

CUET-UG General Aptitude Test Sample Paper-4

Duration: 1 Hour

Maximum Marks: 250

Instructions

- This paper contains a total of 50 Multiple Choice Questions.
- Each correct answer carries **+5 marks**.
- Each incorrect answer carries **-1 mark**.
- No negative marking for unattempted questions.

Q1. A man's salary is increased by 10%, then decreased by 10%, and then increased by 20%. What is the net percentage change in his salary?

- (A) 8.8% increase
- (B) 10.2% increase
- (C) 18.8% increase
- (D) 20% increase

Q2. A shopkeeper marks his goods 40% above the cost price and allows a discount of 25%. If he uses a weight of 800g instead of 1kg while selling, find his overall profit percentage.

- (A) 25%
- (B) 31.25%
- (C) 35.5%
- (D) 40%

Q3. The difference between compound interest (compounded annually) and simple interest on a sum of money for 3 years at 10% per annum is ₹ 155. Find the principal amount.

- (A) ₹ 4000
- (B) ₹ 5000



(C) ₹ 6000

(D) ₹ 4500

Q4. If $a : b = 2 : 3$, $b : c = 4 : 5$, and $c : d = 6 : 7$, then find the ratio of $a : d$.

(A) 16:35

(B) 24:35

(C) 8:15

(D) 12:35

Q5. A can do a work in 12 days and B in 15 days. They work together for 3 days and then B leaves. A is joined by C, and they finish the remaining work in 3 days. In how many days can C alone do the entire work?

(A) 12 days

(B) 15 days

(C) 20 days

(D) 30 days

Q6. A train 150m long passes a man running at 6 km/hr in the same direction in 9 seconds. What is the speed of the train in km/hr?

(A) 60 km/hr

(B) 66 km/hr

(C) 54 km/hr

(D) 72 km/hr

Q7. The average age of a class of 40 students is 15 years. When the teacher's age is included, the average increases by 1 year. What is the teacher's age?

(A) 55

(B) 56

(C) 41



(D) 60

Q8. In what ratio must a grocer mix tea at ₹ 60/kg and ₹ 65/kg so that by selling the mixture at ₹ 68.20/kg, he may gain 10%?

(A) 3:2

(B) 3:4

(C) 3:5

(D) 4:5

Q9. A, B, and C invest in a business in the ratio 3:4:5. After 6 months, C withdraws half of his capital. If the total profit at the end of the year is ₹ 11,000, find C's share.

(A) ₹ 3,500

(B) ₹ 3,750

(C) ₹ 4,000

(D) ₹ 3,000

Q10. Pipe A can fill a tank in 10 hours, and Pipe B can empty it in 15 hours. If both are opened together, how long will it take to fill the tank?

(A) 25 hours

(B) 30 hours

(C) 20 hours

(D) 12 hours

Q11. If the five-digit number $653xy$ is divisible by 80, then find the value of $x + y$.

(A) 2

(B) 6

(C) 4

(D) 8



Q12. The LCM of two numbers is 480 and their HCF is 160. If one number is 480, find the other number.

- (A) 160
- (B) 320
- (C) 120
- (D) 240

Q13. Identify the largest value among the following surds: $\sqrt{2}$, $\sqrt[3]{3}$, $\sqrt[4]{4}$.

- (A) $\sqrt{2}$
- (B) $\sqrt[3]{3}$
- (C) $\sqrt[4]{4}$
- (D) All are equal

Q14. Find the value of the following expression: $\frac{0.05 \times 0.05 \times 0.05 - 0.04 \times 0.04 \times 0.04}{0.05 \times 0.05 + 0.05 \times 0.04 + 0.04 \times 0.04}$

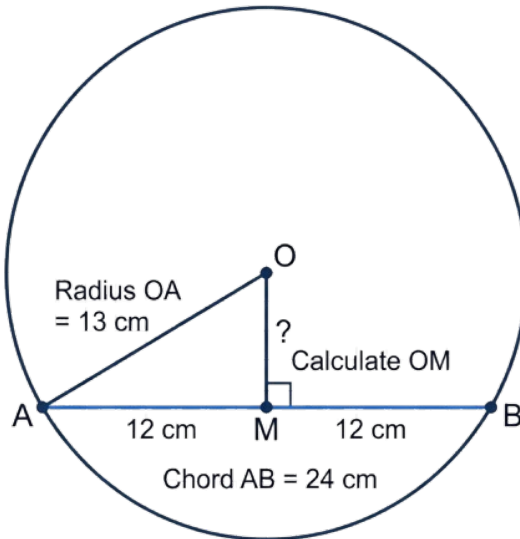
- (A) 0.01
- (B) 0.1
- (C) 0.001
- (D) 0.9

Q15. If $x + \frac{1}{x} = 5$, find the value of $x^3 + \frac{1}{x^3}$.

