MOCK TEST 3

Q. 1 The least number to be added to 13851 to get a number that is divisible by 87 is:

Option 1:
18

Option 2:
43

Option 3:
54

Option 4:
69

Correct Answer:
69

Solution:
If 13851 is divided by 87,
Quotient = 159
Remainder = 18
So, the required number is Divisor – Remainder = (87 – 18) = 69
Hence, the correct answer is 69.

Q. 2 What is the least value that must be assigned to * so that the number 451*603 is exactly divisible by 9?

Option 1:
7

Option 2:
8

Option 3:
5

Option 4:
9

Correct Answer:
8

Solution:
If the sum of the digits of the number is divisible by 9, then the number is divisible by 9.
Given: The number 451*603 is divisible by 9.
Let the unknown value be x.
Therefore, Sum of the digits = $\frac{(4+5+1+x+6+0+3)}{9} = \frac{(19+x)}{9}$
If $x = 8$, Then,
$\Rightarrow \frac{(19+8)}{9} = \frac{(27)}{9}$
Here, 27 is divisible by 9.
Hence, the correct answer is 8.

Q. 3 A man has some hens and some cows. If the total number of heads of both is 50 and the number of feet of both is 142, then the number of cows is:

Option 1:
21

Option 2:
25

Option 3:
27

Option 4:
29

Correct Answer:
21

Solution:
Let's assume:
h = number of hens
c = number of cows
From the problem, we can make two equations:
1) Each hen and each cow has one head:
h + c = 50 ––(i)
2) Each hen has 2 feet and each cow has 4 feet:
2h + 4c = 142 ––(ii)
From equation (i), we can express h in terms of c:
h = 50 – c ––(iii)
Now, substituting the value of h from equation (iii) into equation (ii), we get:
2(50 – c) + 4c = 142
⇒ 2c = 142 – 100

$\Rightarrow c = \frac{42}{2}$
$\Rightarrow c = 21$
Hence, the number of cows is 21.

Option 1 is correct.

Q. 4 If 7 times the 7th term of an arithmetic progression (A.P.) is equal to 11 times its 11th term, then the 18th term of the A.P. will be:

Option 1:
1

Option 2:
0

Option 3:
2

Option 4:
–1

Correct Answer:
0

Solution:
Given: 7 times the 7th term of AP = 11 times its 11th term
Formula for nth term $\Rightarrow a + (n-1)d$
where a = 1st term, d = common difference and n = number of terms
$\Rightarrow 7 \times a_7 = 11 \times a_{11}$
$\Rightarrow 7[a + (7-1)d] = 11[a + (11-1)d]$
$\Rightarrow 7a + 42d = 11a + 110d$
$\Rightarrow 11a - 7a + 110d - 42d = 0$
$\Rightarrow 4a + 68d = 0$
$\Rightarrow 4(a + 17d) = 0$
$\Rightarrow a + 17d = 0$ ----------(1)
Similarly, $a_{18} = [a + (18-1)d] = a + 17d$
By using equation (1) we get,
$\Rightarrow a_{18} = 0$
So, the 18th term is 0.
Hence, the correct answer is 0.

Q. 5 Among three numbers, the second is twice the first and also thrice the third. If the average of the three numbers is 33, then the largest number is:

Option 1:
36

Option 2:
54

Option 3:
62

Option 4:
72

Correct Answer:
54

Solution:
Let the first number be x, the second number be $2x$ and the third number be $\frac{2x}{3}$.
The average of the three numbers is 33.
According to the question,
$x + 2x + \frac{2x}{3} = 3 \times 33$
$\Rightarrow 11x = 99 \times 3$
$\therefore x = 27$
Largest number = $2 \times 27 = 54$
Hence, the correct answer is 54.

Q. 6 If the selling price of 40 articles is equal to the cost price of 50 articles, the loss or gain percent is:

Option 1:
25% gain

Option 2:
20% gain

Option 3:
25% loss

Option 4:
20% loss

Correct Answer:
25% gain

Solution:

Let the cost price of each article be Re. 1.
Selling price (SP) of 40 articles = cost price (CP) of 50 articles = Rs. 50
CP of 40 articles = Rs. 40
Profit on 40 articles = SP of 40 articles – CP of 40 articles = 50 – 40 = 10
Profit % = $\frac{\text{Profit}}{\text{Cost price}} \times 100 = \frac{10}{40} \times 100 = 25\%$
Hence, the correct answer is 25% gain.

Q. 7 Three bottles of equal capacity contain mixtures of milk and water in ratios 2 : 5, 3 : 4, and 4 : 5. These three bottles are emptied into a large bottle. What will be the ratio of milk and water respectively in the large bottle?

Option 1:
73 : 106

Option 2:
73 : 116

Option 3:
73 : 113

Option 4:
73 : 189

Correct Answer:
73 : 116

Solution:
Let the capacity of each bottle be x units.
Bottle 1 has milk : water = 2 : 5
Bottle 2 has milk : water = 3 : 4
Bottle 3 has milk : water = 4 : 5
Bottle 1 contains milk = $\frac{2x}{7}$, water = $\frac{5x}{7}$
Bottle 2 contains milk = $\frac{3x}{7}$, water = $\frac{4x}{7}$
Bottle 3 contains milk = $\frac{4x}{9}$, water = $\frac{5x}{9}$
When mixed, the ratio of milk and water is:
$= (\frac{2x}{7} + \frac{3x}{7} + \frac{4x}{9}) : (\frac{5x}{7} + \frac{4x}{7} + \frac{5x}{9})$
$= (\frac{18x+27x+28x}{63}) : (\frac{45x+36x+35x}{63})$
$= 73 : 116$
Hence, the correct answer is 73 : 116.

Q. 8 The average mark obtained in a class of 50 students is 70%. The average of the first 25 is 60% and that of 24 is 80%. What were the marks obtained by the last student?

