ADVITIYA ACADEMY OF LEARNING

KARNATAKA DCET 2025

Question Paper & Detailed Solutions

Complete 100 MCQs with Step-by-Step Derivations

Comprehensive solved question paper with authentic official KEA key answers, diagrams, mathematical explanations, and syllabus categorization.

Total Questions: 100 | **Sections:** 5 | **Duration:** 3 Hours

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Prepared by **Advitiya Academy Of Learning**
Validated against Official KEA Key Answers

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Section 1: Engineering Mathematics

Q1 – Q20

Q.1 ENGINEERING MATHEMATICS

Choose the correct answer from the following:

(1) ✓ Every identity matrix is a scalar matrix

(2) Every scalar matrix is an identity matrix

(3) Every diagonal matrix is an identity matrix

(4) A square matrix whose each element is one is an identity matrix

✓ Answer: Option (1)

SOLUTION

Explanation: An identity matrix is a special case of a scalar matrix where the diagonal elements are all equal to 1.

Step-by-step:

1. Recall definitions:
- Diagonal matrix: all non-diagonal elements are 0.
- Scalar matrix: diagonal matrix where all diagonal elements are equal.
- Identity matrix: diagonal matrix where all diagonal elements are equal to 1.

2. Since 1 is a scalar, an identity matrix is always a scalar matrix.

3. The converse is not true: $\begin{pmatrix} 3 & 0 \\ 0 & 3 \end{pmatrix}$ is scalar but not identity.

Q.2 ENGINEERING MATHEMATICS

The value of $\begin{vmatrix} 3 & 1 & -9 \\ -1 & 2 & 3 \\ 2 & 1 & -6 \end{vmatrix}$ is:

(1) 45

(2) 90

(3) ✓ 0

(4) -45

✓ Answer: Option (3)

SOLUTION

Explanation: Calculate the determinant of a 3×3 matrix by expanding along the first row.

Step-by-step:

1. Expand along the first row:

$$D = 3\begin{vmatrix} 2 & 3 \\ 1 & -6 \end{vmatrix} - 1\begin{vmatrix} -1 & 3 \\ 2 & -6 \end{vmatrix} + (-9)\begin{vmatrix} -1 & 2 \\ 2 & 1 \end{vmatrix}$$

2. Calculate the 2×2 determinants:

$$\begin{vmatrix} 2 & 3 \\ 1 & -6 \end{vmatrix} = (2)(-6) - (3)(1) = -12 - 3 = -15.$$

$$\begin{vmatrix} -1 & 3 \\ 2 & -6 \end{vmatrix} = (-1)(-6) - (3)(2) = 6 - 6 = 0.$$

$$\begin{vmatrix} -1 & 2 \\ 2 & 1 \end{vmatrix} = (-1)(1) - (2)(2) = -1 - 4 = -5.$$

3. Substitute back:

$$D = 3(-15) - 1(0) - 9(-5)$$
$$= -45 - 0 + 45 = 0.$$

Q.3 ENGINEERING MATHEMATICS

The characteristic equation of $A = \begin{pmatrix} 1 & -2 \\ 3 & 4 \end{pmatrix}$ is:

(1) $\lambda^2 - 3\lambda - 2 = 0$

(2) ✓ $\lambda^2 - 5\lambda + 10 = 0$

(3) $\lambda^2 - 5\lambda - 2 = 0$

(4) $\lambda^2 + 3\lambda + 10 = 0$

✓ Answer: Option (2)

📝 SOLUTION

Explanation: The characteristic equation of a square matrix is given by $|A - \lambda I| = 0$.

Step-by-step:

1. Set up $|A - \lambda I| = 0$:

$$\begin{vmatrix} 1-\lambda & -2 \\ 3 & 4-\lambda \end{vmatrix} = 0$$

2. Expand the determinant:

$(1-\lambda)(4-\lambda) - (-2)(3) = 0$

$4 - \lambda - 4\lambda + \lambda^2 + 6 = 0$

$\lambda^2 - 5\lambda + 10 = 0.$

Q.4 ENGINEERING MATHEMATICS

If $|A|I = \begin{pmatrix} -3 & 0 \\ 0 & -3 \end{pmatrix}$, then $A \cdot \text{adj } A$ is equal to:

(1) $\begin{pmatrix} 3 & 0 \\ 0 & 3 \end{pmatrix}$

(2) $\begin{pmatrix} 9 & 0 \\ 0 & 9 \end{pmatrix}$

(3) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

(4) ✓ $\begin{pmatrix} -3 & 0 \\ 0 & -3 \end{pmatrix}$

✓ Answer: Option (4)

SOLUTION

Explanation: By the fundamental theorem of matrix algebra, $A \cdot \text{adj}(A) = |A| \cdot I$.

Step-by-step:

1. Recall the property: $A \cdot \text{adj}(A) = |A| \cdot I$.
2. The problem states that $|A|I = \begin{pmatrix} -3 & 0 \\ 0 & -3 \end{pmatrix}$.
3. Since $A \cdot \text{adj } A$ is mathematically identical to $|A|I$, it must be equal to the same matrix: $\begin{pmatrix} -3 & 0 \\ 0 & -3 \end{pmatrix}$.

Q.5 ENGINEERING MATHEMATICS

The slope of the straight line joining two points $(3, -4)$ and $(-1, 5)$ is:

(1) $\frac{4}{9}$

(2) $-\frac{4}{9}$

(3) $-\frac{1}{4}$

(4) ✓ $-\frac{9}{4}$

✓ Answer: Option (4)

SOLUTION

Explanation: The slope of a line passing through (x_1, y_1) and (x_2, y_2) is given by $m = \frac{y_2 - y_1}{x_2 - x_1}$.

Step-by-step:

1. Identify points: $(x_1, y_1) = (3, -4)$ and $(x_2, y_2) = (-1, 5)$.
2. Apply the slope formula:

$m = \frac{5-(-4)}{-1-3} = \frac{5+4}{-4} = \frac{9}{-4} = -\frac{9}{4}$.

Q.6 ENGINEERING MATHEMATICS

The angle of inclination of the straight line is $\pi/4$ and y-intercept is 3, then equation of the straight line is:

(1) ✓ $y = x + 3$

(2) $y = x - 3$

(3) $y = -x - 3$

(4) $y = -x + 3$

✓ Answer: Option (1)

SOLUTION

Explanation: Find slope $m = \tan\theta$, then substitute into $y = mx + c$.

Step-by-step:

1. Find slope m: Given inclination $\theta = \pi/4$ rad $= 45^\circ$. Therefore, $m = \tan(45^\circ) = 1$.
2. Identify y-intercept c: Given $c = 3$.
3. Substitute into slope-intercept form $y = mx + c$:

$y = 1x + 3 \implies y = x + 3$.

Q.7 ENGINEERING MATHEMATICS

The equation of straight line passing through $(-5, 4)$ and parallel to X-axis is:

(1) $x - y + 9 = 0$

(2) $x + 5 = 0$

(3) $x + y + 1 = 0$

(4) ✓ $y - 4 = 0$

✓ Answer: Option (4)

SOLUTION

Explanation: A line parallel to the X-axis has a slope of 0 ($m = 0$). Use the point-slope form.

Step-by-step:

1. A line parallel to the X-axis is horizontal and has slope $m = 0$.
2. Use the point-slope form with point $(x_1, y_1) = (-5, 4)$:

$y - y_1 = m(x - x_1) \implies y - 4 = 0(x - (-5))$

$y - 4 = 0$.

Q.8 ENGINEERING MATHEMATICS

What is the equation of the straight line passing through the points $(1, 5)$ and $(3, 2)$?

(1) $7x - 4y + 13 = 0$

(2) $3x + 2y - 17 = 0$

(3) ✓ $3x + 2y - 13 = 0$

(4) $3x + 2y + 13 = 0$

✓ Answer: Option (3)

SOLUTION

Explanation: Find the slope first, then use the point-slope formula with one of the points.

Step-by-step:

1. Find slope m:
$m = \frac{2-5}{3-1} = -\frac{3}{2}$.
2. Use point-slope form with point $(1, 5)$:
$y - 5 = -\frac{3}{2}(x - 1)$
$2(y - 5) = -3(x - 1) \implies 2y - 10 = -3x + 3$
$3x + 2y - 13 = 0$.

Q.9 ENGINEERING MATHEMATICS

The ramp in front of a gate is elevated by an angle of $\pi/3$ radians, then the angle in degrees is:

(1) 15°

(2) 75°

(3) ✓ 60°

(4) 30°

✓ Answer: Option (3)

SOLUTION

Explanation: Convert radians to degrees: $\text{Angle in Degrees} = \text{Angle in Radians} \times \frac{180}{\pi}$.

Step-by-step:

1. Given angle: $\theta = \frac{\pi}{3}$ rad.
2. Apply the conversion formula:
$\theta_{\text{deg}} = \frac{\pi}{3} \times \frac{180}{\pi}$.
3. Cancel π and simplify:
$\theta_{\text{deg}} = \frac{180}{3} = 60^\circ$.

Q.10 ENGINEERING MATHEMATICS

If $\sin(90-\theta)+\cos\theta=\sqrt{2}\cos(90-\theta)$, then the value of $\csc\theta$ is:

(1) $\frac{\sqrt{3}}{2}$

(2) ✓ $\sqrt{\frac{3}{2}}$

(3) $\sqrt{\frac{2}{3}}$

(4) $\sqrt{3}$

✓ Answer: Option (2)

SOLUTION

Explanation: Simplify using co-function identities first, then solve for $\tan\theta$ and $\csc\theta$.

Step-by-step:

1. Apply co-function identities: $\sin(90^\circ-\theta)=\cos\theta$ and $\cos(90^\circ-\theta)=\sin\theta$.
2. Substitute into equation:
$\cos\theta+\cos\theta=\sqrt{2}\sin\theta \implies 2\cos\theta=\sqrt{2}\sin\theta$.
3. Rearrange to find $\tan\theta$:
$\frac{\sin\theta}{\cos\theta}=\frac{2}{\sqrt{2}} \implies \tan\theta=\sqrt{2}$.
4. Use trigonometric identity $\csc^2\theta=1+\cot^2\theta$:
Since $\tan\theta=\sqrt{2} \implies \cot\theta=\frac{1}{\sqrt{2}}$.
$\csc^2\theta=1+\left(\frac{1}{\sqrt{2}}\right)^2=1+\frac{1}{2}=\frac{3}{2}$.
5. Take square root: $\csc\theta=\sqrt{\frac{3}{2}}$.

