

DCET 2024 - Question Paper & Solutions

1. If $A = \begin{bmatrix} 3 & -2 \\ 4 & 1 \end{bmatrix}$ and $A - B = \begin{bmatrix} 5 & -3 \\ 4 & 6 \end{bmatrix}$, then matrix B is _____.

- a) $\begin{bmatrix} -3 & 2 \\ -4 & -1 \end{bmatrix}$ b) $\begin{bmatrix} -5 & 3 \\ -4 & -6 \end{bmatrix}$
 c) $\begin{bmatrix} -2 & 1 \\ 0 & -5 \end{bmatrix}$ d) $\begin{bmatrix} 2 & -1 \\ 0 & 5 \end{bmatrix}$

Ans : (c)

$$\text{Given, } A = \begin{bmatrix} 3 & -2 \\ 4 & 1 \end{bmatrix} \text{ and } A - B = \begin{bmatrix} 5 & -3 \\ 4 & 6 \end{bmatrix}$$

$$\therefore \begin{bmatrix} 3 & -2 \\ 4 & 1 \end{bmatrix} - \begin{bmatrix} 5 & -3 \\ 4 & 6 \end{bmatrix} = B$$

$$B = \begin{bmatrix} -2 & 1 \\ 0 & -5 \end{bmatrix}$$

2. If $\begin{bmatrix} 3 & -4 \\ 9 & 2 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 10 \\ 2 \end{bmatrix}$, then the values of x and y are _____

- a) $\left(\frac{2}{3}, -2\right)$ b) $\left(2, \frac{2}{3}\right)$
 c) $\left(-2, \frac{2}{3}\right)$ d) $\left(\frac{-2}{3}, 2\right)$

Ans : (a)

$$\text{Given } \begin{bmatrix} 3 & -4 \\ 9 & 2 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} \downarrow = \begin{bmatrix} 10 \\ 2 \end{bmatrix}$$

$$\begin{bmatrix} (3x) + (-4y) \\ (9x) + (2y) \end{bmatrix} = \begin{bmatrix} 10 \\ 2 \end{bmatrix}$$

$$\begin{bmatrix} 3x - 4y \\ 9x + 2y \end{bmatrix} = \begin{bmatrix} 10 \\ 2 \end{bmatrix}$$

$$\therefore 3x - 4y = 10$$

$$9x + 2y = 2 \rightarrow 2$$

$$3x - 4y = 10$$

$$18x + 4y = 4$$

Adding

$$21x = 14$$

$$x = \frac{14}{21}$$

$$x = \frac{2}{3}$$

$$\therefore 3x - 4y = 10$$

$$3\left(\frac{2}{3}\right) - 4y = 10$$

$$2 - 4y = 10$$

$$2 - 10 = 4y$$

$$-8 = 4y$$

$$\frac{-8}{4} = y$$

$$\therefore y = -2$$

3. If $A = \begin{bmatrix} -2 & 6 \\ -2 & 3 \end{bmatrix}$, then A^{-1} is _____.

- a) $\frac{1}{18} \begin{bmatrix} 3 & -6 \\ 2 & -2 \end{bmatrix}$ b) $\frac{1}{6} \begin{bmatrix} 3 & -6 \\ 2 & -2 \end{bmatrix}$
 c) $\begin{bmatrix} 3 & -6 \\ 2 & -2 \end{bmatrix}$ d) $\frac{1}{6} \begin{bmatrix} -2 & 6 \\ -2 & 3 \end{bmatrix}$

Ans : (b)

$$\text{Given } A = \begin{bmatrix} -2 & 6 \\ -2 & 3 \end{bmatrix}, |A| = \begin{vmatrix} -2 & 6 \\ -2 & 3 \end{vmatrix} = -6 - (-12)$$

$$|A| = -6 + 12 = 6$$

$$\text{W.K.T. } A^{-1} = \frac{1}{|A|}$$

$$\therefore \text{Adjoint of } A = \begin{bmatrix} 3 & -6 \\ 2 & -2 \end{bmatrix} \text{ and}$$

$$\therefore A^{-1} = \frac{1}{6} \begin{bmatrix} 3 & -6 \\ 2 & -2 \end{bmatrix}$$

4. If $x + y = 3$ and $2x + 3y = 8$ are the linear equations, then x and y are _____.

- a) $(1, -2)$ b) $(1, 2)$
c) $(-1, -2)$ d) $(-1, 2)$

Ans : (b)

$$x + y = 3 \rightarrow \text{(i) and } 2x + 3y = 8 \rightarrow \text{(ii)}$$

$$x + y = 3 \rightarrow \times 2$$

$$\cancel{2x} + 2y = 6$$

$$\cancel{2x} + 3y = 8$$

$$-y = -2$$

$$y = 2$$

Put $y = 2$ in equation (i)

$$x + y = 3$$

$$x + 2 = 3$$

$$x = 3 - 2$$

$$x = 1$$

5. If the straight line is $2y = 3x + 4$, then the y-intercept is _____

- a) 4 b) 2
c) $\frac{-4}{3}$ d) -2

Ans : (b)

$$\text{Given } 2y = 3x + 4$$

$$0 = 3x - 2y + 4$$

$$3x - 2y + 4 = 0$$

$$\text{y - intercept} = \frac{-c}{b} = \frac{-4}{-2} = 2$$

6. The acute angle of inclination made by the line $3x - 3y - 2 = 0$ with positive x-axis is _____.

- a) 135° b) 30°
c) 45° d) 0°

Ans : (c)

$$\text{Given } 3x - 3y - 2 = 0$$

$$\text{Slope, } m = \frac{-a}{b} = \frac{-3}{-3} = 1$$

$$\text{w.k.t } m = \tan 45^\circ = 1 \quad \therefore \text{inclination } \theta = 45^\circ$$