Option 1:
90%

Option 2:
60%

Option 3:
80%

Option 4:
70%

Correct Answer:
80%

Solution:
Average marks of 50 students = 70%
Total percentage of marks of 50 students = 50 × 70% = 3500%
Average of first 25 students = 60%
Total percentage of marks of 25 students = 25 × 60% = 1500%
Average marks of the next 24 students = 80%
Total percentage of marks of 24 students = 24 × 80% = 1920%
∴ Percentage of marks obtained by the last student = 3500% – (1500 + 1920)% = 80%
Hence, the correct answer is 80%.

Q. 9 A boat goes a certain distance at 30 km/hr and comes back the same distance at 60 km/hr. What is the average speed (in km/hr) for the total journey?

Option 1:
45 km/hr

Option 2:
50 km/hr

Option 3:
40 km/hr

Option 4:
35 km/hr

Correct Answer:
40 km/hr

Solution:

Given: The speed of the boat is 30 km/hr and 60 km/hr for the same distance.
So, average speed = $\frac{2xy}{x+y}$, where x and y are two given speeds of the boat (for the same distance).
Putting the values x = 30 and y = 60, we get,
$\therefore$ Average speed = $\frac{2\times30\times60}{30+60}$ = $\frac{3600}{90}$ = 40 km/hr
Hence, the correct answer is 40 km/hr.

Q. 10 What is the equation of the line perpendicular to the line $2x + 3y = -6$ and having y-intercept 3?

Option 1:
$3x - 2y = 6$

Option 2:
$3x - 2y = -6$

Option 3:
$2x - 3y = -6$

Option 4:
$2x - 3y = 6$

Correct Answer:
$3x - 2y = -6$

Solution:
The equation of the given line is $2x + 3y = -6$
The y-intercept is 3.
According to the question,
A line with slope m is represented as $y = mx + c$
Given line, $2x + 3y = -6$
$\Rightarrow y = -\frac{2}{3}x - 2$
Slope of the line $= -\frac{2}{3}$
The product of the slope of two perpendicular lines is -1.
So, the slope of the required line is $= (-\frac{1}{-\frac{2}{3}}) = \frac{3}{2}$
The equation of the line is
$y = \frac{3}{2}x + c$
Given y-intercept $(c) = 3$,
Now, $y = \frac{3}{2}x + 3$
$\Rightarrow 2y = 3x + 6$
Therefore, the equation of the required line is $3x - 2y = -6$
Hence, the correct answer is $3x - 2y = -6$.

Q. 11 The sum of money that will yield Rs. 60 as simple interest at a rate of 6% per annum in 5 years is:

Option 1:
Rs. 200

Option 2:
Rs. 225

Option 3:
Rs. 175

Option 4:
Rs. 300

Correct Answer:
Rs. 200

Solution:
Given:
Simple interest = Rs. 60
Rate = 6%
Time = 5 years
Simple interest = $\frac{\text{Principal}\times\text{Rate}\times\text{Time}}{100}$
$\Rightarrow 60 = \frac{\text{Principal}\times 6\times 5}{100}$
⇒ Principal = Rs. 200
Hence, the correct answer is Rs. 200.

Q. 12 The diameter of a wheel on a bicycle is 21 cm. The cyclist takes 45 minutes to reach a destination at a speed of 16.5 km/hr. How many revolutions will the wheel make during the journey?

Option 1:
12325

Option 2:
18750

Option 3:
21000

Option 4:
24350

Correct Answer:
18750

Solution:
Here, 16.5 km/hr = $\frac{16500}{60}$ m/min = 275 m/min
So, the total distance of the journey is = (275 × 45) = 12375 metres = 1237500 cm
Here, the diameter of a wheel on a bicycle is 21 cm.
⇒ the radius is = $\frac{21}{2}$ cm
⇒ the circumference of the wheel = $\left(2\times\frac{22}{7}\times\frac{21}{2}\right)$ cm = 66 cm
∴ During the journey, the wheel will make ($\frac{1237500}{66}$) = 18750 revolutions
Hence, the correct answer is 18750.

Q. 13 A and B can do a job in 12 days, B and C in 15 days, and C and A in 20 days. If A, B, and C work together, they will complete the work in:

Option 1:
5 days

Option 2:
$7\frac{5}{6}$ days

Option 3:
10 days

Option 4:
$15\frac{2}{3}$ days

Correct Answer:
10 days

Q. 14 **Directions:** Study the table and answer the question. The number of five types of cycles manufactured by a company over the years is given below:

Years	Types of cycles (in 1000)				
	A	B	C	D	E
1997	200	150	78	90	65
1998	150	180	100	105	70
1999	180	175	92	110	85
2000	195	160	120	125	75
2001	220	185	130	135	80

What was the approximate percentage increase in production of the D type of the cycle from 1998 to 2000?

Option 1:
10

Option 2:
19

Option 3:
15

Option 4:
17

Correct Answer:
19

Solution:
Production of the D type of the cycle in 1998 = 105
Production of the D type of the cycle in 2000 = 125
Increase in production of the D type of the cycle from 1998 to 2000 = 125 – 105 = 20
Percentage increase = $\frac{20\times100}{105}$ = 19.05%
The approximate percentage increase in production of the D type of the cycle from 1998 to 2000 is 19%.
Hence, the correct answer is 19.

Q. 15 **Directions:** Study the table and answer the question. The number of five types of cycles manufactured by a company over the years is given below:

Years	Types of cycles (in 1000)				
	A	B	C	D	E
1997	200	150	78	90	65
1998	150	180	100	105	70
1999	180	175	92	110	85
2000	195	160	120	125	75
2001	220	185	130	135	80

In which type of cycle was the total production of the given 5 years the maximum?

Option 1:
A

Option 2:
B

Option 3:
C

Option 4:
D

Correct Answer:
A

Solution:
Total production of A = 200 + 150 + 180 + 195 + 220 = 945
Total production of B = 150 + 180 + 175 + 160 + 185 = 850
Total production of C = 78 + 100 + 92 + 120 + 130 = 520
Total production of D = 90 + 105 + 110 + 125 + 135 = 565
Total production of E = 65 + 70 + 85 + 75 + 80 = 375
The total production of the given 5 years is maximum in A type of cycle.
Hence, the correct answer is A.

