frac{1}{12}\begin{bmatrix} 3 & -3 \\ -1 & 5 \end{bmatrix}$$

Q5. Period of $\sin(\frac{x}{3}) + \tan(\frac{x}{4})$ is _____

A. 6π
B. 12π
C. 24π
D. 10π

Correct Ans: B Solution :

If period of $f(x)$ is T_1 and period of $g(x)$ is T_2 then: Period of $f(x) + g(x)$ is L. C. M. (T_1, T_2)

Here period of $\sin x = 2\pi$ and so period of $\sin(\frac{x}{3}) = 6\pi$

and, period of $\tan x = \pi$ and so period of $\tan(\frac{x}{4}) = 4\pi$

So period of $\sin(\frac{x}{3}) + \tan(\frac{x}{4})$ is L. C. M. $(6\pi, 4\pi) = 12\pi$

Q6. $\frac{\sin 2A+\sin 8A}{\cos 2A+\cos 8A}$ =_____

A. $\cot 5A$
B. $\tan 10A$
C. $\tan 5A$
D. None of above

Correct Ans: C Solution :

For $\frac{\sin 2A+\sin 8A}{\cos 2A+\cos 8A}$

Placing $\sin A + \sin B = 2\sin\frac{A+B}{2}\cos\frac{A-B}{2}$

and $\cos A + \cos B = 2\cos\frac{A+B}{2}\cos\frac{A-B}{2}$

$$\frac{\sin 2A+\sin 8A}{\cos 2A+\cos 8A} = \frac{2\sin\frac{2A+8A}{2}\cos\frac{8A-2A}{2}}{2\cos\frac{2A+8A}{2}\cos\frac{8A-2A}{2}}$$

$$= \frac{2\sin 5A\cos 3A}{2\cos 5A\cos 3A}$$

$$= \frac{\sin 5A}{\cos 5A}$$

$$= \tan 5A$$

Q7. $\sec 75° =$_____

A. $\frac{2\sqrt{2}}{\sqrt{3}+1}$
B. $\frac{2\sqrt{2}}{1-\sqrt{3}}$
C. $\frac{2\sqrt{2}}{\sqrt{3}-1}$
D. None of above

Correct Ans: C Solution :

$$\sec 75° = \frac{1}{\cos 75°}$$

$$\cos 75° = \cos(45° + 30°) = \cos 45\cos 30 - \sin 45\sin 30$$

$$\cos 75° = \frac{1}{\sqrt{2}}\frac{\sqrt{3}}{2} - \frac{1}{\sqrt{2}}\frac{1}{2}$$

$$\cos 75° = \frac{\sqrt{3}-1}{2\sqrt{2}}$$

So, $\sec 75° = \frac{2\sqrt{2}}{\sqrt{3}-1}$

Q8. Angle between vector $\bar{a}$ and $(1, 1, 1)$ is $60°$. If direction cosines of $\bar{a}$ are l, m, n then $l+m+n =$____

A. $\frac{1}{2}$
B. $\frac{\sqrt{3}}{2}$
C. $\frac{2}{\sqrt{3}}$
D. 1

Correct Ans: B Solution :

Direction cosines of $\bar{a}$ are l, m, n and that of $(1, 1, 1)$ are

$$\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}$$

Cosine of angle between $\bar{a}$ and $(1, 1, 1)$ is dot product of their direction cosines:

$$\cos\theta = (l, m, n) \cdot \left(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right)$$

$$\cos 60° = \frac{l}{\sqrt{3}} + \frac{m}{\sqrt{3}} + \frac{n}{\sqrt{3}}$$

$$\frac{1}{2} = \frac{l+m+n}{\sqrt{3}}$$

$$l+m+n = \frac{\sqrt{3}}{2}$$

Q9. If vectors $(m, 3, 5)$ and $(m, m-1, -3)$ are perpendicular to each other then $m =$____