7. The slope of a straight line passing through the points $(1, 2)$ and $(5, -3)$ is _____.

- a) $\frac{5}{4}$ b) $\frac{1}{6}$
c) $\frac{-1}{4}$ d) $\frac{-5}{4}$

Ans : (d)

$$\text{Given } (x_1, y_1) = (1, 2) \text{ and } (x_2, y_2) = (5, -3)$$

$$\text{Slope } m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - 2}{5 - 1} = \frac{-5}{4}$$

8. If the slope of the straight line is $-\frac{3}{2}$ and

y-intercept is $\frac{5}{2}$, then the equation of the straight line is _____.

- a) $3x + 2y - 5 = 0$ b) $3x - 2y - 5 = 0$
c) $3x + 2y + 5 = 0$ d) $3x - 2y + 5 = 0$

Ans : (a)

$$\text{Given, slope, } m = \frac{-3}{2} \text{ and y - intercept, } c = \frac{5}{2}$$

(Slope - intercept form)

$$y = mx + c$$

$$y = \frac{-3}{2}x + \frac{5}{2}$$

$$y = \frac{-3x + 5}{2}$$

$$2y = -3x + 5$$

$$3x + 2y - 5 = 0$$

9. The line perpendicular to the straight line $5x - y + 1 = 0$ and passing through the point $(2, 3)$ is _____.

- a) $x - 5y - 17 = 0$ b) $x + 5y - 13 = 0$
 c) $x + 5y - 17 = 0$ d) $x + 5y + 13 = 0$

Ans : (c)

Given line $5x - y + 1 = 0$ and point $(2, 3) = (x_1, y_1)$

$$\text{Slope of perpendicular line} = \frac{b}{a} = \frac{-1}{5}$$

(slope – point form)

$$y - y_1 = m(x - x_1)$$

$$(y - 3) = \frac{-1}{5}(x - 2)$$

$$5y - 15 = -1x + 2$$

$$1x + 5y - 15 - 2 = 0$$

$$x + 5y - 17 = 0$$

10. The value of $\cot 660^\circ$ is ____.

- a) $\frac{-1}{\sqrt{3}}$ b) $\sqrt{3}$
 c) $\frac{1}{\sqrt{3}}$ d) $-\sqrt{3}$

Ans : (a)

Given, $\cot 660^\circ$

$$\cot 660^\circ = \cot (360^\circ + 300^\circ)$$

$$= \cot 300^\circ$$

$$= \cot (270^\circ + 30^\circ)$$

$$= -\tan 30^\circ$$

$$\cot 660^\circ = -\frac{1}{\sqrt{3}}$$

11. The value of $\cos 75^\circ$ is ____.

- a) $\frac{\sqrt{3} + 1}{2\sqrt{2}}$ b) $\frac{\sqrt{3} + 1}{\sqrt{3} - 1}$
 c) $\frac{\sqrt{3} - 1}{2\sqrt{2}}$ d) $\frac{\sqrt{3} - 1}{\sqrt{3} + 1}$

Ans : (c)

$$\cos 75^\circ = \cos (45 + 30^\circ)$$

$$= \cos (A + B)$$

$$= (\cos A \cdot \cos B) - (\sin A \cdot \sin B)$$

$$= (\cos 45^\circ \times \cos 30^\circ) - (\sin 45^\circ \times \sin 30^\circ)$$

$$= \left(\frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{2} \right) - \left(\frac{1}{\sqrt{2}} \times \frac{1}{2} \right)$$

$$= \frac{\sqrt{3}}{2\sqrt{2}} - \frac{1}{2\sqrt{2}} = \frac{\sqrt{3} - 1}{2\sqrt{2}}$$

12. If a ladder is inclined to the wall with base angle 30° , then the angle in radians is ____

- a) $\frac{\pi}{3}$ b) $\frac{\pi}{4}$
 c) $\frac{\pi}{2}$ d) $\frac{\pi}{6}$

Ans : (d)

Given angle $\theta = 30^\circ$

$$\text{Angle in radian} = \frac{\pi}{180^\circ} \times \theta = \frac{\pi}{180^\circ} \times 30^\circ$$

$$= \frac{\pi}{6} \text{ radian}$$

13. If $\sin A = \frac{3}{5}$ and $\cos B = \frac{12}{13}$, then $\cos (A - B)$ is ____.

- a) $\frac{-33}{65}$ b) $\frac{63}{65}$
 c) $\frac{-63}{65}$ d) $\frac{33}{65}$

Ans : (b)

$$\text{Given } \sin A = \frac{3}{5} = \frac{\text{opp}}{\text{Hyp}}, \quad \cos B = \frac{12}{13} = \frac{\text{adj}}{\text{hyp}}$$