Q. 16 The longest rod that can be placed in a room is 12 metres long, 9 metres broad, and 8 metres high is:

Option 1:
27 m

Option 2:
19 m

Option 3:
17 m

Option 4:
13 m

Correct Answer:
17 m

Solution:
Length of room, l = 12 m
Breadth, b = 9 m
Height, h = 8 m
The longest rod to be kept in the room
= diagonal of the cuboid
= $\sqrt{l^2+b^2+h^2}$
= $\sqrt{12^2+9^2+8^2}$
= $\sqrt{144+81+64}$
= $\sqrt{289}$
= 17 m
Hence, the correct answer is 17 m.

Q. 17 The radius of the base of a hollow cone is 8 cm, and its height is 15 cm. A sphere of the largest radius is put inside the cone. What is the ratio of the radius of the base of a cone to the radius of a sphere?

Option 1:
5 : 3

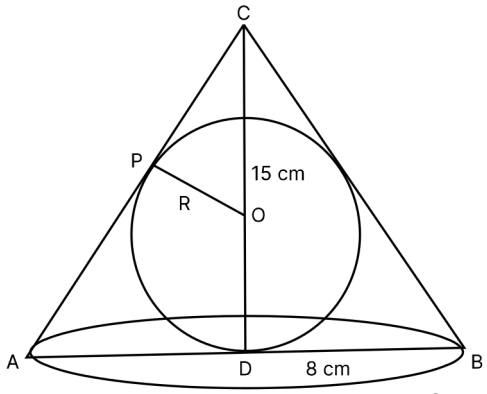
Option 2:
4 : 1

Option 3:
2 : 1

Option 4:
7 : 3

Correct Answer:
5 : 3

Solution:
Given: The radius of the base of a hollow cone = 8 cm
Height = 15 cm
Now consider the problem in two dimensions.
Area of the triangle = $\frac{1}{2} \times$ base $\times$ height.
The inradius of the circle = $\frac{A}{s}$, where A is the area of the triangle and s is the semi–perimeter of the triangle.



Using Pythagoras theorem, $(CB)^2 = (BD)^2 + (CD)^2$
$\Rightarrow (CB)^2 = (8)^2 + (15)^2$
$\Rightarrow (CB)^2 = 64 + 225$
$\Rightarrow (CB)^2 = 289$
$\Rightarrow (CB) = 17$ cm
Now, inradius = $\frac{A}{s}$
$A = \frac{1}{2} \times 15 \times 16$
$= 120$ cm^2
$\Rightarrow s = \frac{17+16+17}{2}$
$\Rightarrow s = 25$ cm
Inradius = $\frac{120}{25} = \frac{24}{5}$
The ratio of the radius of the base of a cone to the radius of a sphere is $8 : \frac{24}{5} = 5 : 3$
Hence, the correct answer is 5 : 3.

Q. 18 A thousand solid metallic spheres of 6 cm diameter each are melted and recast into a new solid sphere. The diameter of the new sphere (in cm) is:

Option 1:
30

Option 2:
90

Option 3:
45

Option 4:
60

Correct Answer:
60

Solution:
Given: Diameter = 6 cm
Radius = 3 cm
The volume of the sphere = $\frac{4}{3}\pi R^3$ (R is the radius of a new sphere formed)
According to the question,
$1000 \times \frac{4}{3} \times \pi \times (\frac{6}{2})^3 = \frac{4}{3} \times \pi \times R^3$
$\Rightarrow 1000 \times 3^3 = R^3$
$\Rightarrow R = 30$ cm
So, the diameter of the new sphere is 2 × 30 = 60 cm.
Hence, the correct answer is 60.

Q. 19 In an examination, 65% of students pass in History and 55% pass in Hindi. If 5% of students fail in both subjects, what is the percentage of students who have passed in both subjects?

Option 1:
15

Option 2:
20

Option 3:
25

Option 4:
30

Correct Answer:
25

Solution:
Passed in History = 65%
Failed in History = (100 – 65) = 35%
Passed in Hindi = 55%

Failed in Hindi = (100 – 55) = 45%
Failed in Both = 5%
The percentage of students who failed in a minimum of one subject = (35 + 45) – 5 = 75%
Therefore, the percentage of those students who have passed both subjects = (100 – 75) = 25%
Hence, the correct answer is 25%.

Q. 20 A train is running at a speed of 116 km/hr. The distance covered by the train (in metres) in 18 seconds is:

Option 1:
900 metres

Option 2:
1160 metres

Option 3:
508 metres

Option 4:
580 metres

Correct Answer:
580 metres

Solution:
Given: The speed of the train is 116 km/hr.
For converting it into m/sec, multiply with $\frac{5}{18}$.
So, 116 km/hr = 116 × $\frac{5}{18}$ m/s = $\frac{580}{18}$ m/s
∴ The distance covered in 18 seconds = Speed × Time = $\frac{580}{18} \times 18 = 580$ metres
Hence, the correct answer is 580 metres.

Q. 21 Gol Gumbaz was built in which century?

Option 1:
15th

Option 2:
16th

Option 3:
17th

Option 4:
18th

Correct Answer:
17th

Solution:
The correct answer is the **17th century.**

The Gol Gumbaz, a significant historical structure in Bijapur, was built in the 17th century by Mohammed Adil Shah, the seventh sultan of the Shahi dynasty. It is built using Indo-Islamic design. The round dome is the second-largest dome in the world. This structure is occasionally referred to as the Taj Mahal of South India.

Q. 22 Which of the following Sultans of the Tughlaq Dynasty issued copper coins instead of silver ones?

Option 1:
Ghiyasuddin Tughlaq

Option 2:
Muhammad bin Tughluq

Option 3:
Firuz Shah Tughlaq

Option 4:
Abu Bakr Shah

Correct Answer:
Muhammad bin Tughluq

Solution:
The correct answer is **Muhammad bin Tughluq**.