- (A) 110
- (B) 125
- (C) 140
- (D) 115



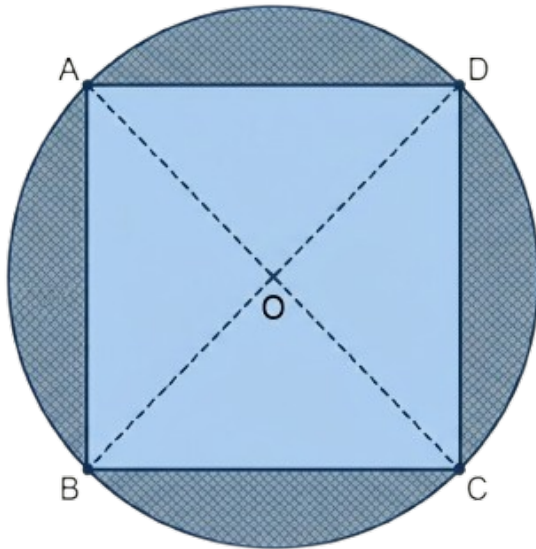
- Q16.** A circle with center O has a chord AB of length 24 cm. A perpendicular line from center O meets the chord at point M . If the radius OA is 13 cm, calculate the length of OM .



- (A) 5 cm
(B) 7 cm
(C) 12 cm
(D) 10 cm
- Q17.** The sum of the interior angles of a regular polygon is 1440° . How many sides does this polygon have?
- (A) 8
(B) 10
(C) 12
(D) 14

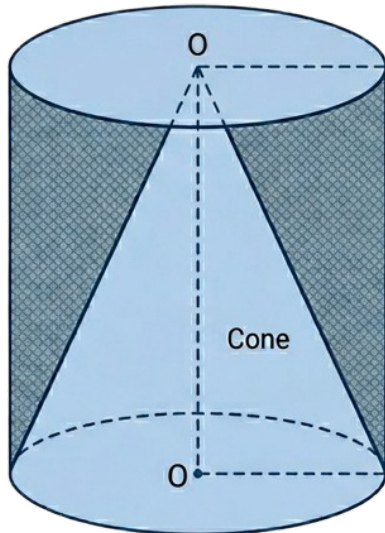


- Q18.** A square is inscribed inside a circle of radius $7\sqrt{2}$ cm. The four vertices of the square touch the circumference. Find the area of the shaded region consisting of the circle area minus the square area. (Take $\pi = 22/7$)



- (A) 112 cm^2
(B) 108 cm^2
(C) 124 cm^2
(D) 96 cm^2
- Q19.** A right circular cone is placed inside a cylinder. Both share the same base radius of 6 cm and the same height of 14 cm. Find the volume of the remaining space in the cylinder after the cone is removed.





- (A) 1056 cm^3
- (B) 528 cm^3
- (C) 1584 cm^3
- (D) 792 cm^3

Q20. If $2x + 3y = 12$ and $3x - 2y = 5$, find the value of $x + y$.

- (A) 3
- (B) 4
- (C) 5
- (D) 7

Q21. If the radius of a sphere is doubled, by how many times will its volume increase?

- (A) 2 times
- (B) 4 times
- (C) 8 times
- (D) 16 times



- Q22.** In a certain code, "MUMBAI" is written as "NWN CBJ". How is the word "DELHI" written in that same code?
- (A) EFMIJ
(B) EFMJK
(C) EGMJK
(D) EDMGH
- Q23.** If the word "RAIN" is coded as 42 and "SUN" is coded as 54, what is the numerical code for "CLOUD"?
- (A) 55
(B) 59
(C) 61
(D) 65
- Q24.** Pointing to a photograph, Vikas said, "She is the daughter of my grandfather's only son." How is the girl in the photograph related to Vikas?
- (A) Mother
(B) Sister
(C) Cousin
(D) Aunt
- Q25.** If $A + B$ means A is the father of B, and $A - B$ means A is the sister of B. What is the relationship of P to Q in the expression $P - R + Q$?
- (A) P is the aunt of Q
(B) P is the sister of Q
(C) P is the mother of Q
(D) P is the daughter of Q
- Q26.** A man walks 5km South, then turns right and walks 3km. He then turns left and walks 5km. In which direction is he now situated from the starting point?



- (A) West
- (B) South
- (C) South-West
- (D) South-East

Q27. If North-East becomes West and South-East becomes North, what will the direction West become?

- (A) South-East
- (B) North-East
- (C) South-West
- (D) North-West

Q28. Complete the number series: 2, 6, 12, 20, 30, ?

- (A) 40
- (B) 42
- (C) 44
- (D) 46

Q29. Complete the alphanumeric series: BDF, CFI, DHL, ?

- (A) EIM
- (B) EJO
- (C) EKP
- (D) ELO

Q30. Complete the series: 1, 8, 27, 64, ?