Triplets

3	4	5
---	---	---

opp ↑ Hyp

adj

Triplets

5	12	13
---	----	----

↑ Adj Hyp

opp

$$\therefore \cos A = \frac{\text{Adj}}{\text{Hyp}} = \frac{4}{5}$$

$$\sin B = \frac{\text{Opp}}{\text{Hyp}} = \frac{5}{13}$$

$$\cos(A-B) = (\cos A \cdot \cos B) + (\sin A \cdot \sin B)$$

$$= \left(\frac{4}{5} \times \frac{12}{13} \right) + \left(\frac{3}{5} \times \frac{5}{13} \right)$$

$$= \frac{48}{65} + \frac{15}{65}$$

$$= \frac{48+15}{65} = \frac{63}{65}$$

14. If $y = 2 \sin x - 4 \cot x + e^{-x} + 7$, then $\frac{dy}{dx}$ is ____.

- a) $-2 \cos x - 4 \operatorname{cosec}^2 x - e^{-x} + 7x$
 b) $2 \cos x + 4 \operatorname{cosec}^2 x - e^{-x}$
 c) $2 \cos x + 4 \operatorname{cosec}^2 x + e^x + 7$
 d) $2 \sin x - 4 \operatorname{cosec}^2 x + e^x$

Ans : (b)

$$\text{If } y = 2 \sin x - 4 \cot x + e^{-x} + 7$$

$$\frac{dy}{dx} = 2 \cos x - 4 (-\operatorname{cosec}^2 x) - e^{-x}$$

$$= 2 \cos x + 4 \operatorname{cosec}^2 x - e^{-x}$$

15. If $y = \left(x + \frac{1}{x} \right)^2$, $\frac{dy}{dx}$ is:

- a) $x^2 + \frac{1}{x^2} + 2$ b) $2x + \frac{1}{x^2}$
 c) $2x - \frac{2}{x^3}$ d) $2x + \frac{1}{x}$

Ans : (c)

$$\text{If } y = \left(x + \frac{1}{x} \right)^2$$

$$y = x^2 + \frac{1}{x^2} + \frac{2x}{x}$$

$$y = x^2 + \frac{1}{x^2} + 2$$

$$\frac{dy}{dx} = 2x - \frac{2}{x^3} + 0 = 2x - \frac{2}{x^3}$$

16. If $y = e^{3x} + e^{7x}$, then $\frac{d^2y}{dx^2}$ at $x = 0$ is ____.

- a) 10 b) 58
 c) 1 d) 2

Ans : (b)

$$\text{If } y = e^{3x} + e^{7x} \text{ at } x = 0$$

$$\frac{dy}{dx} = 3e^{3x} + 7e^{7x}$$

$$\frac{d^2y}{dx^2} = 3.3 e^{3x} + 7.7 e^{7(0)}$$

$$= 3.3 e^{3(0)} + 7.7 e^{3(0)} \quad \text{w.k.t, } e^0 = 1$$

$$= 9(1) + 49(1)$$

$$= 58$$

17. If $y = \log(\sec x + \tan x)$, then $\frac{dy}{dx}$ is ____.

- a) $\sec x + \tan x$ b) $\frac{1}{\sec x + \tan x}$
 c) $\sec x$ d) $\sec^2 x$

Ans : (c)

$$y = \log(\sec x + \tan x)$$

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

$$= \frac{\sec x \cdot \tan x + \sec^2 x}{\sec x + \tan x}$$

$$= \frac{\sec x (\cancel{\sec x + \tan x})}{\cancel{\sec x + \tan x}} = \sec x$$

18. $\int (3x^2 + 2x + 2)^{3/2} (3x + 1) dx$ is ____.

- a) $\frac{(3x+5)}{5} + C$ b) $\left(\frac{3x-5}{5} \right) + C$
 c) $\left(\frac{3x^2 - 2x - 2}{5} \right)^{5/2}$ d) $\frac{(3x^2 + 2x + 2)^{5/2}}{5} + C$

Ans : (d)

$$\int (3x^2 + 2x + 2)^{3/2} (3x + 1) dx$$

By logic

$$\frac{2}{5} \left(\frac{3x^2 + 2x + 2}{2} \right)^{5/2} + C \quad \left| \quad \frac{dy}{dx} = 6x + 2 + 0 \right.$$

$$\left(\frac{3x^2 + 2x + 2}{5} \right)^{5/2} + C \quad \left| \quad \frac{dy}{dx} = 2(3x + 1) \right.$$

19. The integral of $x^3 + \frac{1}{x} + e^x$ is _____

a) $\frac{x^4}{4} + \log x - e^x + C$

b) $\frac{x^4}{4} + \log x + e^x + C$

c) $3x^2 - \frac{1}{x^2} + e^x + C$

d) $3x^2 - \frac{1}{x^2} - e^x + C$

Ans : (b)

$$\int x^3 + \frac{1}{x} + e^x dx$$

$$= \frac{x^4}{4} + \log x + e^x + C$$

20. $\int x \sin x dx =$ _____.