The Tughlaq Sultan who issued copper coins instead of silver ones was Muhammad bin Tughluq. During his reign, he introduced copper coins known as "tankas" to replace the silver coins. This decision, among other factors, contributed to economic challenges and is often cited as one of the reasons for the financial difficulties faced by his administration.

Q. 23 In which of the following states Vidhan Sabha elections was not held in 2022?

Option 1:
Haryana

Option 2:
Goa

Option 3:
Punjab

Option 4:
Uttar Pradesh

Correct Answer:
Haryana

Solution:
The correct answer is **Haryana**

The states that held elections for state assemblies in 2022 are Goa, Punjab, Uttarakhand, Uttar Pradesh, Manipur, Himachal Pradesh, and Gujarat. The elections in Haryana will take place in 2024.

Q. 24 Which of the following taxes is levied by the state government only?

Option 1:
Wealth tax

Option 2:
Entertainment tax

Option 3:
Income tax

Option 4:
Gift tax

Correct Answer:
Entertainment tax

Solution:
The correct option is **Entertainment tax**.

The State List of the Seventh Schedule of the Indian Constitution grants states the authority to levy and collect taxes on entertainment. This indicates that the state governments have the power to impose and regulate taxes on entertainment activities like movies, theatres, visiting an amusement park, etc.

Q. 25 The garden inside the Taj Mahal is known as ____.

Option 1:
Mughal Garden

Option 2:
Taj Bageecha

Option 3:
Taj Mahal Garden

Option 4:
Mahal Bageecha

Correct Answer:
Mughal Garden

Solution:
The correct answer is the **Mughal Garden.**

The Mughal Garden is located inside the Taj Mahal. It's a Persian-style garden with paths or water channels dividing it into four equal sections. The Charbagh, a formal garden featuring terraced flowerbeds, water channels, and pathways, is a key component of the Taj Mahal's overall architectural design.

Q. 26 Wall Street collapse led to _____.

Option 1:
World War II

Option 2:
Recession

Option 3:
U.S. Attack on Iraq

Option 4:
Great Depression

Correct Answer:
Great Depression

Solution:
The correct answer is the **Great Depression.**

The Great Depression began in 1929 after the Wall Street crashed and the 20th century's worst economic downturn occurred. It began in the US in 1929 and quickly spread to other countries. A protracted period of extreme poverty, despair and significant unemployment characterised the Great Depression. The Wall Street

is eight blocks long and lies in the financial district of Lower Manhattan. It's situated in New York City.

Q. 27 Which of the following countries do not have a written constitution?

Option 1:
United Kingdom

Option 2:
Australia

Option 3:
United States of America

Option 4:
Bangladesh

Correct Answer:
United Kingdom

Solution:
The correct answer is the **United Kingdom.**

A written constitution is a carefully planned document that outlines all the fundamental laws, institutions and rules. An **'unwritten' constitution** is what the **UK** is said to have. The various texts that comprise the laws of the land are not all codified in writing. Many countries, including **Saudi Arabia, the United Kingdom, China, Israel, Canada, and New Zealand**, have unwritten constitutions.

Q. 28 Who appoints the members of the State Public Service Commission (PSC)?

Option 1:
The Chief Minister

Option 2:
The Governor

Option 3:
The Chief Justice

Option 4:
The Vice President

Correct Answer:
The Governor

Solution:
The correct answer is **The Governor.**

The Governor of the State appoints the Chairman and members of the State Public Service Commission. The Chairman and members of the Joint Public Service Commission are chosen by the Indian President.

Q. 29 The Comptroller and Auditor General is closely connected with which of the following Committees of Parliament?

Option 1:
The Estimates Committee

Option 2:
The Committee on Public Undertakings

Option 3:
The Public Accounts Committee

Option 4:
All of these

Correct Answer:
The Public Accounts Committee

Solution:
The answer is **The Public Accounts Committee**.

Article 148 of the Indian Constitution establishes the office of the Comptroller and Auditor General of India. This institution is tasked with auditing both the Government of India and entities that receive government funding. It holds the highest authority in auditing matters within India. The CAG presents an annual report to the President of India, which is then deliberated upon by the Public Accounts Committee (PAC).

Q. 30 The Comptroller and Auditor General of India submits his report relating to the accounts of the union to the:

Option 1:
Finance minister

Option 2:
Prime minister

Option 3:
President

Option 4:
Chief Justice of the Supreme Court

Correct Answer:
President

Solution:
The correct answer is **The President**.

The Comptroller and Auditor General (CAG) of India annually submits its report to the President of India. Established under Article 148 of the Indian Constitution, it is the topmost audit institution in India. CAG audits the accounts of the Government of India and other institutions that receive government funding. The Public Accounts Committee (PAC) is responsible for discussing the CAG report in the parliament.

Q. 31 The northern part of the West Coast is known as

Option 1:
Coromandel coast

Option 2:
Malabar coast

Option 3:
Konkan coast

Option 4:
Northern circars

Correct Answer:
Konkan coast

Solution:
The correct option is **Konkan Coast**.

The Konkan Coast refers to the northernmost region of India's west coast. The Konkan Coast spans sections of the Indian states of Maharashtra, Goa, and Karnataka along the country's western coastline. The Coromandel Coast, Malabar Coast, and Northern Circars are regions located along the southeastern and eastern coasts of India.

Q. 32 The largest irrigation canal in India is called the

Option 1:
Yamuna Canal

Option 2:
Sirhind Canal

Option 3:
Indira Gandhi Canal

Option 4:
Upper Bari Doab Canal

Correct Answer:
Indira Gandhi Canal

Solution:
The correct answer is the **Indira Gandhi Canal.**

The Indira Gandhi Canal is the longest canal system in India. It starts at Harike Barrage and flows parallel to the India-Pakistan border. The primary aim of the project was to provide irrigation facilities in Rajasthan. Harike Barrage is formed at the confluence of the rivers Sutlej and Beas in the state of Punjab, and the Indira Gandhi Canal passes through the states of Punjab, Rajasthan and Haryana.