Q.11 ENGINEERING MATHEMATICS

If A, B, C are the angles of a triangle, then the incorrect relation is:

(1) $\sin\left(\frac{A+B}{2}\right) = \cos\left(\frac{C}{2}\right)$

(2) $\cos\left(\frac{A+B}{2}\right) = \sin\left(\frac{C}{2}\right)$

(3) ✓ $\tan\left(\frac{A+B}{2}\right) = \sin\left(\frac{C}{2}\right)$

(4) $\cot\left(\frac{A+B}{2}\right) = \tan\left(\frac{C}{2}\right)$

✓ Answer: Option (3)

SOLUTION

Explanation: Since A, B, C are angles of a triangle, $A + B + C = 180^\circ \implies \frac{A+B}{2} = 90^\circ - \frac{C}{2}$. Use co-function properties.

Step-by-step:

1. Starting with $A + B + C = 180^\circ$, isolate $A + B$: $A + B = 180^\circ - C$.
2. Divide by 2: $\frac{A+B}{2} = 90^\circ - \frac{C}{2}$.
3. Take trigonometric functions of both sides using complementary angle properties:

- $\sin\left(\frac{A+B}{2}\right) = \sin\left(90^\circ - \frac{C}{2}\right) = \cos\left(\frac{C}{2}\right)$ (Option 1 is correct).
- $\cos\left(\frac{A+B}{2}\right) = \cos\left(90^\circ - \frac{C}{2}\right) = \sin\left(\frac{C}{2}\right)$ (Option 2 is correct).
- $\tan\left(\frac{A+B}{2}\right) = \tan\left(90^\circ - \frac{C}{2}\right) = \cot\left(\frac{C}{2}\right)$ (Option 3 is INCORRECT, as it wrongly claims equality to $\sin(C/2)$).
- $\cot\left(\frac{A+B}{2}\right) = \cot\left(90^\circ - \frac{C}{2}\right) = \tan\left(\frac{C}{2}\right)$ (Option 4 is correct).

Q.12 ENGINEERING MATHEMATICS

The value of $\sin 40^\circ + \sin 20^\circ$ is:

(1) $\sqrt{3}\cos 10^\circ$

(2) $\sqrt{3}\cos 20^\circ$

(3) ✓ $\cos 10^\circ$

(4) $\sqrt{2}\cos 10^\circ$

✓ Answer: Option (3)

SOLUTION

Explanation: Apply the sum-to-product identity: $\sin C + \sin D = 2\sin\left(\frac{C+D}{2}\right)\cos\left(\frac{C-D}{2}\right)$.

Step-by-step:

1. Apply the sum-to-product trigonometric formula:

$$\sin C + \sin D = 2\sin\left(\frac{C+D}{2}\right)\cos\left(\frac{C-D}{2}\right)$$

2. Substitute $C = 40^\circ$ and $D = 20^\circ$:

$$\sin 40^\circ + \sin 20^\circ = 2\sin\left(\frac{40^\circ + 20^\circ}{2}\right)\cos\left(\frac{40^\circ - 20^\circ}{2}\right)$$

3. Simplify the angles inside the parentheses:

$$= 2\sin(30^\circ)\cos(10^\circ)$$

4. Substitute the standard value $\sin 30^\circ = \frac{1}{2}$:

$$= 2\left(\frac{1}{2}\right)\cos 10^\circ = \cos 10^\circ$$

Q.13 ENGINEERING MATHEMATICS

The derivative of $y = \frac{1+x}{1-x}$ is:

(1) ✓ $\frac{2}{(1-x)^2}$

(2) $\frac{-2}{(1-x)^2}$

(3) $\frac{2}{1-x^2}$

(4) $\frac{-2x}{(1-x)^2}$

✓ Answer: Option (1)

SOLUTION

Explanation: Use the Quotient Rule of differentiation.

Step-by-step:

1. Let $u = 1 + x \implies u' = 1$.
2. Let $v = 1 - x \implies v' = -1$.
3. Apply the quotient rule:

$\frac{dy}{dx} = \frac{(1)(1-x)-(1+x)(-1)}{(1-x)^2} = \frac{1-x+1+x}{(1-x)^2} = \frac{2}{(1-x)^2}$.

Q.14 ENGINEERING MATHEMATICS

If $y = \log(\sqrt{\tan x})$, then the value of $\frac{dy}{dx}$ at $x = \frac{\pi}{4}$ is:

(1) ∞

(2) ✓ 1

(3) 0

(4) $1/2$

✓ Answer: Option (2)

SOLUTION

Explanation: Differentiate using the chain rule of differentiation, simplify, then substitute the value of x.

Step-by-step:

1. Rewrite the function using logarithm properties: $y = \log((\tan x)^{1/2}) = \frac{1}{2}\log(\tan x)$.
2. Differentiate with respect to x:

$\frac{dy}{dx} = \frac{1}{2} \cdot \frac{1}{\tan x} \cdot \frac{d}{dx}(\tan x) = \frac{\sec^2 x}{2\tan x}$.

3. Evaluate at $x = \frac{\pi}{4}$ (Recall $\tan(\pi/4) = 1$ and $\sec(\pi/4) = \sqrt{2}$):

$\left.\frac{dy}{dx}\right|_{x=\pi/4} = \frac{(\sqrt{2})^2}{2(1)} = \frac{2}{2} = 1$.

Q.15 ENGINEERING MATHEMATICS

If $y = (2 + 3\log x)^{10}$, then $\frac{dy}{dx}$ at $x = 1$ is:

(1) $15(2^9)$

(2) $(15 \times 2)^{10}$

(3) ✓ $15(2^{10})$

(4) $10(5^9)$

✓ Answer: Option (3)

SOLUTION

Explanation: Differentiate using the power chain rule, then substitute $x = 1$.

Step-by-step:

1. Apply the power chain rule:
$\frac{dy}{dx} = 10(2 + 3\log x)^9 \cdot \frac{d}{dx}(2 + 3\log x)$
$= 10(2 + 3\log x)^9 \cdot \left(0 + \frac{3}{x}\right) = \frac{30(2+3\log x)^9}{x}$.
2. Substitute $x = 1$ (Recall $\log 1 = 0$):
$\left.\frac{dy}{dx}\right|_{x=1} = \frac{30(2+3(0))^9}{1} = 30(2)^9$.
3. Rewrite in terms of options: $30(2)^9 = 15 \times 2 \times 2^9 = 15(2^{10})$.

Q.16 ENGINEERING MATHEMATICS

If $y = \sqrt{\sin x + y}$, then $\frac{dy}{dx} =$

(1) ✓ $\cos x/(2y-1)$

(2) $\cos x/(1-2y)$

(3) $\sin x/(2y-1)$

(4) $\sin x/(1-2y)$

✓ Answer: Option (1)

SOLUTION

Explanation: Use implicit differentiation by squaring both sides of the equation first.

Step-by-step:

1. Square both sides to eliminate the radical:
$y^2 = \sin x + y$.
2. Differentiate both sides implicitly with respect to x:
$2y\frac{dy}{dx} = \cos x + \frac{dy}{dx}$.
3. Group $\frac{dy}{dx}$ terms:
$2y\frac{dy}{dx} - \frac{dy}{dx} = \cos x \implies (2y-1)\frac{dy}{dx} = \cos x$.
4. Solve for $\frac{dy}{dx}$:
$\frac{dy}{dx} = \frac{\cos x}{2y-1}$.

Q.17 ENGINEERING MATHEMATICS

$\int \cot^2 x \, dx =$

(1) ✓ $-\cot x - x + C$

(2) $\cot x - x + C$

(3) $\tan x - x + C$

(4) $\tan^2 x + C$

✓ Answer: Option (1)

📝 SOLUTION

Explanation: Rewrite using the trigonometric identity $\cot^2 x = \csc^2 x - 1$ before integrating.

Step-by-step:

1. Rewrite the integral:
$\int (\csc^2 x - 1)\, dx.$
2. Integrate term by term:
$= \int \csc^2 x \, dx - \int 1 \, dx.$
3. Recall standard integrals: $\int \csc^2 x \, dx = -\cot x$ and $\int 1 \, dx = x.$
4. Combine: $= -\cot x - x + C.$

Q.18 ENGINEERING MATHEMATICS

The value of $\int_0^{\pi/4} \frac{\sec^2 x}{1+\tan x}\, dx$ is:

(1) $\log 2 + 1$

(2) $\log 1$

(3) ✓ $\log 2$

(4) $\log 2 - 1$

✓ Answer: Option (3)

SOLUTION

Explanation: Solve using substitution or the log integration formula $\int \frac{f'(x)}{f(x)}\, dx = \log|f(x)|$.

Step-by-step:

1. Notice that the numerator $\sec^2 x$ is the derivative of the denominator $1 + \tan x$.
2. Let $u = 1 + \tan x \implies du = \sec^2 x\, dx$.
3. Find new integration limits:
- At $x = 0$: $u = 1 + \tan 0 = 1$.
- At $x = \pi/4$: $u = 1 + \tan(\pi/4) = 2$.
4. Substitute:
$\int_1^2 \frac{1}{u}\, du = [\log u]_1^2 = \log 2 - \log 1 = \log 2 - 0 = \log 2$.

Q.19 ENGINEERING MATHEMATICS

$\int \sqrt{1+\cos 2x}\, dx$ is:

(1) $2\cos x + C$

(2) $2\sin x + C$

(3) $\sqrt{2}\cos x + C$

(4) ✓ $\sqrt{2}\sin x + C$

✓ Answer: Option (4)

SOLUTION

Explanation: Simplify the integrand using the double-angle identity $1+\cos 2x = 2\cos^2 x$ before integrating.

Step-by-step:

1. Apply identity: $\sqrt{1+\cos 2x} = \sqrt{2\cos^2 x} = \sqrt{2}\cos x$.
2. Set up the simplified integral:
$\int \sqrt{2}\cos x\, dx = \sqrt{2}\int \cos x\, dx$.
3. Integrate $\cos x$:
$= \sqrt{2}\sin x + C$.

Q.20 ENGINEERING MATHEMATICS

The value of $\int_0^{\pi/4} \sin x \cos x \, dx$ is:

(1) $-1/4$

(2) ✓ $1/4$

(3) $\pi/2$

(4) $\pi/4$

✓ Answer: Option (2)

SOLUTION

Explanation: Solve using substitution ($u = \sin x$) or the double angle formula ($\sin 2x = 2 \sin x \cos x$).

Step-by-step:

1. Let $u = \sin x \implies du = \cos x \, dx$.

2. Change limits:

- At $x = 0$: $u = \sin 0 = 0$.

- At $x = \pi/4$: $u = \sin(\pi/4) = \frac{1}{\sqrt{2}}$.

3. Substitute and integrate:

$$\int_0^{1/\sqrt{2}} u \, du = \left[\frac{u^2}{2}\right]_0^{1/\sqrt{2}} = \frac{(1/\sqrt{2})^2}{2} - 0 = \frac{1/2}{2} = \frac{1}{4}.$$

Section 2: Statistics & Analytics

Q21 – Q40

Q.21 STATISTICS & ANALYTICS

The data extracted from the google forms has the file extension as

(1) .doc

(2) .docx

(3) ✓ .csv

(4) .xlsx

✓ Answer: Option (3)

SOLUTION

Explanation: Downloaded responses from Google Forms are exported natively in comma-separated values (.csv) format.