a) $x \cos x - \sin x + C$ b) $-x \cos x + \sin x + C$

c) $x \cos x + \sin x + C$ d) $-x \cos x - \sin x + C$

Ans : (b)

$$\int x \sin x dx$$

$$= +[x] [-\cos] - [1] [-\sin x] + \underbrace{\begin{bmatrix} 0 \\ 1 \end{bmatrix} \begin{bmatrix} 1 \\ 0 \end{bmatrix}}_0$$

$$= -x \cos x + \sin x + c$$

21. Which of the following are not obstacles in project management?

- a) Project complexities b) Project risks
c) Changes in technology
d) Early identification of problems

Ans : (d)

Early identification of problems is the benefit of project management and it is not an obstacle.

22. _____ provides guidance as well as direction to the project and he/she is *not* a part of the project team.

- a) CEO b) Project Manager
c) Team Leader d) Project Consultant

Ans : (d)

Project consultant guides the project but not a part of the project team.

23. Repair of dam in case of damage due to natural calamities is an example of _____.

- a) Normal project b) Crash project
c) Risky project d) Disaster project

Ans : (d)

Project performed due to effect of natural calamities is known as disaster project.

24. _____ refers to a detailed description of the expected outcome of a project.

- a) Project scope b) Project operation
c) Project objective d) Project process

Ans : (c)

Project objective illustrate the tasks you execute to achieve the result.

25. The process of dividing the project into number of tasks in order to carry out the effective project administration is:

- a) PPM b) WBS
c) PEP d) Project diary

Ans : (b)

Work Breakdown structure (WBS) is the process of dividing the project work into number of tasks.

26. The project _____ relieves a project team from most regular work such as planning, tracking and reporting responsibility.

- a) Manager b) CEO
- c) Administration d) Leader

Ans : (c)

Project administration relieves a project team.

27. The use of authority to channelize the activities of the project on desired lines is referred to as _____.

- a) Project direction b) Project coordination
- c) Project communication
- d) Project execution

Ans : (a)

Project direction channelize the activities of the project on desired lines.

28. _____ illustrates total project work into divisions of major work packages.

- a) PERT b) CPM
- c) WBS d) PEP

Ans : (c)

WBS divides the work into major packages

29. _____ is a condition wherein a construction or manufacturing project does not complete well within its prescribed time schedule.

- a) Time analysis b) Time estimate
- c) Time overrun d) Cost overrun

Ans : (c)

Overrun of a time is a condition where project cannot be completed within its prescribed time schedule.

30. A project _____ creates damages or adverse effects to either project activities or project deliverables.

- a) Failure b) Undertaken
- c) Risk d) Analysis

Ans : (c)

Damages or uncertainties affects the project is known as risk.

31. Identify the correct risk analysis which has typically one variable changed at a time

- a) Sensitivity Analysis
- b) Scenario Analysis
- c) Best and Worst Case Analysis
- d) Simulation Analysis

Ans : (a)

Sensitivity Analysis where studies done by changing one variable at a time.

32. Risk usually _____ as the project progresses.

- a) Increases b) Reduces
- c) Remains same d) Becomes negligible

Ans : (b)

As project progress towards goal risk usually reduces.

33. In 'SMART', the letter R stands for ____.

- a) Realistic b) Reliable
- c) Reasonable d) Relation

Ans : (a)

The full form of SMART.

S - Specific

M - Measurable

A - Achievable

R - Realistic

T - Timely

34. _____ is a step-by-step process of collecting, recording and organising information about project results.

- a) Project planning
- b) Project evaluation
- c) Project scheduling
- d) Project monitoring

Ans : (b)

Project evaluation is a process where information are collected recorded and organised to check about project results.

35. Which one of the following is *not* a policy of a project?

- a) Extent of work given to outside contractors
- b) Number of contractors to be employed
- c) Monitoring the progress of project
- d) Terms of contract

Ans : (c)

Monitoring the progress of project is the phase of project life cycle, not a policy,

36. The scheduling, 'EST' stands for:

- a) Easiest Start Time b) Earliest Start Time
- c) Earliest Schedule Time
- d) Earliest Schedule Technique

Ans : (b)

EST - Earliest Start Time

37. _____ is an expert in measuring, confirming, investigating and reporting status of a project.

- a) Project Guide b) Project Reviewer
- c) Project Auditor d) Project Advisor

Ans : (c)

Project Auditor is the one who reports the status of a project.

38. _____ is the time estimate if there are no hurdles in an activity.

- a) Pessimistic time b) Optimistic time
- c) Most likely time d) Expected estimated time

Ans : (b)

Optimistic time is where project time is scheduled based on quickest completion of time without any risk.

39. _____ is the last phase of the project life cycle which reports overall achievements of a project in terms of defined performance measures.

- a) Project closure b) Project initiation
- c) Project execution d) Project planning

Ans : (a)

Project closure is the final phase of the project life cycle.