Q. 33 Which of the following is the name of the US Parliament?

Option 1:
Diet

Option 2:
Senate

Option 3:
Congress

Option 4:
House of Commons

Correct Answer:
Congress

Solution:
The correct answer is **Congress**

Congress, the United States' parliament, was established in 1789. The House of Representatives and the Senate make the two Houses of this bicameral legislature. There are 435 members of the House of Representatives and 100 senators among the 535 total members of Congress.

Q. 34 The suicidal bags of the cell are

Option 1:
Lysosomes

Option 2:
Ribosomes

Option 3:
Dictyosomes

Option 4:
Phagosomes

Correct Answer:
Lysosomes

Solution:
The correct option is **Lysosomes**.

The Lysosomes is the organelle known as the suicidal bag in cells. Lysosomes are membrane-bound organelles within cells that contain enzymes that degrade cellular waste items such as worn-out organelles, cellular debris and foreign substances. They are critical components of cellular maintenance, recycling and defence systems.

Q. 35 Postage Meter was invented by

Option 1:
Fyodor Pirotsky

Option 2:
Arthur Pitney

Option 3:
Fritz Pfleumer

Option 4:
Stephen Perry

Correct Answer:
Arthur Pitney

Solution:

The correct option is **Arthur Pitney**.

The Postage Meter, a significant invention, was pioneered by American entrepreneur and inventor Arthur Pitney. On December 9, 1901, Pitney formally filed a patent application in Stamford, Connecticut, marking the inception of the world's inaugural Postage Meter.

Q. 36 The daily weather map of India is prepared and printed at

Option 1:
Kolkata

Option 2:
Mumbai

Option 3:
New Delhi

Option 4:
Pune

Correct Answer:
Pune

Solution:
The correct answer is **Pune**.

The National Data Centre of India Meteorological Department (IMD) in Pune prepares and prints the daily weather map of India. The India Meteorological Department (IMD) is an agency of the Government of India's Ministry of Earth Sciences. It is the primary agency of meteorological monitoring, forecasts and seismology.

Q. 37 Atoms having the same number of protons but different numbers of neutrons are called

Option 1:
Isotopes

Option 2:
Cations

Option 3:
Higgs Boson

Option 4:
Anions

Correct Answer:
Isotopes

Solution:
The correct answer is **Isotopes.**

Isotopes are those atoms which have the same number of protons but different numbers of neutrons.

For example- There are three isotopes of Hydrogen. They are Protium, Deuterium, and Tritium. Where Protium only has one electron and one proton, Deuterium has one electron, one proton, and one neutron, while Tritium has one electron, one proton, and two neutrons.

Q. 38 Electrons in the highest energy level of an atom are called _____.

Option 1:
Valence protons

Option 2:
Orbital protons

Option 3:
Valence electrons

Option 4:
Orbital electrons

Correct Answer:
Valence electrons

Solution:
The correct option is **valence electrons**

Valence electrons are electrons in an atom's outermost energy level or shell. These electrons are involved in the formation of chemical bonds as well as the interactions of the atom with other atoms. An atom's valence electrons control its reactivity, chemical properties and capacity to form bonds with other atoms. The electrons in the outermost electron shell are known as valence electrons.

Q. 39 What is the other name of Sahyadri Range?

Option 1:
Lesser Himalayas

Option 2:
Shivaliks

Option 3:
Western Ghats

Option 4:
Eastern Ghats

Correct Answer:
Western Ghats

Solution:
The correct option is the **Western Ghats**

Known by most as the **Western Ghats**, the Sahyadri group is a group of mountains that runs parallel to India's western coast. It extends roughly **1,600km** from the Tamil Nadu and Kerala borders in the south to Gujarat and Maharashtra in the north. The range is known for its verdant woods, variety of wildlife and profusion of rivers and waterfalls. The ecological balance of the Indian subcontinent depends on the Sahyadri Range.

Q. 40 Who among the following Indians has been honoured by a special Oscar?

Option 1:
Mahesh Bhatt

Option 2:
Satyajit Ray

Option 3:
Mira Nair

Option 4:
G.P. Sippy

Correct Answer:
Satyajit Ray

Solution:
The correct answer is **Satyajit Ray.**

Satyajit Ray, the great Bengali director, received an Honorary Academy Award, commonly known as a Special Oscar, in 1992, being the only Indian to do so. He received the Oscar in 1992 at the 64th Academy Awards. Satyajit Ray was a Bengali film director, writer, and animator who popularized Indian cinema with works such as Pather Panchali, and its two sequels, known as the Apu Trilogy, and others.

Q. 41 **Directions:** Which of the following interchange of signs would make the given equation correct?
5 + 3 × 8 – 12 ÷ 4 = 3

Option 1:
– and ÷

Option 2:
+ and ×

Option 3:
+ and ÷

Option 4:
+ and –

Correct Answer:
– and ÷

Solution:
Given:
5 + 3 × 8 – 12 ÷ 4 = 3

Replace the given signs in the options one by one with those in the given equation.
First option: – and ÷
= 5 + 3 × 8 ÷ 12 – 4
= 5 + 2 – 4
= 7 – 4
= 3
Second option: + and ×
= 5 × 3 + 8 – 12 ÷ 4
= 5 × 3 + 8 – 3
= 15 + 8 – 3
= 23 – 3
= 20 ≠ 3
Third option: + and ÷
= 5 ÷ 3 × 8 – 12 + 4
= 1.67 × 8 – 12 + 4
= 13.36 – 12 + 4
= 5.36 ≠ 3
Fourth option: + and –
= 5 – 3 × 8 + 12 ÷ 4
= 5 – 3 × 8 + 3
= 5 – 24 + 3
= –16 ≠ 3

Here, only the first option satisfies the R.H.S. of the given equation. Hence, the **first option** is correct.