> **Step-by-step:**
> The data extracted from the google forms has the extension as .csv

Q.22 STATISTICS & ANALYTICS

Match the following with respect to the classification of data and data collection:

Term	Example / Method
a) Data	i) Survey
b) Questionnaire	ii) Number of students appearing for exam
c) Interview	iii) Google form
d) Quantitative data	iv) Facts and figure

(1) a - iv, b - i, c - iii, d - ii

(2) a - iv, b - ii, c - iii, d - i

(3) ✓ a - iv, b - iii, c - i, d - ii

(4) a - iv, b - i, c - ii, d - iii

✓ Answer: Option (3)

📝 SOLUTION

Explanation: Data: Facts and figures (a-iv); Questionnaire: Google form (b-iii); Interview: Survey method (c-i); Quantitative data: Number of students appearing for exam (d-ii).

Step-by-step:

1. (a) Data → (iv) Facts and figures
2. (b) Questionnaire → (iii) Google form
3. (c) Interview → (i) Quantitative data
4. (d) Survey → (ii) Number of students appearing for exam

Matching option: a-iv, b-iii, c-i, d-ii.

Q.23 STATISTICS & ANALYTICS

Data cleaning refers to:

(1) ✓ Modifying the gathered data

(2) Adding data to the gathered data

(3) Removing the data from gathered data

(4) Processing the data according to the defined problem statement

✓ Answer: Option (1)

SOLUTION

Explanation: Data cleaning (data scrubbing/cleansing) is the process of fixing or removing incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset. Its primary objectives include modifying existing gathered data, enriching/adding missing data, removing corrupt/duplicate data, and transforming/processing data according to problem requirements. Since all 4 choices represent valid objectives and dimensions of data cleaning, KEA considered all options (a/b/c/d) correct.

> **Step-by-step:**
> 1. Define Data Cleaning: In data analytics and statistics, data cleaning prepares raw data for analysis by identifying errors, outliers, missing values, and duplicate records.
> 2. Evaluate Key Operations in Data Cleaning:
> - Modifying data (e.g., standardizing text cases, converting data types, correcting spelling errors).
> - Adding/imputing data (e.g., handling missing values with mean/median, data enrichment).
> - Removing data (e.g., eliminating irrelevant features, duplicate records, or unfixable corrupt entries).
> - Processing data (e.g., normalizing, filtering, and structuring data per the specific problem requirements).
> 3. Conclusion: Because each option (1, 2, 3, and 4) describes a recognized function of data cleaning, KEA recognized all options (a/b/c/d) as correct.

Q.24 STATISTICS & ANALYTICS

The syntax to find frequency distribution in an interval in excel is 43

(1) ✓ COUNT IFS (criteria_range I, criteria I, ...)

(2) COUNTIF (criteria_range I, criteria I, ...)

(3) COUNT (criteria_range I, criteria I

(4) COUNT IFS (criteria I, criteria 2, ...)

✓ Answer: Option (1)

SOLUTION

Explanation: The syntax to find frequency distribution in an interval in excel is = COUNTIES (criteria_range I, criteria 1, ...)

Step-by-step:

The syntax to find frequency distribution in an interval in excel is = COUNTIES (criteria_range I, criteria 1, ...)

Q.25 STATISTICS & ANALYTICS

Which tab in Excel supports in plotting Piechart?

(1) Home tab

(2) View tab

(3) ✓ Insert tab

(4) Data tab

✓ Answer: Option (3)

SOLUTION

Explanation: In Microsoft Excel, charts including 2D/3D Pie Charts are placed in the 'Insert' tab under the Charts group.

Step-by-step:

We can plot pie-chart ofa data in excel using tab called insert

Q.26 STATISTICS & ANALYTICS

A frequency polygon is a graphical representation created as a:

(1) Scatter graph

(2) Pie graph

(3) Bar graph

(4) ✓ Line graph

✓ Answer: Option (4)

SOLUTION

Explanation: A frequency polygon is a line graph formed by connecting the midpoints of the tops of the bars in a histogram.

Step-by-step:

1. Frequency polygons plot frequencies at class midpoints and join points with straight line segments.
2. Hence, it is categorized as a line graph.

Q.27 STATISTICS & ANALYTICS

Which of the following statements on Histogram is true?

(1) A Histogram can display categorical data effectively

(2) The bars ina Histogram shouldnottouch each other

(3) ✓ A Histogram shows the frequency distribution of continuous data

(4) A Histogram is same as a bar chart

✓ Answer: Option (3)

SOLUTION

Explanation: Histogram can be constructed for continuous frequency distribution.

Step-by-step:

Histogram can be constructed for continuous frequency distribution.

Q.28 STATISTICS & ANALYTICS

Choose the right stem-leaf plot from the following plots for the data set:

52, 20, 44, 28, 20, 41, 30, 56, 32, 28

Plot-1: Stem 2 | Leaf 0088 Stem 3 | Leaf 20 Stem 4 | Leaf 14 Stem 5 | Leaf 26	**Plot-2:** Stem 2 | Leaf 0088 Stem 3 | Leaf 02 Stem 4 | Leaf 14 Stem 5 | Leaf 26
Plot-3: Stem 2 | Leaf 08 Stem 3 | Leaf 20 Stem 4 | Leaf 14 Stem 5 | Leaf 26	**Plot-4:** Stem 2 | Leaf 80 Stem 3 | Leaf 20 Stem 4 | Leaf 41 Stem 5 | Leaf 62

(1) Plot - 1

(2) ✓ Plot - 2

(3) Plot - 3

(4) Plot - 4

✓ Answer: Option (2)

SOLUTION

Explanation: Sorting data in ascending order: 20, 20, 28, 28, 30, 32, 41, 44, 52, 56. Stem 2: leaves 0, 0, 8, 8; Stem 3: leaves 0, 2; Stem 4: leaves 1, 4; Stem 5: leaves 2, 6. This perfectly matches Plot-2.

> **Step-by-step:**
> Arrange the data in ascending order 20, 20, 28, 28, 30, 32, 41, 44, 52, 56 Stem Leaf 2 3 4 5 0088 02 14 26 Key : 2/0 = 20

Q.29 STATISTICS & ANALYTICS

The below chart represents the expenditure of a person in a month. If his salary is ₹50,000, what is his total expenditure on rent and transport?



(1) ₹ 30,000

(2) ₹ 25,000

(3) ✓ ₹ 15,000

(4) ₹ 10,000

✓ Answer: Option (3)

SOLUTION

Explanation: Total monthly salary is ₹50,000. From the pie chart, rent accounts for 20% and transport accounts for 10% of total expenditure. Therefore, total expenditure on rent and transport is $(20\% + 10\%) \times 50{,}000 = 30\% \times 50{,}000 = ₹15{,}000$.

Step-by-step:

1. Extract given values from the pie chart:
- Total monthly salary = ₹50,000
- Percentage spent on Rent = 20%
- Percentage spent on Transport = 10%

2. Calculate combined percentage for Rent and Transport:

$$\text{Combined Percentage} = 20\% + 10\% = 30\%$$

3. Compute total expenditure on rent and transport:

$$\text{Expenditure} = \frac{50{,}000}{100} \times 30 = 500 \times 30 = 15{,}000$$

4. Hence, the total expenditure on rent and transport is ₹15,000 (Option 3).

Q.30 STATISTICS & ANALYTICS

For the data set given below, match the values of statistical parameters:

Parameter	Value
i) Range	a) 58
ii) Mean	b) 44
iii) Mode	c) 48.4545
iv) Median	d) 48

Dataset: 28, 36, 44, 58, 44, 33, 76, 59, 58, 39, 58

(1) i - d, ii - c, iii - b, iv - a

(2) ✓ i - d, ii - c, iii - a, iv - b

(3) i - a, ii - b, iii - c, iv - d

(4) i - d, ii - a, iii - b, iv - c

✓ Answer: Option (2)

📝 SOLUTION

Explanation: 1) Range = Max - Min = 76 - 28 = 48 (i-d). 2) Sum = 533, n = 11 ⟹ Mean = 533/11 = 48.4545 (ii-c). 3) Most frequent value is 58 (appears 3 times) ⟹ Mode = 58 (iii-a). 4) Sorted data: 28, 33, 36, 39, 44, 44, 58, 58, 58, 59, 76. 6th value = 44 ⟹ Median = 44 (iv-b). Matches option (2).

> **Step-by-step:**
> 1. Range: Maximum value (76) - Minimum value (28) = 48 → (i - d)
> 2. Mean: $\frac{28+36+44+58+44+33+76+59+58+39+58}{11} = \frac{533}{11} \approx 48.45$ → (ii - c)
> 3. Mode: 58 appears 3 times (highest frequency) → (iii - a)
> 4. Median: Sorted: [28, 33, 36, 39, 44, 44, 58, 58, 58, 59, 76]. The 6th term is 44 → (iv - b)
> Correct match: i-d, ii-c, iii-a, iv-b.

Q.31 STATISTICS & ANALYTICS

The Excel syntax for finding quartile 4 (4th quartile) for a given data set is DCET - 2025 Question Paper & Solutions

(1) -QUARTILE [array, 4]

(2) ✓ QUARTILE (array, 4)

(3) = QUARTILE (array_4)

(4) QUARTILE (array-4)

✓ Answer: Option (2)

SOLUTION

Explanation: The excel syntax for finding quartile 4 (4th quartile) for a given data set is - QUARTILE (array, 4)

> **Step-by-step:**
> The excel syntax for finding quartile 4 (4th quartile) for a given data set is - QUARTILE (array, 4)

Q.32 STATISTICS & ANALYTICS

Which of the following equalities and inequalities is true for the data set 25, 25, 25, 25, 25, 25, 25, 25, 25?

(1) Variance > Standard deviation

(2) ✓ Variance = Standard deviation

(3) Variance < Standard deviation

(4) Variance < 0, Standard deviation < 0

✓ Answer: Option (2)

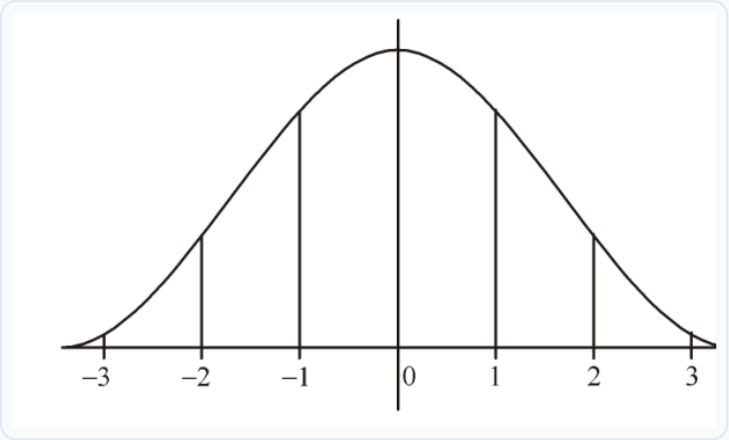
SOLUTION

Explanation: If all the observations are same then variance and S.D are equal Variance = S.D = O

> **Step-by-step:**
> If all the observations are same then variance and S.D are equal Variance = S.D = O

Q.33 STATISTICS & ANALYTICS

Skewness of the distribution shown below is:



(1) -1

(2) ✓ 0

(3) 1

(4) 2

✓ Answer: Option (2)

SOLUTION

Explanation: The shown diagram is a symmetric normal bell curve centered at zero. In a perfectly symmetric distribution, skewness is zero.