40. The objective of network analysis in a project is to _____.

- a) Minimise total project duration
- b) Minimise total project cost
- c) Minimise production delays
- d) Minimise manpower requirements

Ans : (a)

Minimize total project duration is the objective of network analysis.

41. What is the output of the following?

a = 10

if (a > 1) then

print "TWENTY"

else

print "TEN"

- a) 10 b) TEN
- c) TWENTY d) No Output

Ans : (c)

Assignment: $a = 10$

This line assigns the value 10 to the variable a
Conditional statement: if ($a > 1$) then

This line starts a conditional statement. The condition being checked is whether the value of a is greater than 1. In this case, it is (since 10 is greater than 1).

Print statement: print "TWENTY" If the condition is true, this line would print the word "TWENTY"

Else statement : else This line indicates the start of the else block of the conditional statement.

Print statement : print "TEN" This line would print the word "TEN" if the condition in the if statement is not true.

Since the value of a is 10, which is greater than 1, the condition in the if statement is true.

42. The symbol used to connect two parts of a big flowchart is _____

- a) Oval b) Rectangle
- c) Diamond d) Circle

Ans : (d)

In flowcharts, circles are used as connector symbols to show the continuation of the flow across multiple pages or through a complex chart.

43. Which symbol is used to represent start or stop in a flowchart?

- a) Rectangle b) Diamond
- c) Oval d) Circle

Ans : (c)

In standard flowcharting practices, the oval symbol is used to represent the start and end points of a process

44. What does CSS stand for?

- a) Colourful Style Sheet
- b) Cascading Style Sheet
- c) Creative Style Sheet
- d) Computer Style Sheet

Ans : (b)

The fullform of CSS is cascading style sheet

45. Which of the following is *not* a web browser?

- a) Google Chrome b) Netscape Navigator
- c) Safari d) Apache

Ans : (d)

Google Chrome: Google Chrome is a popular web browser developed by Google

Netscape Navigator: Netscape Navigator was one of the first popular web browsers

Safari: Safari is a web browser developed by Apple.

Apache: Apache is a web server software, not a web browser.

46. What is the correct syntax to change the background colour with CSS?

- a) background – color = "purple";
- b) background – color : purple;
- c) background – color = orange
- d) change-background-color : purple

Ans : (b)

background-color is a property in CSS that specifies the background color of an element.

The colon : separates the property name from the value.

purple is the value assigned to the property, which in this case sets the background color to purple.

47. Which HTML tag gives a scrolling effect of a given text?

- a) <div> b) <scroll>
- c) <marquee> d) <effect>

Ans : (c)

The <marquee> tag is an HTML tag that is used to create scrolling text

48. ERP package will handle _____ business functionality / functionalities.

- a) One b) Two
- c) Three d) Multiple

Ans : (d)

ERP integrates all the functional unit.

49. Which one is a type of organizational structure?

- a) Responsibility structure
- b) Behavioural structure
- c) Functional structure
- d) Relational structure

Ans : (c)

Functional structure is a type of organisational structure where it works on the basis of functional units.

50. The _____ describes how an actor uses a system to accomplish a particular goal for describing the activities.

- a) Process case b) Work case
- c) Use case d) Sub process

Ans : (c)

Use case describes how an employee uses a system.

51. Which of the following is not a characteristic of First-generation ERP system?

- a) They were based on mainframe computer
- b) They focused on accounting and finance
- c) They used centralized database
- d) They supported real-time data processing

Ans : (d)

First generation ERP stand alone applications designed to automate specific functions such as inventory management, accounting and order processing.

52. Which cloud service model enables users to develop, run, manage application without worrying about underlying infrastructure?

- a) IAAS b) PAAS c) SAAS d) NAAS

Ans : (b)

Platform as a Service (PaaS): PaaS provides a platform for developing, deploying, and managing applications. Users don't have to worry about managing the underlying infrastructure.

53. Which of the following is *not* a Google application?

- a) Google Docs b) Google slides
- c) Google Sheets d) Google Word

Ans : (d)

Google Word is not a Google application. The correct name for Google's word processing application is Google Docs

54. IoT is a _____.

- a) Network of sensors
- b) Network of objects in a ring structure
- c) Network of virtual objects
- d) Network of physical objects embedded with sensors.

Ans : (d)

IoT refers to the network of physical objects or "things" that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.

55. _____ is a file storage and synchronization service developed by Google which provides complete office tools with cloud storage.

- a) Google Colab b) Google Drive
- c) Google Meet d) AWS Cloud

Ans : (b)

Google Drive is a file storage and synchronization service developed by Google that provides cloud storage, file sharing, and collaborative editing. It integrates with Google's office suite of tools, such as Google Docs, Google Sheets, and Google Slides

56. Which of the following is not a security issue in a personal computer?

- a) Ransomware Attack
- b) Data Breach
- c) Code Injection
- d) IoT

Ans : (d)

The Internet of Things (IoT) is a network of physical objects that are embedded with sensors, software, and other technologies to connect and exchange data with other devices and systems over the internet.