Q. 42 **Directions:** In the following question, correct the equation by interchanging two signs.
6 + 8 ÷ 4 – 4 = 8

Option 1:
÷ and =

Option 2:
÷ and +

Option 3:
÷ and –

Option 4:
+ and –

Correct Answer:
+ and –

Solution:
Given:
6 + 8 ÷ 4 – 4 = 8

Let's check the options –
First option: ÷ and =
6 + 8 = 4 – 4 ÷ 8
LHS→6 + 8 = 14
RHS→4 – 4 ÷ 8
= 4 – 0.5
= 3.5
LHS ≠ RHS
Second option: ÷ and +
6 ÷ 8 + 4 – 4 = 8
LHS→6 ÷ 8 + 4 – 4
= 0.75 + 4 – 4
= 0.75
RHS→8
LHS ≠ RHS
Third option: ÷ and –
6 + 8 – 4 ÷ 4 = 8
LHS→6 + 8 – 4 ÷ 4
= 6 + 8 – 1
= 14 – 1
= 13

RHS→8
LHS ≠ RHS
Fourth option: + and –
6 – 8 ÷ 4 + 4 = 8
LHS→6 – 8 ÷ 4 + 4
= 6 – 2 + 4
= 10 – 2
= 8
RHS→8
LHS = RHS

Only the fourth option satisfies the equation. Hence, the **fourth option** is correct.

Q. 43 **Directions:** In the following question, select the related word from the given alternatives.
Fungi : Mycology :: Tissue : ?

Option 1:
Haematology

Option 2:
Cytology

Option 3:
Histology

Option 4:
Bacteriology

Correct Answer:
Histology

Solution:
Given:
Fungi : Mycology :: Tissue : ?

The study of fungi is known as Mycology.
Similarly, the study of tissue is known as Histology.

Hence, the **third option** is correct.

Q. 44 **Directions:** In the following question, select the related word from the given alternatives.
Flow : River :: Stagnant : ?

Option 1:
Pond

Option 2:
Rain

Option 3:
Stream

Option 4:
Canal

Correct Answer:
Pond

Solution:
Given:
Flow : River :: Stagnant : ?

The river is characterised by its continuous flow of water.
Similarly, the pond is stagnant since the water in it remains still and motionless.

Hence, the **first option** is correct.

Q. 45 **Directions:** In the following question, find the odd letter cluster from the given alternatives.

Option 1:
ACEG

Option 2:
BDFG

Option 3:
JLNP

Option 4:
SUWY

Correct Answer:
BDFG

Solution:
Let's check the options –
First option: ACEG; A + 2 = C; C + 2 = E; E + 2 = G
Second option: BDFG; B + 2 = D; D + 2 = F; F + 1 = G

Third option: JLNP; J + 2 = L; L + 2 = N; N + 2 = P
Fourth option: SUWY; S + 2 = U; U + 2 = W; W + 2 = Y

So, only in the second option, the difference between the place value of the third and fourth letters is 1 instead of 2. Hence, the **second option** is correct.

Q. 46 **Directions:** In the following question, find the odd letter cluster from the given alternatives.

Option 1:
NSWX

Option 2:
KPSU

Option 3:
HMQR

Option 4:
EJNO

Correct Answer:
KPSU

Solution:
Let's check the options –
First option: NSWX; N + 5 = S; S + 4 = W; W + 1 = X
Second option: KPSU; K + 5 = P; P + 3 = S; S + 2 = U
Third option: HMQR; H + 5 = M; M + 4 = Q; Q + 1 = R
Fourth option: EJNO; E + 5 = J; J + 4 = N; N + 1 = O

So, the second option is different from the other three options because the difference in the position value of the letters is different. Hence, the **second option** is correct.

Q. 47 **Directions:** A man walks 7 km towards the south and turns to the left. After walking 5 km, he turns to the right and walks 7 km. In which direction is he now from the starting point?

Option 1:
West

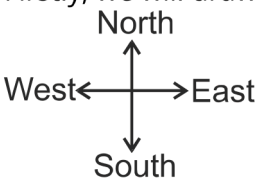
Option 2:
South

Option 3:
South-East

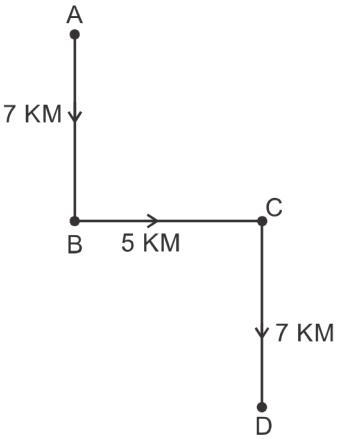
Option 4:
North-East

Correct Answer:
South-East

Solution:
Firstly, we will draw the diagram according to the instructions given in the question –



Now, we have to find the direction of the end point from the starting point.



So, he is in the south-east direction from the starting point. Hence, the **third option** is correct.

Q. 48 **Directions:** Ramesh starts his journey by walking 2 kilometres towards the north. Then he takes a right turn and walks 1 kilometre. Again, takes a right turn and walks 2 kilometres. Now, which direction is he facing?

Option 1:
East

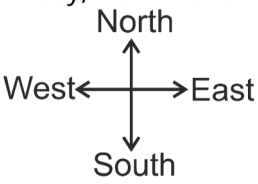
Option 2:
West

Option 3:
South

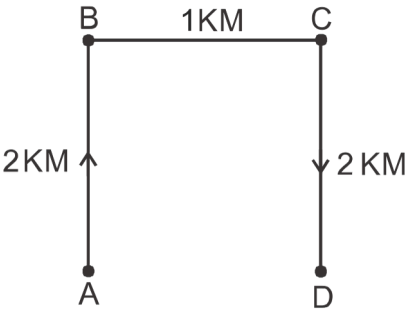
Option 4:
North

Correct Answer:
South

Solution:
Firstly, we will draw the direction and distance diagram according to the instructions –



Now, we have to find in which direction Ramesh is facing now.



Here, A is the starting point and D is the endpoint.

So, Ramesh is facing the south direction. Hence, the **third option** is correct.