Step-by-step:

1. For a symmetric distribution, Mean = Median = Mode.
2. Therefore, Pearson's skewness $Sk = \frac{\text{Mean}-\text{Mode}}{\sigma} = 0$.
3. In terms of moment coefficient of skewness, $\beta_1 = 0$.

Q.34 STATISTICS & ANALYTICS

If the Kurtosis = 3, then the data distribution is called

(1) Leptokultic

(2) ✓ Mesokurtic

(3) Platykultic

(4) Skewkurtic 45

✓ Answer: Option (2)

📝 SOLUTION

Explanation: If Kurtosis 3 (ß2 3) Then the given distribution is mesokurtic.

> **Step-by-step:**
> If Kurtosis 3 (ß2 3) Then the given distribution is mesokurtic.

Q.35 STATISTICS & ANALYTICS

Assertion (A): An "int" type data in Python can store floating point numbers.

Reasoning (R): Python "int" type only stores positive integers.

(1) A is true, R is false

(2) A is false, R is true

(3) ✓ A is false, R is false

(4) A is true, R is true

✓ Answer: Option (3)

SOLUTION

Explanation: Assertion (A) is false because in Python, the int data type only represents whole numbers (integers); decimal numbers require the float data type. Reasoning (R) is also false because Python's int type stores positive integers, negative integers, and zero (unbounded in Python 3). Therefore, both Assertion and Reasoning are false.

> **Step-by-step:**
> 1. Analyze Assertion (A): 'An "int" type data in Python can store floating point numbers.'
> - In Python, `int` is strictly for whole numbers (e.g., 5, -12, 0). Numbers with a decimal point (e.g., 3.14) are represented by the `float` data type.
> - Therefore, Assertion (A) is FALSE.
> 2. Analyze Reasoning (R): 'Python "int" type only stores positive integers.'
> - Python's `int` type can store positive numbers, zero, and negative numbers (e.g., -5, 0, +10).
> - Therefore, Reasoning (R) is FALSE.
> 3. Conclusion: Both A is false and R is false, which corresponds to Option (3).

Q.36 STATISTICS & ANALYTICS

Match the following data types with their Python expressions:

Expression	Data Type
a) `a = 5`	i) string
b) `a or b`	ii) float
c) `"Hello KEA"`	iii) Integer
d) `c = 5.9`	iv) Boolean

(1) ✓ a - iii, b - iv, c - i, d - ii

(2) a - iv, b - i, c - ii, d - iii

(3) a - iv, b - i, c - iii, d - ii

(4) a - i, b - ii, c - iii, d - iv

✓ Answer: Option (1)

📝 SOLUTION

Explanation: In Python: a = 5 is an integer (iii); a or b is a logical expression evaluated in a boolean context (iv); "Hello KEA" is text enclosed in quotes, hence a string (i); c = 5.9 contains a decimal point, hence a float (ii). This matches a-iii, b-iv, c-i, d-ii (Option 1).

> **Step-by-step:**
> 1. `a = 5`: 5 is a whole number without a decimal point → Integer (iii).
> 2. `a or b`: `or` is a logical operator representing Boolean logic → Boolean (iv).
> 3. `"Hello KEA"`: Characters enclosed in quotes represent a string literal → string (i).
> 4. `c = 5.9`: A number containing a decimal fractional part → float (ii).
> 5. Matching combination: a - iii, b - iv, c - i, d - ii, which corresponds to Option (1).

Q.37 STATISTICS & ANALYTICS

What is the syntax to assign the data type to a variable in Python?

(1) Name = "hello world"

(2) Height = 5.9

(3) Assertion = True

(4) ✓ All ofthe above

✓ Answer: Option (4)

SOLUTION

Explanation: In Python, data types are assigned automatically based on the value you assign to a variable. This is known as dynamic typing. Name - - "hello world" "hello world" is a string (text). • So Name becomes a string type variable. Height = 5.9 5 . 9 is a floating-point number. • So Height becomes a float. Assertion = True T rue is a Boolean value. • So Assertion becomes a bool. • All three assignments correctly assign a variable along with its appropriate data type based on the value. Hence, the correct answer is: (All of the above

> **Step-by-step:**
> In Python, data types are assigned automatically based on the value you assign to a variable. This is known as dynamic typing. Name - - "hello world" "hello world" is a string (text). • So Name becomes a string type variable. Height = 5.9 5 . 9 is a floating-point number. • So Height becomes a float. Assertion = True T rue is a Boolean value. • So Assertion becomes a bool. • All three assignments correctly assign a variable along with its appropriate data type based on the value. Hence, the correct answer is: (All of the above

Q.38 STATISTICS & ANALYTICS

Which of the following is a valid variable name in Python?

(1) 1Var

(2) ✓ Var_name

(3) Var-name

(4) Var name

✓ Answer: Option (2)

SOLUTION

Explanation: In Python, identifiers must begin with a letter or underscore, cannot begin with a number, and cannot contain hyphens or spaces. Thus, Var_name is valid.

> **Step-by-step:**
> Names: 1. Must start with a letter (A-Z or a-z) or an underscore 2. Cannot start with a digit 3. Can contain letters, digits, and underscores only 4. Cannot contain spaces or special characters like -, @, #, etc. 5. Cannot be a Python keyword (like if, while, etc.) Let's analyze the invalid options: a) 1 Var X Invalid: Starts with a number and contains a space c) Var - name X Invalid: Contains a minus - symbol, which is not allowed d) Var name X Invalid: Contains a space Valid Option: b) Var _ name ...Z Starts with a letter v/ Contains only letters and underscore v/ No spaces or invalid symbols

Q.39 STATISTICS & ANALYTICS

The output of the following Python program is:

```
n = 5
A = 0
while (n > 0):
    A = A + n
    n = n - 1
print(A)
```

(1) ✓ 15

(2) 5

(3) 55

(4) 0

✓ Answer: Option (1)

📝 SOLUTION

Explanation: The loop computes: A = 0 + 5 + 4 + 3 + 2 + 1 = 15. When n reaches 0, the condition (n > 0) becomes false and 15 is printed.

> **Step-by-step:**
> Weare adding n to A repeatedly while n > 0, and decreasing n by I each time. Initial Values: Loop Execution: 1. 2. 3. 4. 5. 5 9 = 12 14 4 3 2 1 5, then n - 9, then n - 12, then n - then n 14 , 15, then n 4 3 2 Now n is 0, so the loop stops.

Q.40 STATISTICS & ANALYTICS

Which of the following is the correct syntax of an if statement in Python?

(1) if x > 0 then:

(2) if (x > 10)

(3) ✓ if x > 10:

(4) if x > 10;

✓ Answer: Option (3)

📝 SOLUTION

Explanation: Python requires an 'if' keyword, an expression, and a trailing colon (:). Parentheses are optional and 'then' or ';' are invalid syntax.

> **Step-by-step:**
> b) if(x> 10) d) if x > IO; Syntax ofifStatement in Python Python uses a simple and clean syntax for conditional statements: if condition: Key points: • The if keyword is followed by a condition. The condition does not need parentheses (unlike languages like C or Java). It must end with a colon: 47

Section 3: IT Skills

Q41 – Q60

Q.41 IT SKILLS

Consider the following algorithms:

Step 1 : A = 5, B = 3

Step 2 : if A > B, then A = A - B

Step 3 : B = A + B

Step 4 : Output B

What is the output?

(1) 2

(2) ✓ 5

(3) 8

(4) 3

✓ Answer: Option (2)

SOLUTION

Explanation: Step 1: A = 5, B = 3. Step 2: 5 > 3 is true, so A = 5 - 3 = 2. Step 3: B = 2 + 3 = 5. Step 4: Output B gives 5.

> **Step-by-step:**
> Let's go step-by-step again clearly: Step 1: Step 2: 5 3 • Now: ISA > B? Then: A 3 5 2 A Step 3: Step 4: 2 3 2+3- • Output B 5

Q.42 IT SKILLS

Which of the following best defines an algorithm?

(1) A graphical representation

(2) A code snippet

(3) ✓ A step-by-step procedure to solve a problem

(4) A mobile application

✓ Answer: Option (3)

SOLUTION

Explanation: An algorithm is: A finite sequence of well-defined steps or instructions used to solve a problem or perform a task.

> **Step-by-step:**
> An algorithm is: A finite sequence of well-defined steps or instructions used to solve a problem or perform a task.

Q.43 IT SKILLS

Consider the following algorithm:

```
Start
if a <= b and a <= c
    print a
else if b <= a and b <= c
    print b
else
    print c
End.
```

If a = 10, b = 25, c = 33, what output will be printed for the above algorithm?

(1) 25

(2) ✓ 10

(3) 33

(4) None of the above

✓ Answer: Option (2)

📝 SOLUTION

Explanation: Checking the first condition: a <= b (10 <= 25, True) and a <= c (10 <= 33, True). Both are true, so it prints a = 10.

> **Step-by-step:**
> Algorithm Logic: We are given: 48 print a else if b < print b else print c End. a = 10 = a and b < = c ifa= 10, = 25, 33 What output will be printed for the above b) 10 d) None ofthe above b 25 33 Condition 1: if a <= b and a <= Substitute values: 10 <= 259 True 10 True c Since both conditions are true, this block is executed: So, 10 is printed and the rest of the conditions (el se if, else) are skipped.

Q.44 IT SKILLS

Consider the following algorithm:

```
if num > 0
    num = num + 10
    print num
else if num == 0
    num = num * 10
    print num
else
    print num.
```

What will be the output, if num = -5?

(1) 50

(2) -50

(3) ✓ -5

(4) 5

✓ Answer: Option (3)

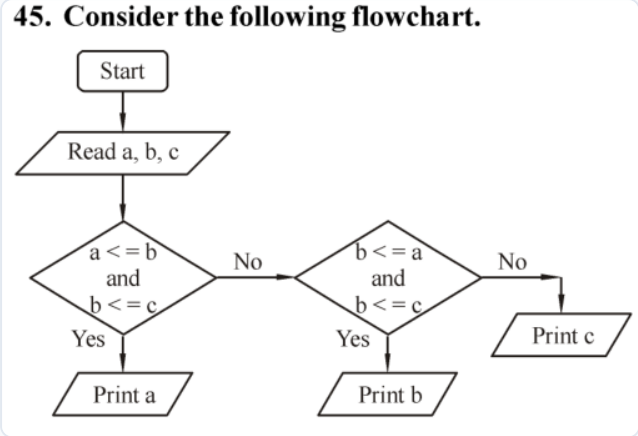
📝 SOLUTION

Explanation: Since num = -5, it is neither > 0 nor == 0. The else branch executes and prints the original value of num, which is -5.