57. Which of the following is *not* a firewall?

- a) Packet filtering b) Stateful inspection
- c) Panda d) Circuit Level Gateway

Ans : (c)

Panda is not a type of firewall; it is a brand name associated with cybersecurity products, including antivirus software. The other options-packet filtering, stateful inspection, and circuit-level gateway-are all types of firewalls.

58. "S" in HTTPS stands for _____.

- a) Safe b) Secure
- c) System d) Server

Ans : (b)

In HTTPS, the "S" stands for Secure. HTTPS is a protocol for secure communication over a computer network.

59. The process used to get an output 43205 from a given input "DCTE" is _____

- a) Hashing b) Compression
c) Decompression d) Encryption

Ans : (a)

Hashing is a process that converts an input of any size into a fixed-length alphanumeric string. In this case, "DCTE" would be converted into a string of numbers and letters, potentially resulting in something like "43205"..

60. $a = 10$

$b = 20$

$a = a + b$

$b = a - b$

$a = a - b$

The final values of a and b are:

- a) $a = 30, b = 10$ b) $a = 30, b = 20$
c) $a = 20, b = 10$ d) $a = 20, b = 30$

Ans : (c)

- $a = 10$: This assigns the value 10 to variable a .
- $b = 20$: This assigns the value 20 to variable b .
- $a = a + b$: This adds the current value of b (which is 20) to the current value of a (which is 10) and stores the result back into a . So now, a becomes 30 ($10 + 20$).
- $b = a - b$: This subtracts the current value of b (which is still 20) from the current value of a (which is now 30) and stores the result back into b . So now, b becomes 10 ($30 - 20$).
- $a = a - b$: This subtracts the current value of b (which is 10) from the current value of a (which is still 30) and stores the result back into a . So now, a becomes 20 ($30 - 10$).

Therefore, after all the calculations, a will be 20 and b will be 10.

61. Which one of the following is not essential for good questionnaires?

- a) Logically arranged
b) Avoiding personal questions
c) Limiting number of questions
d) Unlimited number of questions

Ans : (d)

Unlimited number of questions is not essential for good questionnaire.

62. Both categorical and numerical data variables can be used for _____

- a) Continuous variable
b) Class intervals
c) Distribution of frequency
d) Frequency distribution table

Ans : (d)

It is used for both categorical and numerical data variable.

63. Match the following:

- | | |
|-------------------|--------------------------------------|
| a) Mean | i. $= Q_3 - Q_1$ |
| b) Absolute value | ii. $= \text{AVERAGE}(\text{array})$ |
| c) IQR | iii. $= \text{ABS}(\text{cell})$ |
- a) a - i b - ii c - iii
b) a - ii b - iii c - i
c) a - iii b - i c - ii
d) a - i b - iii c - ii

Ans : (b)

Mean formula in Excel = Average (Array)

Absolute value formula in excel = ABS (Cell)

IQR formula = $Q_3 - Q_1$

64. _____ type of chart is used to show the relationship between numerical and categorical variable

- a) Plot b) Pie
c) Bar d) Line

Ans : (c)

Bar chart is used to show the relationship between numerical and categorical variable.

65. Who developed Python language?

- a) Zim Den b) Guido van Rossum
c) Niene Stom d) Wick van Rossum

Ans : (b)

Python was created by Guido van Rossum

66. Which one of the following is *not* the benefit of data cleaning?

- a) Removal of errors when multiple sources of data are at play
- b) Boosts results and revenue
- c) Helps with faster decision-making and more efficient business practices
- d) Consumes more time

Ans : (d)

Consuming more time is not the benefit of data cleaning.

67. Is Python code complied or interpreted?

- a) Python code is both complied and interpreted
- b) Python code is neither complied nor interpreted
- c) Python code is only complied
- d) Python code is only interpreted

Ans : (a)

Python code is first compiled into bytecode, which is an intermediate form that is not human-readable. This bytecode is then interpreted by the Python virtual machine (PVM) to execute the program.

68. Which one of the following is *not* a type of interview?

- a) Unstructured b) Semi-structured
- c) Audio recorder d) Structured

Ans : (c)

Audio recorder is not a type of interview.

69. The time, in seconds, taken by 180 athletes to run a 110 m hurdle race are tabulated below:

Class	Frequency
13.8 to 14	2
14 to 14.2	4
14.2 to 14.4	15
14.4 to 14.6	74
14.6 to 14.8	36
14.8 to 15	49

The number of athletes who completed the race in less than 14.6 seconds is:

- a) 19 b) 95 c) 131 d) 180

Ans : (b)

The number of athletes who completed the race in less than 14.6 seconds is $2 + 4 + 15 + 74 = 95$

70. The higher value of the range represents _____.

- a) greater spread of the Data
- b) lesser spread of the Data
- c) equal to range of the Data
- d) average of the Data

Ans : (a)

If range of the data is more then spread of data is also more.

71. The middle number in a given data set is called:

- a) Mean b) Mode
- c) Frequency d) Median

Ans : (d)

Median is the middle most value in arrange data.

72. _____ is the example of qualitative Data.

- a) Temperature b) Ability of students
- c) Prices d) Area

Ans : (b)

The data which cannot be numerically measurable is called qualitative data.