A. 3
B. 0
C. 2
D. 6

Correct Ans: A Solution :

If vectors $(m, 3, 5)$ and $(m, m-1, -3)$ are perpendicular to each other then

$$(m, 3, 5) \cdot (m, m-1, -3) = 0$$

$$\Rightarrow (m \times m + 3 \times (m-1) + 5 \times (-3)) = 0$$

$\Longrightarrow \quad m^2 + 3m - 3 - 15 = 0$

$\Longrightarrow \quad m^2 + 3m - 18 = 0$

$\Longrightarrow \quad m = 3, \text{or} -6$

Q10. Equation of line perpendicular to line $3x - 2y + 7 = 0$ and passes through $(3,2)$ is

A. $3x + 2y - 11 = 0$
B. $2x + 3y - 5 = 0$
C. $2x + 3y + 12 = 0$
D. $2x + 3y - 12 = 0$

Correct Ans: D

Solution :

Given equation can be written as:

$2y = 3x + 7$

$y = \frac{3}{2}x + \frac{7}{2}$

By comparing it with general form $y = mx + c$

Slope $m = \frac{3}{2}$

Line which is perpendicular to this line will have a slope that is negative reciprocal of the original, means line equation will be:

$y = -\frac{2}{3}x + c.$

and the line passes through the point $(3,\ 2)$

So $2 = -\frac{2}{3} \times 3 + c$

$\Longrightarrow \quad c = 2 + \frac{2}{3} \times 3 = 4$

line perpendicular to the line $3x - 2y + 7 = 0$ and passes through the point $(3,2)$ is:

$y = -\frac{2}{3}x + 4$

$\Longrightarrow 2x + 3y - 12 = 0$

Q11. Radius of circle $2x^2 + 2y^2 + 2x + 4y - 2 = 0$ is ——

A. 7
B. $\sqrt{7}$
C. $\frac{3}{2}$
D. $\sqrt{\frac{3}{2}}$

Correct Ans: B Solution

:

For the general equation of circle $x^2 + y^2 + 2gx + 2fy + c = 0$, radius is:

$$\sqrt{g^2 + f^2 - c}$$

By comparing it with given equation we get:
$g = 1, f = 2$ and $c = -2$

And the radius is given by:

$$\sqrt{1^2 + 2^2 - (-2)}$$

$$= \sqrt{1 + 4 + 2}$$

$$= \sqrt{7}$$

Q12. If $f(x) = \tan x$ then $f(45°) + f(30°) =$_____

A. $\frac{1-\sqrt{3}}{\sqrt{3}}$
B. $1 \pm \sqrt{3}$
C. $\frac{\sqrt{3}+1}{\sqrt{3}}$
D. $\frac{\sqrt{3}-1}{\sqrt{3}}$

Correct Ans: C

Solution :

$$f(45°) + f(30°)$$

$$= \tan(45°) + \tan(30°)$$

$$= 1 + \frac{1}{\sqrt{3}}$$

$$= \frac{\sqrt{3}+1}{\sqrt{3}}$$

Q13. $\lim_{n\to\infty} \frac{3n^2+5n-7}{5n^2+6n-2} =$_____

A. $\frac{5}{3}$
B. $\frac{3}{5}$

C. $\frac{7}{2}$
D. 0

Correct Ans: B Solution

:

$$\lim_{n\to\infty} \frac{3n^2+5n-7}{5n^2+6n-2}$$

Divide numerator and denominator by n^2

$$= \lim_{n\to\infty} \frac{3+\frac{5}{n}-\frac{7}{n^2}}{5+\frac{6}{n}-\frac{2}{n^2}}$$

$$= \frac{3}{5}$$

Q14. $\lim_{x\to 0} \frac{e^x+\sin x-1}{x} =$_____

A. 0
B. 2
C. 1
D. None of above

Correct Ans: B Solution

:

Here,

$$\lim_{x\to 0} \frac{e^x+\sin x-1}{x} = \frac{1+0-1}{0} = \frac{0}{0}$$

This is of the form $\frac{0}{0}$, so by L'Hospital's rule and differentiate the numerator and denominator:

$$= \lim_{x\to 0} e^x+\cos x$$

$$= \frac{1+1}{1} = 2$$

Q15. $\frac{d}{dx}(\log_e(\sin x)) =$

A. $\cot x$
B. $\tan x$
C. $\operatorname{cosec} x$
D. None of the above

Correct Ans: A

Solution :

Given : $f(x) = \ln \sin(x)$

$$\Longrightarrow f'(x) = \frac{d\,f(x)}{dx} = \frac{1}{\sin(x)} \times \frac{d}{dx}(\sin(x))$$

$$\Longrightarrow f'(x) = \frac{1}{\sin(x)} \times \cos(x) = \cot(x)$$

Q16. $\frac{d}{dx}(x \log_e x) =$

A. $\frac{1}{x}$
B. $\frac{x+1}{x}$
C. $\log_e x + x$
D. $\log_e x + 1$

Correct Ans: D

Solution :

Given : $\frac{d}{dx}(x \log_e x)$

$\Rightarrow$ Use product rule, $\frac{d}{dx}(p\,q) = q\,\frac{dp}{dx} + p\,\frac{dq}{dx}$

$$\Longrightarrow \frac{d(x \log_e x)}{dx} = \log x_e \frac{d(x)}{dx} + x \frac{d(\log_e x)}{dx}$$

$$\Longrightarrow \frac{d(x \log_e x)}{dx} = \log_e x + x.\frac{1}{x}$$

$$\Longrightarrow \frac{d(x \log_e x)}{dx} = \log x_e + 1$$

Q17. If $x = a(1+\sin\theta),\ y = a(1-\cos\theta)$ then $\frac{dy}{dx} =$

A. $\cot\theta$
B. $\sin\theta$
C. $\tan\theta$
D. $\sec\theta$

Correct Ans: C

Solution :

$\therefore \frac{dx}{d\theta} = \frac{d}{d\theta}(a + a\sin\theta) = a\cos\theta$

$$\therefore \frac{dy}{d\theta} = \frac{d}{d\theta}(a - a\cos\theta) = a\sin\theta$$

$$\Rightarrow \frac{\frac{dy}{d\theta}}{\frac{dx}{d\theta}} = \frac{a\sin\theta}{a\cos\theta}$$

$$\Longrightarrow \frac{dy}{dx} = \tan\theta$$

Q18. If equation of motion of moving object is $s = t^3 - 6t^2 + 9t + 7$ then at $t =$____ second object changes its direction.

A. 2, 3
B. 1, 2
C. 1, 3
D. 2, 3

Correct Ans: C

Solution :

$\Rightarrow$ To determine when the object changes its direction, we need to find the points where the velocity v of the object is equal to zero ..... (i)

Given : $s = t^3 - 6t^2 + 9t + 7$

$$\Longrightarrow v = \frac{ds}{dt} = \frac{d}{dt}(t^3 - 6t^2 + 9t + 7) = 3t^2 - 12t + 9$$

$\therefore v = 0 = 3t^2 - 12t + 9$ $(\because$ (sentence (i)))

$$\Longrightarrow 0 = 3(t^2 - 4t + 3)$$

$$\Longrightarrow 0 = t^2 - 4t + 3)$$

$$\Longrightarrow 0 = (t - 3)(t - 1)$$

$\therefore t = 3$ sec & $t = 1$ sec

Q19. $\int \sin^5 x \cos x\, dx =$ ____

A. $\frac{\sin^4 x}{4} + c$
B. $\frac{\sin^6 x}{6} + c$
C. $5\sin^4 x + c$
D. $6\sin^6 x + c$

Correct Ans: B Solution

:

Given : $\int \sin^5 x \cos x \, dx$

$\Rightarrow$ Take, $\sin x = u \quad \Longrightarrow \quad \cos x \, dx = du$

$\Longrightarrow \int \sin^5 x \cos x \, dx = \int u^5 \, du = \frac{u^6}{6} + c$

$\therefore \int \sin^5 x \cos x \, dx = \frac{\sin^6 x}{6} + c$

Q20. $\int x e^x \, dx = \_\_\_\_$

A. $xe^x + e^x + c$
B. $e^x - x + c$
C. $e^x + x + c$
D. $xe^x - e^x + c$

Correct Ans: D

Solution :

Given : $I = \int xe^x \, dx$

$\longrightarrow$ take, $u = x \quad \& \quad v = e^x$

$\Rightarrow$ Use rule of integration by parts, $\int u.\, v \, dx = u \int v \, dx - \int \left(\frac{du}{dx} \int v \, dx \right) dx$

$\Longrightarrow \int xe^x \, dx = x \int e^x \, dx - \int \left(\frac{d(x)}{dx} \int e^x \, dx \right) dx$

$\Longrightarrow \int xe^x \, dx = x \frac{e^x}{1} - \int (1 . \frac{e^x}{1}) dx$

$\Longrightarrow \int xe^x \, dx = x \frac{e^x}{1} - \frac{e^x}{1}$

$\Longrightarrow \int xe^x \, dx = e^x(x - 1) + c = x e^x - e^x + c$

Q21. $\int_0^{\frac{\pi}{2}} \frac{\sin x}{\sin x + \cos x} \, dx = \_\_\_\_\_$

A. $\frac{\pi}{4}$
B. $\frac{\pi}{2}$
C. π
D. None of the above

Correct Ans: A

Solution :

Given : $\int_0^{\frac{\pi}{2}} \frac{\sin x}{\sin x+\cos x}\,dx$

$\Rightarrow$ Take, $f(x) = \int \frac{\sin x}{\sin x+\cos x}dx$

$\rightarrow$ Re-write equation with , $\sin x = \frac{1}{2}[(\sin x + \cos x)] - \frac{1}{2}[(\cos x - \sin x)]$

$$\Longrightarrow f(x) = \int \frac{\frac{1}{2}[(\sin x+\cos x)]-\frac{1}{2}[(\cos x-\sin x)]}{\sin x+\cos x}\,dx = \int\left(\frac{1}{2} - \frac{(\cos x-\sin x)}{2(\sin x+\cos x)}\right)dx$$

$$\Longrightarrow f(x) = \frac{x}{2} + \int \frac{\sin x-\cos x}{2(\sin x+\cos x)}\,dx \quad \ldots(i)$$

$\rightarrow$ From eq.(i),
$\int \frac{\sin x-\cos x}{2(\sin x+\cos x)}\,dx$

$\rightarrow$, Take, $u = \sin x + \cos x \Longrightarrow du = (\cos x - \sin x)dx = -(\sin x - \cos x)du$

$$\therefore \int \frac{\sin x-\cos x}{2(\sin x+\cos x)}dx = -\frac{1}{2}\int \frac{1}{u}du = -\frac{1}{2}\ln u = -\frac{1}{2}\ln(\sin x + \cos x) \quad \ldots(ii)$$

$\Rightarrow$ use eq.(ii) in eq.(i)

$$\Longrightarrow f(x) = \frac{x}{2} - \frac{\ln(\sin x+\cos x)}{2} + c = \frac{x}{2} - \frac{\ln(\sin(x+\frac{\pi}{4}))}{2} + c$$

$$\therefore \int_0^{\frac{\pi}{2}} f(x)dx = \left[\frac{x}{2} - \frac{\ln(\sin(x+\frac{\pi}{4}))}{2} + c\right]_0^{\frac{\pi}{2}} = \frac{\pi}{4} - \frac{\ln\frac{\sqrt{2}}{2}}{2} + \frac{\ln\frac{\sqrt{2}}{2}}{2} + c$$

$$\Longrightarrow \int_0^{\frac{\pi}{2}} f(x)dx = \frac{\pi}{4}$$

Q22. $\int_1^2 \frac{2x}{1+x^2}\,dx =$ _____

A. $\log_e(\frac{1}{2})$
B. $\log_e(\frac{5}{2})$

C. $\log_e(5)$
D. $\log_e(2)$

Correct Ans: B Solution
:

Given : $\int_1^2 \frac{2x}{1+x^2}\,dx$

$\Rightarrow$ Take, $f(x) = \int \frac{2x}{1+x^2}\,dx$

Let, $1 + x^2 = t \implies 2x\,dx = dt$

$\therefore f(x) = \int \frac{1}{t}\,dt = \ln t + c = \ln(x^2 + 1) + c$

$\Rightarrow \int_1^2 \frac{2x}{1+x^2}\,dx = \int_1^2 f(x)dx = [\ln(x^2 + 1)]_1^2 + c$

$\implies \int_1^2 \frac{2x}{1+x^2}\,dx = \ln 5 - \ln 2 + c = \ln\left(\frac{5}{2}\right) + c$

Q23. If $\log_2(\log_3 x) = 1$ then x = ____

A. 9
B. 3
C. 6
D. 27

Correct Ans: A
Solution :

$\Rightarrow \log_2(\log_3 x) = 1$

$\implies \log_3 x = 2^1 = 2 \quad (\because \log_a b = x \implies b = a^x)$

$\implies x = 3^2 = 9$

Q24. $3^{\log_9 4}$ = ____

A. 2
B. 3
C. 1
D. 4

Correct Ans: A Solution :

Given : $3^{\log_9 4}$

$\Rightarrow$ where, $\log_9 4 = \log_3 2$

$\Longrightarrow$ $3^{\log_9 4} = 3^{\log_3 2} = 2$ ($\because$ Apply log rule $a^{\log_a b} = b$)

Q25. If mean of 3, 5, a, 4, 6 is 5, then a =____

A. 5
B. 6
C. 7
D. 8

Correct Ans: C

Solution :

Mean $\overline{x} = \frac{3+5+a+4+6}{5}$

$\Longrightarrow$ $5 = \frac{18+a}{5}$

$\Longrightarrow$ $18 + a = 25$

$\Longrightarrow$ $a = 7$

Q26. Read the below mentioned comprehension passage and answer the questions 26 to 30.

In the ancient village of Varanasi along the Ganges River, there lived a poor but humble weaver named Raj. He was struggling to meet both ends, yet humble and helping to others. One day, as he worked diligently on his loom, a celestial figure appeared. It was Saraswati, the goddess of knowledge, disguised as an old woman. Impressed by Raj's kindness, she blessed him with unparalleled weaving skills and told him that goddess Lakshami would soon bring prosperity to his doorstep.

News of Raj's extraordinary talent spread, attracting the attention of the king. The king, intrigued by the tales, challenged Raj to weave a fabric that could capture the essence of the river itself. Determined, Raj embarked on a journey to gather inspiration from the Ganges.

After weeks of contemplation by the riverbank, Raj created a masterpiece, a fabric that seemed to ripple like flowing water. The king, amazed by the creation, gave Raj pricey rewards and honored him with the post of Royal Craftsman of his kingdom.

Why did a celestial figure appear before Raj?

A. Because of Raj's prayer
B. Because of black magic
C. Because Raj was a devotee to goddess.
D. Because Raj was a kind and hardworking person.

Correct Ans: D

Q27. Who appeared before Raj in the guise of an old woman?

A. Goddess Swaraswati
B. Goddess Lakshami
C. Goddess Paravati
D. Goddess Durga

Correct Ans: A

Q28. What did the king challenge Raj to weave?