> **Step-by-step:**
> Substitute num -5 into the algorithm: 1. 2. 3. If num > O: Is -5 > 0? No, this condition is false. The program moves to the else i f block. 0? No, O: Is -5 Else if num = this condition is also false. Since neither the if northe else if conditions were true, the program executes the else block. else: print num At this point, the value of num is still -5 because none of the num modification statements in the i f or else if blocks were executed. Therefore, the output will be -5

Q.45 IT SKILLS

Consider the following flowchart:



What will be the output if a = 10, b = 15, c = 5?

(1) 10

(2) 15

(3) error

(4) ✓ 5

✓ Answer: Option (4)

📝 SOLUTION

Explanation: Decision 1: (a <= b and b <= c) ⟹ (10 <= 15 and 15 <= 5) ⟹ True and False = False ('No' branch). Decision 2: (b <= a and b <= c) ⟹ (15 <= 10 and 15 <= 5) ⟹ False ('No' branch). Flow routes directly to 'Print c', outputting 5.

> **Step-by-step:**
> b) 15 Let's trace the flowchart with the given input values: 15, c - 5 Step 1: Start and Read a, b, c the values are read: a = 10 b 15, c = 5 Step 2: First Decision Block a b and b <= c Substitute the values: 10 <= 15 and 15 <= 5 10 <= 15 is True. 15 5is False. True and false evaluates to False. Since the condition is False ("No" path), the control flows to the next decision block. Step 3: Second Decision Blockb <= a and b <= c Substitute the values: 15 <= 10 and 15 <= 5 15 <= 10 is False. 15 5 is False. False and false evaluates to False. Since the condition is False ("No" path), the control flows tothe Print c step. Step 4: Print c the value ofc is 5. So, 5 is printed.

Q.46 IT SKILLS

Which of the following statements about web browsers is correct?

(1) Web browsers translate HTML, CSS and JavaScript into machine code before displaying a web page to the user

(2) Web browsers can only display contentwritten in HTML and CSS, but they cannot execute JavaScript

(3) ✓ Web browsers interpret HTML, CSS & JavaScript to render a webpage allowing dynamic content and interaction

(4) Web browsers use server-side programming

✓ Answer: Option (3)

SOLUTION

Explanation: • languages like PHP to render webpages directly HTML: Parsed to understand the structure and content of the page. CSS: Interpreted to apply styling (colors, fonts, layout, etc.) to the HTML elements. JavaScript: Executed to provide dynamic behavior, interactivity (e.g., button clicks, form validation, animations), and fetch data. The combination ofthese three is how browsers render rich, interactive web pages.

> **Step-by-step:**
> • languages like PHP to render webpages directly HTML: Parsed to understand the structure and content of the page. CSS: Interpreted to apply styling (colors, fonts, layout, etc.) to the HTML elements. JavaScript: Executed to provide dynamic behavior, interactivity (e.g., button clicks, form validation, animations), and fetch data. The combination ofthese three is how browsers render rich, interactive web pages.

Q.47 IT SKILLS

Consider the following HTML code snippet. <select name = ' 'cars" id = '
49 What does the <select> element do in this code?

(1) It creates a text input field for users to type in

(2) ✓ It creates a dropdown list from which the user can select a car brand

(3) It allows users to choose multiple options from a list ofcars

(4) It creates a button that users can click to select a car brand

✓ Answer: Option (2)

SOLUTION

Explanation: AN HTML code snippet. It's a element, which creates a dropdown list (or a selection list) on a web page. It creates a dropdown list from which the user can select a car brand. By default, without the multiple attribute, a element creates a single-selection dropdown list. The options provided are "Volvo", "XUV", and "Tata", which are car brands.

> **Step-by-step:**
> AN HTML code snippet. It's a element, which creates a dropdown list (or a selection list) on a web page. It creates a dropdown list from which the user can select a car brand. By default, without the multiple attribute, a element creates a single-selection dropdown list. The options provided are "Volvo", "XUV", and "Tata", which are car brands.

Q.48 IT SKILLS

Which CSS property is used to set the background color of a webpage?

(1) ✓ background-color

(2) color

(3) bg-color

(4) background-image

✓ Answer: Option (1)

📝 SOLUTION

Explanation: CSS property is used to set the background color ofa webpage. Let's look at the options: background-color: This is the correct CSS property used to define the background color of an element, including the <body> element (which represents the entire visible page). Example: body { background-color : lightblue; }

> **Step-by-step:**
> CSS property is used to set the background color ofa webpage. Let's look at the options: background-color: This is the correct CSS property used to define the background color of an element, including the <body> element (which represents the entire visible page). Example: body { background-color : lightblue; }

Q.49 IT SKILLS

Which CSS selector is used to select an HTML element with a specific id?

(1) .id

(2) ✓ #id

(3) id

(4) [id]

✓ Answer: Option (2)

SOLUTION

Explanation: In CSS, the hash symbol (#) followed by the id name is used to select an HTML element by its specific ID attribute (e.g., #header).

> **Step-by-step:**
> CSS selector for selecting an HTML element with a specific id attribute. The hash symbol (#) is used as the ID selector. For example, ifyou have
> , you would select it with #header. HTML element with a specific ID is b) #id.

Q.50 IT SKILLS

Which event is triggered when a user clicks on an HTML element in JavaScript?

(1) onload

(2) ✓ onclick

(3) onhover

(4) onchange

✓ Answer: Option (2)

SOLUTION

Explanation: The onclick event handler is triggered whenever an element is clicked by the user.

> **Step-by-step:**
> JavaScript to run code when a button, link, or other clickable element is clicked

Q.51 IT SKILLS

Which of the following factors can help improve a website's SEO ranking?

(1) Using JavaScript for content rendering

(2) High Keyword density in the content

(3) ✓ Using relevant and high-quality backlinks

(4) Including as many images as possible on the homepage

✓ Answer: Option (3)

📝 SOLUTION

Explanation: Impact on SEO: This is a major positive factor for SEO. Backlinks (links from other websites to yours) are often seen as "votes of confidence" or endorsements. Backlinks are links from other websites that point to your site. When reputable and relevant websites link to your content, it tells search engines that your site is trustworthy and authoritative.

> **Step-by-step:**
> Impact on SEO: This is a major positive factor for SEO. Backlinks (links from other websites to yours) are often seen as "votes of confidence" or endorsements. Backlinks are links from other websites that point to your site. When reputable and relevant websites link to your content, it tells search engines that your site is trustworthy and authoritative.

Q.52 IT SKILLS

Which of the following are the correct description with respect to structured organisation?

(a) Operations → produces goods or services, ensures quality and efficiency.

(b) Marketing → Identifies customer needs, promotes or services.

(c) H.R. (Human Resources) → Manages budgeting, accounting and financial planning.

(1) ✓ (a), (b)

(2) (a), (b), (c)

(3) (a) only

(4) (b) only

✓ Answer: Option (1)

SOLUTION

Explanation: Human Resources manages recruitment, staffing, and employee development; budgeting and accounting are the function of Finance. Therefore, statements (a) and (b) are correct.

Step-by-step:

d) (b) only HR does not handle budgeting or financial planning that is handled by Finance.Operations and Marketing statements are correctly matched to their roles.

Q.53 IT SKILLS

Which of the following statements best describes the purpose of ERP tools in an organisation.

(1) ERP tools are designed to manage customer relationships and marketing strategies

(2) ✓ **ERP tools are used to integrate and automate key business processes across department as finance, HR, inventory and supply chain**

(3) ERP tools are primarily focused in managingemail communication between employees an organization

(4) ERP tools are closely used for managing the IT infrastructure and hardware resources organisation

✓ **Answer: Option (2)**

📝 **SOLUTION**

Explanation: ERP (Enterprise Resource Planning) systems unifr operations across departments. Their goal is seamless coordination and improved productivity.

> **Step-by-step:**
> ERP (Enterprise Resource Planning) systems unifr operations across departments. Their goal is seamless coordination and improved productivity.

Q.54 IT SKILLS

In cloud computing, data is stored in

(1) Local folders

(2) Physical notebooks

(3) ✓ Remote servers accessed via the internet

(4) USB drives

✓ Answer: Option (3)

SOLUTION

Explanation: Cloud computing stores data on internet-connected to servers rather than local devices.This enables global access and scalability.

Step-by-step:
Cloud computing stores data on internet-connected to servers rather than local devices.This enables global access and scalability.

Q.55 IT SKILLS

Which of the following is an example of IoT in smart homes?

(1) A GPS system in a car for navigation

(2) ✓ A thermostat that adjusts temperature based on occupancy and preferences DCET - 2025 Question Paper & Solutions

(3) An e-commerce website for shopping

(4) A manual doorbell

✓ Answer: Option (2)

SOLUTION

Explanation: Sman thermostats use sensors and connectivity, a core IoT feature. They automate home climate control for efficiency and comfort.

Step-by-step:
Sman thermostats use sensors and connectivity, a core IoT feature. They automate home climate control for efficiency and comfort.

Q.56 IT SKILLS

Which of the following is an example of Software-as-a-Service (SaaS)?

(1) Microsoft Azure

(2) ✓ Google Drive

(3) Amazon Web Services (AWS) EC2

(4) Google Kubernetes Engine (GKE)

✓ Answer: Option (2)

SOLUTION

Explanation: Software-as-a-Service (SaaS) delivers complete software applications over the internet on demand without local installation. Google Drive is a classic SaaS application providing cloud storage and web-based file editing suites (Google Docs, Sheets). Microsoft Azure encompasses cloud services including SaaS applications (e.g., Office 365, Azure DevOps) alongside IaaS/PaaS. AWS EC2 is IaaS, and GKE is PaaS/CaaS. In the official key, KEA awarded marks for both Option (a) and Option (b).

Step-by-step:

1. Define Cloud Service Models:
- IaaS (Infrastructure as a Service): Provides raw compute, storage, and networking (e.g., AWS EC2).
- PaaS / CaaS (Platform / Container as a Service): Provides environment to run applications without managing infrastructure (e.g., GKE).
- SaaS (Software as a Service): Provides ready-to-use software applications hosted centrally over the internet.
2. Evaluate Options:
- Google Drive: A complete, end-user cloud application for file storage, sharing, and online document management → classic SaaS.
- Microsoft Azure: Though primarily known as a cloud infrastructure/platform provider (IaaS/PaaS), Microsoft also offers managed SaaS solutions under the Azure umbrella.
- AWS EC2: Virtual servers → IaaS.
- GKE: Managed Kubernetes → PaaS/CaaS.
3. Official Key Status: KEA considered both Option (1) and Option (2) as valid correct choices.