Ability of students are not numerically measurable.
∴ It is a qualitative data

73. Direct personal observation is a method of collection of:

- a) Secondary Data b) Primary Data
- c) Mixed Data d) Unpublished Data

Ans : (b)

Direct personal observation is one type or method of collection of primary data.

74. The in-built function to find the mean of a given data in Excel is:

- a) =AVERAGE() b) =MEAN()
- c) =MEDIAN() d) =MODE()

Ans : (a)

Excel formula for mean is = Average()

75. The formula for Relative Frequency is:

- a) Frequency \times No. of observations
- b) $\frac{\text{No. of observations}}{\text{Frequency}}$
- c) $\frac{\text{Frequency}}{\text{No. of observations}}$
- d) No. of observations + Frequency

Ans : (c)Relative frequency formula is $R.f = f/n$ **76. In Python, "str" is a:**

- a) Numeric type b) Binary type
- c) Text type d) Sequence type

Ans : (c)

- Numeric type refers to data that represents numbers, such as integers or floating-point numbers.
- Binary type stores data in binary format (0s and 1s).
- Text type (or string type) is used for textual data, like words or sentences.
- Sequence type refers to an ordered collection of items, such as lists or tuples.

77. The results of Python program get displayed in ____.

- a) IDLE 3.1.9 Window
- b) IDLE shell 3.9.1 Window
- c) IDLE shell 3.9.1 Window
- d) ILDE shell 3.1.9 Window

Ans : (c)

IDLE (Integrated Development and Learning Environment) is an integrated development environment for Python.

78. The process of Data cleaning is ____.

- a) Removing virus b) Deduplication
- c) Survey d) Google form

Ans : (b)The process of data cleaning is removing duplicate data. \therefore It is called deduplication.**79. Data collected for the first time is called:**

- a) Published Data b) Mixed Data
- c) Primary Data d) Secondary Data

Ans : (c)

The data collected for the first time directly from field by investigator is called primary data.

80. The Excel formula for standard deviation of a sample is:

- a) STDEV.P b) SDTEV.S
- c) STDEV.S d) SDTEV.P

Ans : (c)

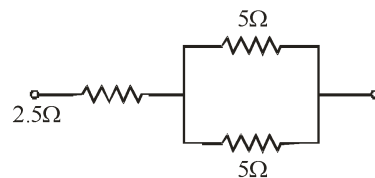
Excel formula for calculating standard deviation of a sample = STDEV.S

81. CPR stands for ____

- a) Cardio Permanent Respiration
- b) Cardio Pulmonary Respiration
- c) Cardio Pulmonary Resuscitation
- d) Cardio Pulmonary Retrieval

Ans : (c)

Explanation : CPR stands for Cardio Pulmonary Resuscitation.

82. The effective resistance of the circuit below is:

- a) 0.5 Ω b) 5 Ω
- c) 2.5 Ω d) 7.5 Ω

Ans : (b)

Explanation : From the given fig

Two 5 Ω Resistors are connected in parallel

$$R_T = \frac{R_1 \times R_2}{R_1 + R_2} = \frac{5 \times 5}{5 + 5} = \frac{25}{10} = 2.5\Omega$$

This parallel combination is connected in series with 2.5Ω Resistor.

$$\begin{aligned} R_T &= R_1 + R_2 \\ &= 2.5 + 2.5 \\ R_T &= 5\Omega \end{aligned}$$

83. The relationship between Voltage (V), Current (I) and Resistance (R) is:

- a) $I = VR$ b) $R = VI$
c) $V = IR$ d) $V = I^2R$

Ans : (c)

Explanation : According to ohm's law statement,
 $V = I \cdot R$

The ohm's law $V = IR$ describes, the relation between voltages (V), Current (I) and Resistance (R).

84. ELCB stands for:

- a) Earth Line Circuit Breaker
b) Electric Load Circuit Breaker
c) Earth Leakage Circuit Breaker
d) Electric Line Circuit Breaker

Ans : (c)

Explanation : ELCB stands for Earth leakage circuit breaker.

85. Good fuse wire must have:

- a) Low melting point
b) High melting point
c) High resistivity
d) High melting point and high resistivity

Ans : (a)

Explanation : A good fuse wire must have low melting point.

86. A 10 HP submersible pump set is used in a borewell for irrigation purpose. It normally uses _____ type of motor.

- a) Single-phase induction motor
b) Three-phase induction motor
c) DC motor
d) FHP motor

Ans : (b)

Explanation : A Three phase Induction motor is used in a borewell for irrigation purpose with a 10 HP submerise pump set.

87. SMF in batteries stands for:

- a) Sealed Moulded - Free
b) Semiconductor Maintenance - Free
c) Sealed Maintenance - Free
d) Solar Maintenance - Free

Ans : (c)

Explanation : SMF batteries stands for Sealed Maintenance Free batteries.

88. The typical use of LVDT is to sense _____.

- a) Light intensity b) Humidity
c) Pressure d) Temperature

Ans : (c)

Explanation : LVDT sensor is used to sense Displacement, Force and Pressure.