Q. 49 **Directions:** The weights of 4 boxes are 30, 20, 60 and 70 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination a box can be used only once?

Option 1:
180

Option 2:
170

Option 3:
120

Option 4:
150

Correct Answer:
170

Solution:
Given:
The weights of 4 boxes are 30, 20, 60 and 70 kilograms.

The total weight of all possible combinations of boxes is as follows –
30 + 20 = 50; 30 + 60 = 90; 30 + 70 = 100; 20 + 60 = 80;
20 + 70 = 90; 60 + 70 = 130; 30 + 20 + 60 = 110;
30 + 60 + 70 = 160; 30 + 20 + 70 = 120; 20 + 60 + 70 = 150;
20 + 60 + 70 + 30 = 180

Therefore, there is no total weight of 170 kilograms in any combination. Hence, the **second option** is correct.

Q. 50 **Directions:** The age of Dr. Pandey is four times the age of his son. After 10 years, the age of Dr. Pandey will be twice the age of his son. What is the present age of Dr. Pandey's son?

Option 1:
4 years

Option 2:
5 years

Option 3:
6 years

Option 4:
8 years

Correct Answer:
5 years

Solution:
Let Dr. Pandey's present age be A, and Dr. Pandey's son's present age be B.

As per the given information,
Dr. Pandey's age is four times the age of his son ⇒ A = 4 × B = 4B

After 10 years, Dr. Pandey's age = (A + 10), and Dr. Pandey's son's age = (B + 10)
Also, after 10 years, Dr. Pandey's age will be twice his son's age, i.e., (A + 10) = 2 × (B + 10)

As, A = 4B; therefore, (A + 10) = 2 × (B + 10) can be written as –
⇒ (4B + 10) = 2 × (B + 10)
⇒ 4B + 10 = 2B + 20
⇒ 4B – 2B = 20 – 10
⇒ 2B = 10 ⇒ B = 10 ÷ 2
⇒ B = 5

So, Dr. Pandey's son's present age is 5 years. Hence, the **second option** is correct.

Q. 51 **Directions**: If it is Saturday, the 27th of September, what day will it be on the 27th of October of the same year?

Option 1:
Thursday

Option 2:
Sunday

Option 3:
Friday

Option 4:
Monday

Correct Answer:
Monday

Solution:
Given:
The 27th of September is Saturday.

Remaining days in September = 3 days
Number of days in October = 27 days
Total number of days = 27 + 3 = 30 days
Now, divide the total number of days, i.e., 30 days by 7, the remainder is 2.
Saturday + 2 days→Monday

So, the 27th of October of the same year is Monday. Hence, the **fourth option** is correct.

Q. 52 **Directions:** Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
M_OMMN_M_NOMMN_M

Option 1:
ONMO

Option 2:
NOMO

Option 3:
MONM

Option 4:
NNMO

Correct Answer:
NOMO

Solution:
Given:
M_OMMN_M_NOMMN_M

To fill the series we have to divide the series – M_OM / MN_M / _NOM / MN_M
Let's check each option –
First option: ONMO; MOOM / MNNM / MNOM / MNOM (No repeated pattern has been found.)
Second option: NOMO; MNOM / MNOM / MNOM / MNOM (MNOM is repeated in the series.)
Third option: MONM; MMOM / MNOM / NNOM / MNMM (No repeated pattern has been found.)
Fourth option: NNMO; MNOM / MNNM / MNOM / MNOM (No repeated pattern has been found.)

So, the series becomes→MNOMMNOMMNOMMNOM. Hence, the **second option** is correct.

Q. 53 **Directions:** Which one set of letters/numbers when sequentially placed at the gaps in the given letter series shall complete it?
a _ ca _ c _ dc _ d _ ad _

Option 1:
ddacdc

Option 2:
daadca

Option 3:
dadaac

Option 4:
ddaacc

Correct Answer:
ddaacc

Solution:
Given:
a _ ca _ c _ dc _ d _ ad _

To fill the series we have to divide the series – a _ c / a _ c / _ dc / _ d _ / ad _
Let's check each option –
First option: ddacdc; adc / adc / adc / cdd / adc (No repeated pattern has been found.)

Second option: daadca; adc / aac / adc / ddc / ada (No repeated pattern has been found.)
Third option: dadaac; adc / aac / ddc / ada / adc (No repeated pattern has been found.)
Fourth option: ddaacc; adc / adc / adc / adc / adc (adc is repeated in the series.)

So, the series becomes→adcadcadcadcadc. Hence, the **fourth option** is correct.

Q. 54 **Directions:** Which one set of letters/numbers when sequentially placed at the gaps in the given letter series shall complete it?
_sr_tr_srs_r_srst_

Option 1:
ttssrr

Option 2:
tsrtsr

Option 3:
strtrs

Option 4:
tstttr

Correct Answer:
tstttr

Solution:
Given:
_sr_tr_srs_r_srst_

To fill the series we have to divide the series – _sr_tr /_srs_r /_srst_
Let's check each option –
First option: ttssrr; tsrttr **/** ssrssr **/** rsrstr (No repeated pattern has been found.)
Second option: tsrtsr; tsrstr **/** rsrstr **/** ssrstr (No repeated pattern has been found.)
Third option: strtrs; ssrttr **/** rsrstr **/** rsrsts (No repeated pattern has been found.)
Fourth option: tstttr; tsrstr **/** tsrstr **/** tsrstr (tsrstr is repeated in the series.)

So, the series becomes→tsrstrtsrstrtsrstr. Hence, the **fourth option** is correct.

Q. 55 **Directions:** Select the related letter cluster from the given alternatives.
PZQW : NXOU :: FISK : ?

Option 1:
EFPJ

Option 2:
FERI

Option 3:
DGQI

Option 4:
HKVM

Correct Answer:
DGQI

Solution:
Given:
PZQW : NXOU :: FISK : ?