Q.57 IT SKILLS

Which of the following is a platform for developing IoT applications?

(1) Google Docs

(2) ✓ Arduino

(3) Microsoft

(4) WinZip

✓ Answer: Option (2)

SOLUTION

Explanation: Arduino is an open-source electronics platform based on easy-to-use hardware microcontrollers and software IDE, widely utilized in IoT development.

Step-by-step:
Ravi often uses incognito mode while browsing, believing it protects him from all types of tracking and threats. He does not use antivirus softwa re or phishing protection. Which of the following statement about Ravi's assumption is correct? a) Incognito mode provides full malware protection b) Incognito mode hides activity from the device and protects against all trackers c) Incognito mode only prevents local history tracking not online threats d) Incognito mode encrypts his traffic and logic credentials i) ii) iii) iv) a) b) c) 51 Ans : (c) Incognito mode only stops the browser from saving history, cookies, and site data.It does not protect from malware, phishing, or external tracking.

Q.58 IT SKILLS

Ravi often uses incognito mode while browsing, believing it protects him from all types of tracking and threats. He does not use antivirus software or phishing protection. Which of the following statement about Ravi's assumption is correct?

(1) Incognito mode provides full malware protection

(2) Incognito mode hides activity from the device and protects against all trackers

(3) ✓ Incognito mode only prevents local history tracking not online threats

(4) Incognito mode encrypts his traffic and logic credentials

✓ Answer: Option (3)

📝 SOLUTION

Explanation: Incognito/private browsing mode only stops the local browser from storing browsing history, cookies, and cached form data. It does not provide protection against malware, network sniffers, or phishing attacks.

Step-by-step:

1. Understand Incognito / Private Browsing:
- Incognito mode only prevents the local browser from storing browsing history, cookies, site data, and form autofill data after the session is closed.
2. Evaluate Ravi's assumptions:
- Incognito does NOT hide your IP address or online activities from websites you visit, your internet service provider (ISP), or school/employer networks.
- It does NOT scan for malware, viruses, keyloggers, or trojans.
- It does NOT protect against phishing websites or credential theft.
3. Conclusion: Ravi's belief is incorrect; incognito mode only prevents local history tracking on his device, not online threats. This matches Option (3).

Q.59 IT SKILLS

Rita is using a public computer in a cyber cafe to check her email. After reading her messages, she closes the browser without logging out of her account. What cyber safety mistake did Rita make?

(1) She read personal emails in public

(2) She used a public computer

(3) ✓ She didn't logout ofher account

(4) She didn't clear the browsing history

✓ Answer: Option (3)

SOLUTION

Explanation: Not logging out on public/shared computers can let others access your private data.It poses a high risk of unauthorized access to personal accounts.

Step-by-step:

Not logging out on public/shared computers can let others access your private data.It poses a high risk of unauthorized access to personal accounts.

Q.60 IT SKILLS

To safeguard against cyber attacks that steal sensitive information or install malicious software, which browser setting should be enabled?

(1) Enable automatic updates

(2) ✓ Turn on phishing and malware protection

(3) Disable phishing and malware protection

(4) Enable cookies

✓ Answer: Option (2)

SOLUTION

Explanation: This setting warns users about harmful websites and malicious downloads. It reduces the risk of identity theft and malware infection.

Step-by-step:

This setting warns users about harmful websites and malicious downloads. It reduces the risk of identity theft and malware infection.

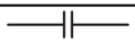
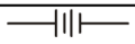
Section 4: Fundamentals of Electrical & Electronics Engineering

Q61 – Q80

Q.61 FEEE

Match the following with symbols:

61. Match the following with symbols

i) Resistance	a) 
ii) Transformer	b) 
iii) Capacitor	c) 
iv) Battery	d) 

a) i - a, ii - c, iii - d, iv - b
b) i - d, ii - b, iii - c, iv - a
c) i - b, ii - c, iii - d, iv - a

(1) i - a, ii - c, iii - d, iv - b

(2) i - d, ii - b, iii - c, iv - a

(3) i - b, ii - c, iii - d, iv - a

(4) ✓ i - d, ii - c, iii - a, iv - b

✓ Answer: Option (4)

SOLUTION

Explanation: i) Resistance matches symbol d (zigzag resistor); ii) Transformer matches symbol c (magnetic coupled coils); iii) Capacitor matches symbol a (parallel plates); iv) Battery matches symbol b (long/short cell plates). Thus, i-d, ii-c, iii-a, iv-b.

Step-by-step:

1. Identify the schematic symbols shown in the diagram:
- Symbol (a): Two parallel straight lines separated by a gap represents a Capacitor (-||-).
- Symbol (b): Alternating long and short parallel lines represents a DC Voltage Source / Battery (-||||-).
- Symbol (c): Two parallel helical coils with core lines represents a Transformer.
- Symbol (d): A zigzag line represents a fixed Resistor.
2. Match List I with List II:
- i) Resistance → Symbol (d)
- ii) Transformer → Symbol (c)
- iii) Capacitor → Symbol (a)
- iv) Battery → Symbol (b)
3. Matching sequence: i - d, ii - c, iii - a, iv - b, which is Option (4).

Q.62 FEEE

Earthing plate is made up of _____

(1) Bakelite

(2) Aluminum

(3) ✓ Copper

(4) Plastic

✓ Answer: Option (3)

SOLUTION

Explanation: Copper has high electrical conductivity and excellent resistance to soil corrosion, making it the preferred material for earthing plates.

Step-by-step:

Explanation: Copper is a good conductor of electricity and corrosion-resistant, making it ideal for use in earthing systems to provide a low- resistance path to the ground.

Q.63 FEEE

Match the following electrical quantities with their SI units:

List - I: (i) Current, (ii) Power, (iii) Energy, (iv) Frequency

List - II: (a) Watts, (b) Hertz, (c) kWh, (d) Ampere

Codes:

(1) i - d, ii - b, iii - c, iv - a

(2) i - a, ii - c, iii - b, iv - d

(3) i - c, ii - b, iii - a, iv - d

(4) ✓ i - d, ii - a, iii - c, iv - b

✓ Answer: Option (4)

SOLUTION

Explanation: Current is measured in Amperes (i-d). Power is measured in Watts (ii-a). Energy is measured in kilowatt-hours (kWh) (iii-c). Frequency is measured in Hertz (iv-b).

Step-by-step:

1. Current → Ampere (d)
2. Power → Watts (a)
3. Energy → kWh (c)
4. Frequency → Hertz (b)

Matching sequence: i-d, ii-a, iii-c, iv-b.

Q.64 FEEE

If resistance of value 12Ω and 6Ω are connected in parallel, the equivalent resistance of the combination is

(1) 18 Ω

(2) 06 Ω

(3) ✓ 04 Ω

(4) 02 Ω

✓ Answer: Option (3)

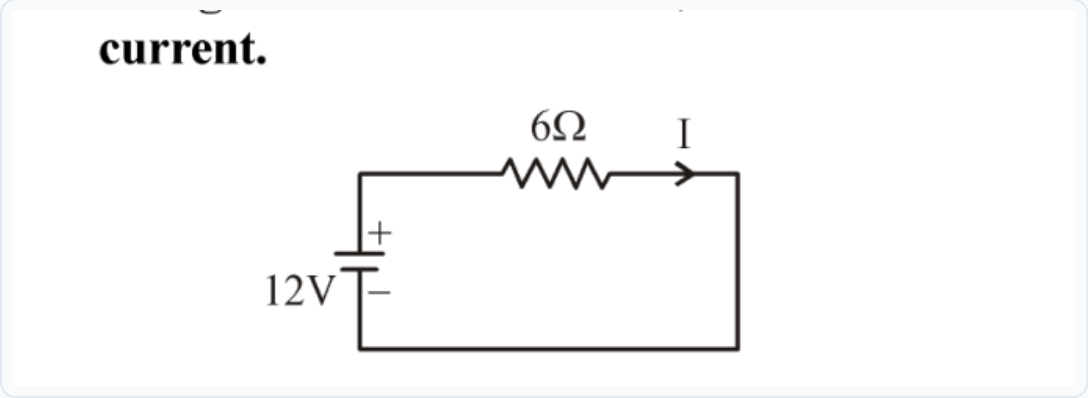
SOLUTION

Explanation: For parallel resistors: 1/Req = 1/12 + 1/6 = 1/12 + 2/12 = 3/12 = 1/4 ⟹ Req = 4 Ω.

> **Step-by-step:**
> For parallel resistors: 1 1 1 1 R RI R2 12 6 R = 40 12 3 12 1 4

Q.65 FEEE

In the given electrical circuit, find the value of current I (given $V = 12\ \text{V}$, $R = 6\ \Omega$):



(1) 72 A

(2) 0.5 A

(3) ✓ 2 A

(4) 12 A

✓ Answer: Option (3)

SOLUTION

Explanation: Using Ohm's law: $I = \frac{V}{R} = \frac{12}{6} = 2\ \text{A}$.

Step-by-step:

1. Given: Voltage $V = 12\ \text{V}$ and Resistance $R = 6\ \Omega$.
2. Apply Ohm's Law: $I = \frac{V}{R} = \frac{12}{6} = 2\ \text{Amperes}$.

Q.66 FEEE

The frequency of signal with a period of 0.02 Sec is

(1) 100 Hz

(2) 200 Hz

(3) ✓ 50 Hz

(4) 150 Hz

✓ Answer: Option (3)

SOLUTION

Explanation: Frequency f = 1 / T = 1 / 0.02 = 50 Hz.

Step-by-step:

Explanation: T 1 = 50 Hz 0.02

Q.67 FEEE

In a pure resistive circuit, which one of the following statement is true?

(1) ✓ Both current and voltage are in phase

(2) Current leads the voltage

(3) Voltage lags the current

(4) Both current and voltage are out of phase

✓ Answer: Option (1)

SOLUTION

Explanation: Explanation: In a pure resistive AC circuit, current and voltage reach their peak and zero values simultaneously. So, they are in phase.

Step-by-step:

Explanation: In a pure resistive AC circuit, current and voltage reach their peak and zero values simultaneously. So, they are in phase.

Q.68 FEEE

HRC fuses can be used upto a maximum current of

(1) 250 mA

(2) 500 mA

(3) IA

(4) ✓ 1250A DCET - 2025 Question Paper & Solutions

✓ Answer: Option (4)

SOLUTION

Explanation: High Rupturing Capacity (HRC) fuses are designed to handle very high fault currents, typically up to 1250 A or more, depending on the rating.

Step-by-step:
High Rupturing Capacity (HRC) fuses are designed to handle very high fault currents, typically up to 1250 A or more, depending on the rating.