89. A p-n junction diode is a _____

- a) Bidirectional switch
b) Unidirectional switch
c) Bidirectional Controlled Switch
d) Unidirectional Controlled Switch

Ans : (b)

Explanation : A P-N junction diode is a unidirectional switch. It allows the flow of current in only one direction i.e., From Anode to Cathode terminal.

90. The purpose of C Filter in a power supply is to _____

- a) Degrade regulation
b) Reduce ripple
c) Reduce gain
d) Reduce the change of an electric shock

Ans : (b)

Explanation : The purpose of C Filter in a power supply is used to decrease unwanted ripple voltage. In a rectifier the C filter is connected in parallel with the load.

91. Lead acid cell is an example of _____

- a) Secondary cell b) Solar cell
c) Primary cell d) Fuel cell

Ans : (a)

Explanation : A secondary cell is a cell that is designed to be recharged with electricity and reused many times.

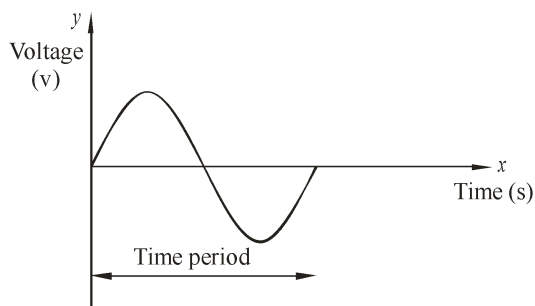
Ex : Lead-Acid, Nickel Cadmium, Lithium ion.

92. Time taken by the alternating quantity to complete one cycle is called _____

- a) Frequency b) Time period
c) Amplitude d) Wavelength

Ans : (b)

Explanation : The time taken by an alternating quantity to complete one cycle is called Time period.



93. What does "PLC" stand for in the context of Industrial Automation?

- a) Programmable Logic Circuit
b) Process Logic Controller
c) Programmable Logic Controller
d) Processor Logic Controller

Ans : (c)

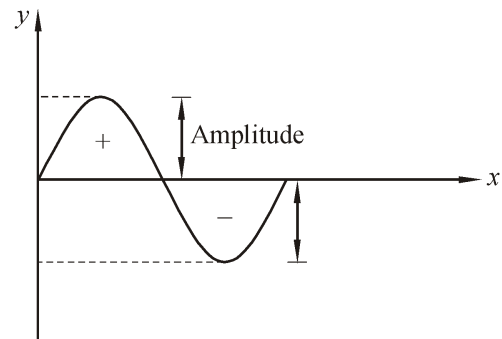
Explanation : PLC stands for Programmable Logic Controller which is used for Industrial Automation.

94. Maximum value attained by the alternating quantity either in positive half-cycle or negative half-cycle is called _____.

- a) Frequency b) Altitude
c) Amplitude d) Wavelength

Ans : (c)

Explanation : Amplitude is the maximum value attained by the Alternating quantity either in positive (or) Negative Half cycle of the waveform



95. Which of the following statement is correct?

- a) In series circuit the current through each resistor is different.
b) In parallel circuit the voltage across each resistor is same.
c) In parallel circuit the equivalent resistance is sum of individual resistances
d) In series circuit the reciprocal of equivalent resistance is sum of reciprocal of individual resistances.

Ans : (b)

Explanation : The voltage value should be same (or) equal (or) remains constant in the parallel circuit.

96. The cell which cannot be recharged and reused is _____.

- a) Secondary cell b) Battery
c) Primary cell d) Simple cell

Ans : (c)

A primary cell is a cell that is designed to be used once and discarded and not recharged with electricity and can not reused like a secondary cell.

97. Specific gravity of a fully charged lead acid battery will be in the range of _____

- a) 1000 to 1210 b) 1100 to 1310
c) 1150 to 1310 d) 1230 to 1300

Ans : (d)

Explanation : Specific gravity of a fully charged lead acid battery will be in the range of 1230 to 1280.

98. The best sensor for sensing vibration is _____

- a) Thermistor b) Thermocouple
- c) Piezoelectric crystal
- d) Hygrometer

Ans : (c)

The piezo electric crystal sensor is used for sensing vibration of an object.

99. During charging of batteries

- a) Chemical energy is converted to Mechanical energy
- b) Mechanical energy is converted to Chemical energy
- c) Electrical energy is converted to Chemical energy
- d) Chemical energy is converted to Electrical energy.

Ans : (c)

Explanation : During charging of a batteries, Electrical energy is converted to chemical energy.

100. When an electric stove is connected across 230 volts, 50 Hz AC supply for the duration of one hour and takes a current of 10 amperes, the energy consumed is:

- a) 230 units b) 2.3 units
- c) 23 units d) 0.23 units

Ans : (b)

Explanation :

$$V = 230V$$

$$I = 10A$$

$$t = 1 \text{ hr}$$

$$\text{Energy} = V \times I \times t$$

$$= 230 \times 10 \times 1$$

$$= \frac{2300}{1000} [\because \text{In terms of units Energy} \div 1000]$$

$$\text{Energy} = 2.3 \text{ units}$$