A. Fabric praising the King
B. Fabric with celestial patterns
C. Fabric depicting spirit of Ganges
D. Fabric depicting royal symbols.

Correct Ans: C

Q29. How did Raj gather inspiration for his weaving?

A. By visiting the mountains
B. By visiting the temple
C. By worshipping the goddess
D. By visiting the river Ganges

Correct Ans: D

Q30. Find one word substitute for 'an act of changing one's appearance' from the passage.

A. Celestial
B. Disguise
C. Contemplation
D. Intrigue

Correct Ans: B

Q31. Which of the following ensures completion of the process of communication cycle?

A. Channel

B. Encoding
C. Feedback
D. Decoding

Correct Ans: C

Solution :

⇒ Feedback ensures completion of the process of the communication cycle.

⇒ Feedback is the response or reaction provided by the receiver to the sender's message, indicating whether the message was understood as intended. It helps in confirming whether the message was successfully transmitted, received, and understood, thus completing the communication loop.

Q32. _____ communication means communication without words.

A. Written
B. Verbal
C. Non-verbal
D. Reading

Correct Ans: C Solution :

⇒ Non-verbal communication means communication without words.

⇒ It involves the use of gestures, facial expressions, body language, tone of voice, and other non-verbal cues to convey meaning.

Q33. The person who transmits the message is called _____ _.

A. Channel
B. Sender
C. Receiver
D. Respondent

Correct Ans: B Solution :

⇒ The person who transmits the message is called the Sender. They are responsible for encoding the message and initiating the communication process.

Q34. Semantic barrier to communication arises due to problems of _____ .

A. Language
B. Expressions
C. Psychology
D. Technology

Correct Ans: A

Solution :

⇒ Semantic barrier to communication arises due to problems of Language. This barrier occurs when the meaning of words used in the communication is not understood in the same way by both the sender and the receiver, leading to misunderstanding or misinterpretation.

Q35. The movement of body, facial expressions, hand movements, gestures, etc. while communicating refer to _____ .

A. Proxemics
B. Kinesics
C. Paralanguage
D. Appearance

Correct Ans: B

Solution :

⇒ The movement of body, facial expressions, hand movements, gestures, etc. while communicating refers to Kinesics.

⇒ Kinesics is the study of body language and non-verbal communication, including gestures, facial expressions, and body movements, which convey meaning during communication.

Q36. The address of recipient of the letter is called _____ .

A. Outside address
B. Sender's address
C. Inside Address
D. Offside Address

Correct Ans: C

Solution :

⇒ The address of the recipient of the letter is called the Inside Address. This is typically placed at the beginning of the letter, indicating the recipient's name and address.

Q37. After receiving a letter of complaint, which kind of letter is drafted in response?

A. Letter of Investigation
B. Letter of Adjustment
C. Letter of Inquiry
D. Letter of Reply

Correct Ans: D

Solution :

⇒ After receiving a letter of complaint, a Letter of Reply is drafted in response.

⇒ This letter acknowledges the receipt of the complaint and provides a response

addressing the concerns raised by the sender.

⇒ It may offer explanations, apologies, or solutions to resolve the issue outlined in the original complaint.

Q38. C.W.O. in business letter or email stands for _____ .

A. Cash Without Order
B. Cash With Offer
C. Cash With Order
D. Company With Order

Correct Ans: C Solution :

⇒ C.W.O. in a business letter or email typically stands for Cash With Order. This indicates that payment is expected at the time the order is placed or upon receipt of the goods/services, rather than after delivery or at a later date.

Q39. Which of the following is an advantage of an email?

A. Desired length
B. Ease of communication
C. Lower cost
D. All of the above

Correct Ans: D Solution :

⇒ All of the above are advantages of an email.

⇒ Desired Length : Emails allow for flexibility in the length of the message, enabling senders to convey information in as much detail as necessary.