Q.69 FEEE

To control single lamp from two different places, the control switch used is _____ switch.

(1) Double pole

(2) ✓ Two way

(3) Single pole

(4) One way

✓ Answer: Option (2)

SOLUTION

Explanation: Two-way switches are used in staircase and hallway wiring to control a single light from two different locations.

Step-by-step:
Explanation: Two-way switches allow a single lamp or device to be controlled from two different locations, such as at the top and bottom of a staircase.

Q.70 FEEE

A fuse is always connected _____ to the circuit.

(1) Parallel

(2) Across the load

(3) ✓ Series

(4) Across the supply

✓ Answer: Option (3)

SOLUTION

Explanation: A fuse is always connected in series with the live phase conductor so that excessive current blows the fuse wire and opens the entire circuit.

Step-by-step:
A fuse is connected in series so that if excessive current flows, the fuse will blow and break the circuit to prevent damage.

Q.71 FEEE

In a Transformer, _____ remains constant

(1) Voltage

(2) ✓ Frequency

(3) Current

(4) Both current and voltage

✓ Answer: Option (2)

SOLUTION

Explanation: Transformers can step up or step down voltage and current, but the operating electrical frequency remains constant.

Step-by-step:
remains constant b) Frequency d) Both current and voltage In both step-up and step-down transformers, the frequency of the input and output remains the same (e.g., 50 Hz in India).

Q.72 FEEE

The combination of two or more cells is _____

(1) ✓ Battery

(2) load cell

(3) Primary cell

(4) Generator

✓ Answer: Option (1)

SOLUTION

Explanation: A battery consists of two or more electrochemical cells connected in series or parallel.

Step-by-step:
A battery is formed by connecting two or more cells in series or parallel to provide a combined voltage or capacity.

Q.73 FEEE

Match the following items with their applications or specifications:
List - I: (i) Ampere hour, (ii) kVA, (iii) Star delta, (iv) Fan
List - II: (a) Lead acid battery, (b) Transformer, (c) 3-phase induction motor, (d) 1-phase induction motor
Codes:

(1) ✓ i - a, ii - b, iii - c, iv - d

(2) i - c, ii - a, iii - d, iv - b

(3) i - b, ii - c, iii - d, iv - a

(4) i - b, ii - a, iii - c, iv - d

✓ Answer: Option (1)

SOLUTION

Explanation: Ampere-hour is the storage capacity rating of a lead-acid battery. kVA is the apparent power rating of transformers. Star-delta starter is used for 3-phase induction motors. Household fans use 1-phase induction motors.

Step-by-step:
1. Ampere hour → Lead-acid battery (a)
2. kVA → Transformer rating (b)
3. Star-delta → 3-phase induction motor starting (c)
4. Fan → 1-phase induction motor (d)

Matching sequence: i-a, ii-b, iii-c, iv-d.

Q.74 FEEE

In a transformer, the winding to which the load connected is called _____ winding

(1) Primary

(2) Axillary

(3) ✓ Secondary

(4) Concentric

✓ Answer: Option (3)

SOLUTION

Explanation: The winding connected to the source of power is called the primary winding, and the winding connected to the electrical load is called the secondary winding.

Step-by-step:
winding b) Axillary d) Concentric In a transformer, the secondary winding is connected to the load and delivers the output voltage.

Q.75 FEEE

Which of the following statements is FALSE with respect to transformer?

(1) Converts high voltage to low voltage

(2) ✓ Converts high frequency to low frequency

(3) Converts low voltage to high voltage

(4) Transfers energy at constant frequency

✓ Answer: Option (2)

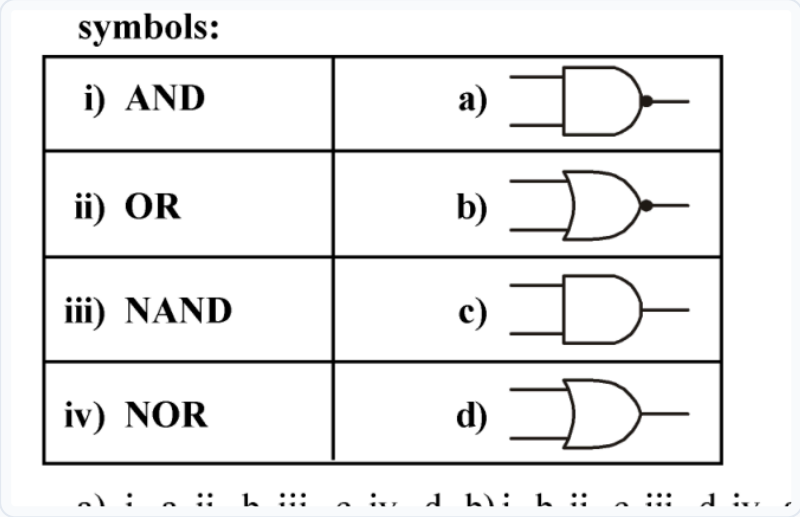
SOLUTION

Explanation: A transformer does not change the frequency of the input signal. It works on AC of constant frequency (e.g., 50 Hz). It can step up or step down voltage, but the frequency remains unchanged. So, option (2) is false. 54

Step-by-step:
A transformer does not change the frequency of the input signal. It works on AC of constant frequency (e.g., 50 Hz). It can step up or step down voltage, but the frequency remains unchanged. So, option (2) is false. 54

Q.76 FEEE

Match the following logic gates with their operations and symbols:



List - I: (i) AND, (ii) OR, (iii) NAND, (iv) NOR

Codes:

(1) i - a, ii - b, iii - c, iv - d

(2) i - b, ii - c, iii - d, iv - a

(3) i - d, ii - a, iii - c, iv - b

(4) ✓ i - d, ii - c, iii - a, iv - b

✓ Answer: Option (4)

SOLUTION

Explanation: From standard logic gate symbols: AND corresponds to diagram (d), OR to diagram (c), NAND to diagram (a), and NOR to diagram (b).

Step-by-step:

1. (i) AND gate → symbol (d)
2. (ii) OR gate → symbol (c)
3. (iii) NAND gate → symbol (a)
4. (iv) NOR gate → symbol (b)

Correct sequence: i-d, ii-c, iii-a, iv-b.

Q.77 FEEE

Which of the following is a common type of sensor used for measuring temperature?

(1) Proximity sensor

(2) Pressure sensor

(3) Flow sensor

(4) ✓ Thermocouple

✓ Answer: Option (4)

SOLUTION

Explanation: A thermocouple is a widely used temperature sensor that converts thermal energy into electrical voltage. It's durable, simple, and accurate overwide temperature ranges

Step-by-step:
A thermocouple is a widely used temperature sensor that converts thermal energy into electrical voltage. It's durable, simple, and accurate overwide temperature ranges

Q.78 FEEE

What does the fourth band in a 4-band resistor indicate?

(1) Resistance

(2) Multiplier

(3) Power rating

(4) ✓ Tolerance

✓ Answer: Option (4)

SOLUTION

Explanation: In standard 4-band color coding: 1st band = first significant digit, 2nd band = second digit, 3rd band = decimal multiplier, 4th band = tolerance.

Step-by-step:
In a 4-band resistor: 1 st & 2nd bands significant digits 3rd band multiplier 4th band = tolerance

Q.79 FEEE

Which of the following is an example of Insulator?

(1) Aluminium

(2) ✓ Rubber

(3) Iron

(4) Silicon

✓ Answer: Option (2)

SOLUTION

Explanation: Rubber is a good electrical insulator; it resists the flow of electric current. Aluminium and Iron are conductors. Silicon is a semiconductor.

Step-by-step:
Rubber is a good electrical insulator; it resists the flow of electric current. Aluminium and Iron are conductors. Silicon is a semiconductor.

Q.80 FEEE

Diode is made up of _____ material.

(1) Conducting

(2) ✓ Semiconducting

(3) Insulating

(4) Electronic

✓ Answer: Option (2)

SOLUTION

Explanation: Diodes are solid-state p-n junction devices fabricated from semiconductor materials such as Silicon or Germanium.

Step-by-step:
It allows current to flow in only one direction due to the p-njunction.

Section 5: Project Management Skills

Q81 – Q100

Q.81 PROJECT MANAGEMENT SKILLS

Complete the following analogy.

Project : Deliverables :: Operation : _____

(1) Deadlines

(2) Efficiency

(3) ✓ Repetition

(4) Conclusion

✓ Answer: Option (3)

📝 SOLUTION

Explanation: A project is a temporary endeavor resulting in unique deliverables; operations are ongoing and characterized by continuous repetition.

> **Step-by-step:**
> Project are temporary endevors with specific goals and deliverables operations are permanent process with repetative outcome.

Q.82 PROJECT MANAGEMENT SKILLS

Multiple objectives are achieved again and again in

(1) ✓ Operation

(2) Project

(3) Business

(4) Sales

✓ Answer: Option (1)

SOLUTION

Explanation: Operation are considered as repetative process hence multiples objectives are achieved again & again.

Step-by-step:
Operation are considered as repetative process hence multiples objectives are achieved again & again.

Q.83 PROJECT MANAGEMENT SKILLS

Which of the following are the examples of consultancy firms?

(1) Accenture

(2) ✓ TCS

(3) Tata Motors

(4) Birla Technical Services Codes: a)

✓ Answer: Option (2)

SOLUTION

Explanation: A Accenture, TCS and Birla Technical services are works as consultancy firms where as Tata motors are automotive manufacturing.

Step-by-step:
A Accenture, TCS and Birla Technical services are works as consultancy firms where as Tata motors are automotive manufacturing.

Q.84 PROJECT MANAGEMENT SKILLS

Which of the following is NOT an obstacle in project management?

(1) Undefined project scope

(2) Poor communication among team members

(3) ✓ Clear project objectives and goals

(4) Limited resources

✓ Answer: Option (3)

SOLUTION

Explanation: Undefined scope, poor communication, and limited resources are major project management obstacles. Clear project objectives and goals are critical success factors and advantages, not obstacles.

Step-by-step:

1. Project obstacles are barriers preventing project success.
2. Undefined scope, poor communication, and resource constraints hinder delivery.
3. Having clear objectives and goals guides the team effectively and is therefore NOT an obstacle.

Q.85 PROJECT MANAGEMENT SKILLS

Complete the following analogy Project procedure Manual : Provides standard operating procedures : : Project diary :

(1) ✓ Records daily events and issues

(2) Provides step-by-step instructions

(3) Outlines rules and processes

(4) Used only during project closure

✓ Answer: Option (1)

SOLUTION

Explanation: Project diary is a document used to record daily events activities and issues throughout project life cycle.

Step-by-step:

Project diary is a document used to record daily events activities and issues throughout project life cycle.