Subtract 2 from the place value of PZQW to obtain the required code –
P – 2 = N; Z – 2 = X; Q – 2 = O; W – 2 = U
Thus, PZQW is coded as NXOU.
Similarly, follow the same pattern for FISK –
F – 2 = D; I – 2 = G; S – 2 = Q; K – 2 = I

Thus, FISK is coded as DGQI. Hence, the **third option** is correct.

Q. 56 **Directions:** Select the related letter cluster from the given alternatives.
ACEG : ZXVT :: IKMO : ?

Option 1:
MNOP

Option 2:
PQRS

Option 3:
RPNL

Option 4:
LNPR

Correct Answer:
RPNL

Solution:
Given:
ACEG : ZXVT :: IKMO : ?

The pattern followed here is each letter is coded as its opposite letter –
Like, ACEG = A→Z; C→X; E→V; G→T
Thus, ACEG is coded as ZXVT.
Similarly, follow the same pattern for IKMO –
I→R; K→P; M→N; O→L

Thus, IKMO is coded as RPNL. Hence, the **third option** is correct.

Q. 57 **Directions:** A is D's brother. D is B's father. B and C are sisters. How is C related to A?

Option 1:
Cousin

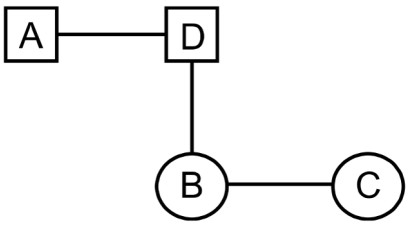
Option 2:
Niece

Option 3:
Aunt

Option 4:
Nephew

Correct Answer:
Niece

Solution:
As per the given information, the family tree will be as follows –



Here, the quadrilateral represents the male, and the circular figure represents the female in the figure.

So, from the above family tree, C is the niece of A. Hence, the **second option** is correct.

Q. 58 **Directions:** X and Y are brothers. R is the father of Y. T is the sister of S who is the maternal uncle of X. How is T related to R?

Option 1:
Mother

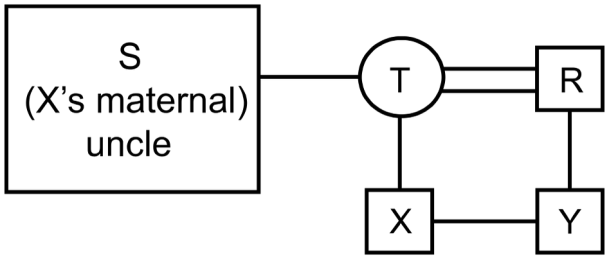
Option 2:
Wife

Option 3:
Sister

Option 4:
Brother

Correct Answer:
Wife

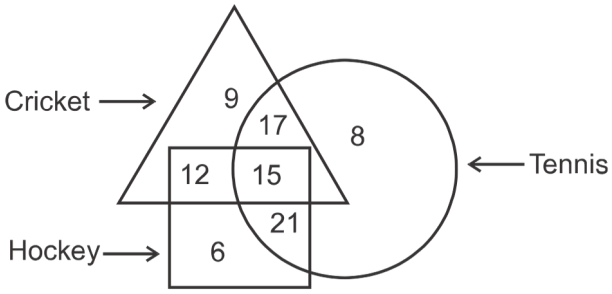
Solution:
As per the given information, the family tree will be as follows –



Here, the quadrilateral represents the male, and the circular figure represents the female in the figure.

So, from the above family tree, T is the wife of R. Hence, the **second option** is correct.

Q. 59 **Directions:** In the given figure, how many people like cricket and tennis both?



Option 1:
17

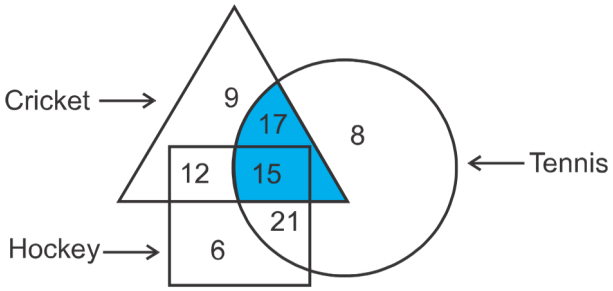
Option 2:
32

Option 3:
15

Option 4:
27

Correct Answer:
32

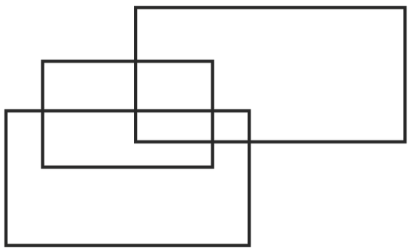
Solution:
In the below diagram, the shaded part represents the region common to both cricket and tennis as well as hockey. The numbers of the asked fields that fall in the hockey region will also be counted as there is no direction given that the region belonging to hockey can not be included.



The total number of people who like cricket and tennis both = 17 + 15 = 32

Therefore, 32 people like both cricket and tennis. Hence, the **second option** is correct.

Q. 60 **Directions:** How many rectangles are there in the given figure?



Option 1:
9

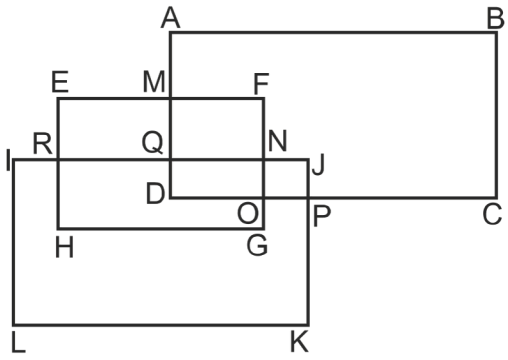
Option 2:
10

Option 3:
11

Option 4:
12

Correct Answer:
11

Solution:
The given figure can be labeled as shown below –



There are a total of 11 rectangles in the above figure. They are ABCD, EFGH, IJKL, MFNQ, EMQR, EFNR, QNOD, NJPO, QJPD, RNGH, MFOD.

Hence, the **third option** is correct.