⇒ Ease of Communication : Email provides a convenient and efficient means of communication, allowing messages to be sent and received quickly and easily, regardless of the sender and recipient's locations.

⇒ Lower Cost : Compared to traditional mail or other forms of communication, sending emails typically incurs lower costs, especially for long-distance or international communication, as it eliminates the need for postage and physical materials.

Q40. BCC in email stands for _____ .

A. Blind Carbon Copy
B. Below Carbon Copy
C. Business Carbon Copy

D. Business Client Company

Correct Ans: A Solution :

⇒ BCC in email stands for Blind Carbon Copy. It allows the sender to send a copy of the email to recipients without the other recipients being aware of their inclusion.

Q41. _____ tense is used in the headlines of newspapers.

A. Simple present tense
B. Simple past tense
C. Simple future tense
D. Present continuous tense

Correct Ans: A Solution :

⇒ The tense used in the headlines of newspapers is typically the Simple Present Tense. This tense is commonly used in headlines to convey information succinctly and effectively.

Q42. The train _____ before we reached the station.

A. Left
B. has left
C. had left
D. will be left

Correct Ans: C Solution :

⇒ The correct option to complete the sentence is:

The train had left before we reached the station.

⇒ The sentence you provided is in the past perfect tense, which is used to indicate an action that was completed before another action took place in the past.

Q43. Rima is a good dancer. The underlined word "good" in the sentence given is _____ .

A. a noun
B. an adjective
C. a verb
D. an adverb

Correct Ans: B Solution :

⇒ The underlined word "good" in the sentence "Rima is a good dancer" is functioning as an adjective.

⇒ It describes the noun ""dancer"" by providing information about the quality or characteristic of Rima's dancing ability.

⇒ Adjectives modify or describe nouns or pronouns in a sentence. In this case, ""good"" describes the type of dancer Rima is.

Q44. _____ you work hard, you will succeed in the university Examination.

A. Though
B. But
C. Unless
D. If

Correct Ans: D Solution :

⇒ The correct word to complete the sentence is:

If you work hard, you will succeed in the university examination.

⇒ In the sentence provided, "If" is used to introduce a conditional clause, indicating a condition upon which the outcome depends.

Q45. One of my friends_____ old.

A. am
B. is
C. are
D. has

Correct Ans: B Solution :

⇒ The correct verb to complete the sentence is:

One of my friends is old.

⇒In this sentence, "One" is the subject, and "is" agrees with the singular subject "One". Therefore, the correct form of the verb "to be" is "is".

Q46. Choose the correct spelling.

A. Vaccum
B. Vacuum
C. Vacumm
D. Veccum

Correct Ans: B Solution :

⇒ The correct spelling is: Vacuum

Q47. Choose the correct spelling.

A. Enterpreneur
B. Entreorenure
C. Entrepreneur
D. Enterprenure

Correct Ans: C Solution :

⇒ The correct spelling is: Entrepreneur

Q48. Choose the correct sentence.

A. He is reading a book yesterday.
B. He reads a book now.
C. He read a book now.
D. He is reading a book now.

Correct Ans: C Solution :

⇒ The correct sentence in present continuous tense is:
He is reading a book now.

Q49. Choose the correct sentence.

A. I don't use public transport daily.
B. I didn't use public transport daily.
C. I not use public transport daily.
D. I not using public transport daily.

Correct Ans: A Solution :

⇒ The correct sentence is: I don't use public transport daily.

⇒ Here the speaker does not use public transport every day. It's in the present tense, and the word "don't" is used to show that the action (using public transport daily) is not happening.

Q50. Choose the correct sentence.

A. Have I a pen?
B. Has I a pen?
C. Do I have a pen?
D. Do I has a pen?

Correct Ans: C Solution :

⇒ The correct sentence is: Do I have a pen?

⇒ This sentence follows the correct word order for asking a question in English, using the auxiliary verb "do" before the subject "I" and the main verb "have" in its base form "have".

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Section-1&2