Q.86 PROJECT MANAGEMENT SKILLS

Match the project team roles with their primary functions:

Team Role	Primary Function
i) Initial project team	a) Guides the project with advice and support
ii) Core project team	b) Works on the project every day, making decisions and doing tasks
iii) Project stakeholders	c) People interested in the project outcomes like clients or sponsors
iv) Project advisors	d) Helps to start the project and plan the initial steps

(1) ✓ i - d, ii - b, iii - c, iv - a

(2) i - a, ii - b, iii - c, iv - d

(3) i - b, ii - a, iii - c, iv - d

(4) i - d, ii - c, iii - b, iv - a

✓ Answer: Option (1)

SOLUTION

Explanation: Initial project team assists in starting and planning the early phases of the project (i - d). The core project team performs day-to-day work and decision-making (ii - b). Stakeholders are individuals or organizations with an interest in the project outcomes, such as clients or sponsors (iii - c). Advisors offer high-level expertise, guidance, and strategic support (iv - a). Hence, the match is i-d, ii-b, iii-c, iv-a.

Step-by-step:

1. Define each project team role:

- Initial project team: Formed during the project initiation phase to conceptualize, define scope, and plan initial steps → matches (d).
- Core project team: Dedicated members directly responsible for executing daily work packages, delivering tasks, and making operational decisions → matches (b).
- Project stakeholders: Any individual or group impacted by or having an interest/stake in project success (clients, users, sponsors) → matches (c).
- Project advisors: Subject matter experts and mentors providing consultative advice, governance, and specialized support → matches (a).

2. Combining the pairs yields: i - d, ii - b, iii - c, iv - a, which corresponds to Option (1).

Q.87 PROJECT MANAGEMENT SKILLS

What does Work Breakdown Structure (WBS) do to help a Project Manager? 55

(1) Track the project's financial performance

(2) ✓ Breakdown the project into smaller, manageable tasks

(3) Determine project's risk level

(4) Allocate resources to team members

✓ Answer: Option (2)

SOLUTION

Explanation: WBS - Work Breakdown Structure is a breakdown of work from complex to smaller, manageable tasks.

Step-by-step:
WBS - Work Breakdown Structure is a breakdown of work from complex to smaller, manageable tasks.

Q.88 PROJECT MANAGEMENT SKILLS

Which of the following is NOT a subpart of Project Execution Plan (PEP)?

(1) Organizational plan

(2) Work packing plan

(3) ✓ Staffing plan

(4) Contracting plan

✓ Answer: Option (3)

SOLUTION

Explanation: A standard PEP includes the work breakdown/packaging plan, contracting strategy, and organizational plan. Staffing plan is part of human resources rather than the execution plan subpart.

Step-by-step:
d) Contracting plan Staffing plan is not included in PEP.

Q.89 PROJECT MANAGEMENT SKILLS

High demand, high selling price, low variable cost are the examples of

(1) Normal Scenario

(2) Worst Scenario

(3) ✓ Best Scenario

(4) Abnormal Scenario

✓ Answer: Option (3)

SOLUTION

Explanation: High demand, high selling price, low variable cost are considered as best scenario.

Step-by-step:

High demand, high selling price, low variable cost are considered as best scenario.

Q.90 PROJECT MANAGEMENT SKILLS

In _____ phase, project definition and problem identification are defined

(1) Planning

(2) Execution

(3) ✓ Initiation

(4) Closure

✓ Answer: Option (3)

SOLUTION

Explanation: Project Initiation is the first phase of the project management lifecycle, during which the core problem is identified, objectives are defined, and the project charter is formulated.

Step-by-step:

Initiation is the first phase of project life cycle where, project is defined and problems are identified.

Q.91 PROJECT MANAGEMENT SKILLS

Risk arising due to fluctuation of interest rate OR mistakes in accounting is known as _____ risks.

(1) Policy

(2) Technical

(3) Marketing

(4) ✓ Financial

✓ Answer: Option (4)

SOLUTION

Explanation: Risks tied to monetary variables such as currency exchange rates, interest rate fluctuations, or fiscal reporting errors are categorized as financial risks.

Step-by-step:
Financial risks arise due to fluctuation of interest rate or mistakes in accounting. 56

Q.92 PROJECT MANAGEMENT SKILLS

Assertion (A): Time overrun can lead to cost overrun in a project.
Reason (R): More time often means more money spent on labour and resources.

(1) ✓ Both (A) and (R) are true and (R) is the correct explanation of (A)

(2) Both (A) and (R) are true, but (R) is not the correct explanation of (A)

(3) (A) is true, but (R) is false

(4) (A) is false, but (R) is true

✓ Answer: Option (1)

SOLUTION

Explanation: When a project extends beyond its planned schedule, overheads, labor costs, equipment rentals, and material holding costs increase proportionally. Hence, time overrun directly causes cost overrun, and (R) correctly explains (A).

Step-by-step:
1. Assertion (A) is true: Delays in project completion invariably inflate the total project cost.
2. Reason (R) is true: Extending duration requires ongoing expenditure on manpower, site supervision, and rented equipment.
3. (R) provides the exact causal reason for (A).

Q.93 PROJECT MANAGEMENT SKILLS

The full form of CPM in project management is

(1) Critical Process Management

(2) ✓ Critical Path Method

(3) Continuous Project Monitoring

(4) Cost Planning Model

✓ Answer: Option (2)

SOLUTION

Explanation: CPM - Critical Path Method

Step-by-step:

CPM - Critical Path Method

Q.94 PROJECT MANAGEMENT SKILLS

Which ofthe following is NOT a tool of project planning, scheduling and monitoring?

(1) Gantt Chart

(2) ✓ Flow chart

(3) PERT Chan

(4) Milestone Chan

✓ Answer: Option (2)

SOLUTION

Explanation: Flow chart is not a tool used for project planning scheduling and monitoring.

Step-by-step:

Flow chart is not a tool used for project planning scheduling and monitoring.

Q.95 PROJECT MANAGEMENT SKILLS

Project Evaluation can be done

(1) At the end ofthe project only

(2) ✓ Throughoutthe project lifecycle

(3) Only during the planning phase

(4) At the start ofthe project only

✓ Answer: Option (2)

SOLUTION

Explanation: Proj ect evaluation is done throughout the project life cycle.

Step-by-step:

Proj ect evaluation is done throughout the project life cycle.

Q.96 PROJECT MANAGEMENT SKILLS

Identify the incorrect statement regarding the functions of project planning.

(1) Defines project goals and objectives * * All the best for y Guaranteed Top Ranks

(2) ✓ Allocates resources without considering constraints

(3) Establishes a project timeline andmilestones

(4) Identifies potential-risks and mitigates them

✓ Answer: Option (2)

SOLUTION

Explanation: Project planning allocate resources by considering constraints.

Step-by-step:

Project planning allocate resources by considering constraints.

Q.97 PROJECT MANAGEMENT SKILLS

Which of the following is NOT a key component of 'SMART' goal?

(1) Time-Bound

(2) ✓ Random

(3) Achievable

(4) Specific

✓ Answer: Option (2)

SOLUTION

Explanation: SMART is an acronym for Specific, Measurable, Achievable, Realistic, and Time-bound. 'Random' is not a component of SMART goals.

Step-by-step:

Specific, Measurable, Achievable, Realistic, Timely / Time-Bound.

Q.98 PROJECT MANAGEMENT SKILLS

The process of correcting and rectifying the errors in the project is

(1) ProjectAudit

(2) Project Monitoring

(3) Project Evaluation

(4) ✓ Project Review

✓ Answer: Option (4)

SOLUTION

Explanation: Project review is defined as process ofcorrecting and rectifying the errors in the project.

Step-by-step:

Project review is defined as process ofcorrecting and rectifying the errors in the project.

Q.99 PROJECT MANAGEMENT SKILLS

The time estimation for a given project are as follows: Optimistic Time = 4 days, Pessimistic time = 8 days, Most likely time = 6 days. The expected time to complete is

(1) 7 days

(2) ✓ 6 days

(3) 5 days

(4) 4 days

✓ Answer: Option (2)

SOLUTION

Explanation: Using PERT (Program Evaluation and Review Technique), expected duration is calculated as $T_e = \frac{T_o+4T_m+T_p}{6} = \frac{4+4(6)+8}{6} = \frac{36}{6} = 6$ days.

Step-by-step:

1. Identify given time estimates:
- Optimistic time (t_o) = 4 days
- Most likely time (t_m) = 6 days
- Pessimistic time (t_p) = 8 days

2. Apply the PERT Beta distribution formula for Expected Time (T_e):

$$T_e = \frac{t_o + 4t_m + t_p}{6}$$

3. Substitute the values:

$$T_e = \frac{4 + 4(6) + 8}{6} = \frac{4 + 24 + 8}{6} = \frac{36}{6} = 6 \text{ days}$$

4. Therefore, the expected time to complete the project is 6 days (Option 2).

Q.100 PROJECT MANAGEMENT SKILLS

Watching a 3D movie is an example of:

(1) Augmented Reality

(2) ✓ Virtual Reality

(3) Both Augmented and Virtual Reality

(4) Cloud Technology

✓ Answer: Option (2)

📝 SOLUTION

Explanation: 3D movies create stereoscopic illusion immersing the user into a virtual simulated environment, which is an early foundational application of Virtual Reality.

Step-by-step:

1. 3D projection immerses the viewer visually into a rendered artificial world.
2. This aligns conceptually with Virtual Reality.

Answer Key

Quick Reference – All 100 Questions

Q.No	Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans
1	(1)	21	(3)	41	(2)	61	(4)	81	(3)
2	(3)	22	(3)	42	(3)	62	(3)	82	(1)
3	(2)	23	(1)	43	(2)	63	(4)	83	(2)
4	(4)	24	(1)	44	(3)	64	(3)	84	(3)
5	(4)	25	(3)	45	(4)	65	(3)	85	(1)
6	(1)	26	(4)	46	(3)	66	(3)	86	(1)
7	(4)	27	(3)	47	(2)	67	(1)	87	(2)
8	(3)	28	(2)	48	(1)	68	(4)	88	(3)
9	(3)	29	(3)	49	(2)	69	(2)	89	(3)
10	(2)	30	(2)	50	(2)	70	(3)	90	(3)
11	(3)	31	(2)	51	(3)	71	(2)	91	(4)
12	(3)	32	(2)	52	(1)	72	(1)	92	(1)
13	(1)	33	(2)	53	(2)	73	(1)	93	(2)
14	(2)	34	(2)	54	(3)	74	(3)	94	(2)
15	(3)	35	(3)	55	(2)	75	(2)	95	(2)
16	(1)	36	(1)	56	(2)	76	(4)	96	(2)
17	(1)	37	(4)	57	(2)	77	(4)	97	(2)
18	(3)	38	(2)	58	(3)	78	(4)	98	(4)
19	(4)	39	(1)	59	(3)	79	(2)	99	(2)
20	(2)	40	(3)	60	(2)	80	(2)	100	(2)

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