- (A) 100
- (B) 121
- (C) 125
- (D) 144



- Q31.** Statements: (I) All Pens are Erasers. (II) Some Erasers are Pencils. Conclusions:
(I) Some Pencils are Pens. (II) All Erasers are Pens.
- (A) Only I follows
(B) Only II follows
(C) Both follow
(D) Neither follows
- Q32.** Identify the Venn Diagram that best represents the relationship between: Women, Mothers, and Engineers.
- (A) One circle inside another, third overlapping both
(B) Three disjoint circles
(C) Three fully overlapping circles
(D) One circle inside another, third separate
- Q33.** Five friends (A, B, C, D, E) are sitting in a row facing North. A is to the immediate left of E. C is between B and D. D is at the extreme right end. Who is sitting in the middle?
- (A) A
(B) B
(C) C
(D) E
- Q34.** Six people are sitting around a circular table facing the center. P is opposite Q. R is between P and S. T is to the immediate left of Q. Who is to the immediate right of Q?
- (A) S
(B) R
(C) U
(D) P



- Q35.** In a class of 50 students, Rohit is ranked 15th from the top. What is his rank from the bottom?
- (A) 35th
(B) 36th
(C) 34th
(D) 37th
- Q36.** Choose the correct mirror image of the word "QUALITY" when the mirror is placed vertically to the right of the word.
- (A) YTILAUQ
(B) YTILaub
(C) QUAlITY
(D) YTIJAUQ
- Q37.** A square paper is folded diagonally, then once more into a triangle, and a hole is punched in the center. When the paper is fully unfolded, how many holes will be visible?
- (A) 1
(B) 2
(C) 4
(D) 8
- Q38.** Who was awarded the Bharat Ratna in 2024 (posthumously) for his significant contribution to social justice?
- (A) Karpoori Thakur
(B) L.K. Advani
(C) M.S. Swaminathan
(D) P.V. Narasimha Rao
- Q39.** Which country/countries hosted the ICC Men's T20 World Cup 2024?



- (A) India
- (B) Australia
- (C) West Indies & USA
- (D) England

Q40. Who is the current ex-officio Chairperson of the NITI Aayog?

- (A) Suman Bery
- (B) B.V.R. Subrahmanyam
- (C) Narendra Modi
- (D) Shaktikanta Das

Q41. Which country held the G20 Presidency for the year 2024?

- (A) India
- (B) Brazil
- (C) South Africa
- (D) USA

Q42. The "Summit of the Future 2024" was organized by which of the following international bodies?

- (A) WEF
- (B) United Nations
- (C) ASEAN
- (D) BRICS

Q43. Who won the Men's Singles title at the 2024 Wimbledon Championships?

- (A) Novak Djokovic
- (B) Carlos Alcaraz
- (C) Jannik Sinner
- (D) Daniil Medvedev



- Q44.** Which Article of the Indian Constitution empowers the President of India to impose President's Rule in a State?
- (A) Article 352
 - (B) Article 356
 - (C) Article 360
 - (D) Article 370
- Q45.** Who among the following was a primary founder of the 'Hindustan Socialist Republican Association' in 1928?
- (A) Bhagat Singh & Chandrashekhar Azad
 - (B) Lala Lajpat Rai
 - (C) Subhas Chandra Bose
 - (D) Bal Gangadhar Tilak
- Q46.** In which year did the Dandi March (Salt Satyagraha) led by Mahatma Gandhi take place?
- (A) 1920
 - (B) 1930
 - (C) 1942
 - (D) 1919
- Q47.** The 'Hirakud Dam', one of the longest dams in the world, is built across which river?
- (A) Ganga
 - (B) Mahanadi
 - (C) Krishna
 - (D) Godavari
- Q48.** Night blindness is a medical condition caused primarily by the deficiency of which Vitamin?



- (A) Vitamin B12
- (B) Vitamin K
- (C) Vitamin A
- (D) Vitamin C



- Q49.** A concave lens always forms an image with which of the following characteristics?
- (A) Virtual and Erect
 - (B) Real and Inverted
 - (C) Real and Erect
 - (D) Virtual and Inverted
- Q50.** Under the Paris Agreement, participating countries aim to limit global warming to well below how many degrees Celsius compared to pre-industrial levels?
- (A) 1.0°C
 - (B) 2.0°C
 - (C) 3.5°C
 - (D) 5.0°C



Detailed Solutions**Q1.****Solution**

Concept: Net percentage change after successive changes is calculated by multiplying the successive percentage changes applied to the initial value.

Solution: Let the initial salary be S.

1. Increase by 10%: New Salary = $S * (1 + 10/100) = S * (1.10) = 1.10S$

2. Decrease by 10%: New Salary = $1.10S * (1 - 10/100) = 1.10S * (0.90) = 0.99S$

3. Increase by 20%: Final Salary = $0.99S * (1 + 20/100) = 0.99S * (1.20) = 1.188S$

Net change in salary = Final Salary - Initial Salary = $1.188S - S = 0.188S$ Percentage change = $(0.188S / S) * 100\% = 0.188 * 100\% = 18.8\%$

Since the final salary (1.188S) is greater than the initial salary (S), it's an increase.

Final Answer : "18.8% increase"

Answer: (C)



Q2.

Solution

Concept: Overall profit percentage in cases involving marking up, discounts, and false weights is calculated by comparing the final selling price with the actual cost of the goods sold.

Solution: Let the Cost Price (CP) of 1 kg of goods be ₹ 100.

1. Marked Price (MP):

The shopkeeper marks his goods 40% above the cost price.

$$MP = CP + 40\% \text{ of } CP = 100 + 40 = ₹ 140 \text{ per kg.}$$

2. Selling Price (SP) after discount:

He allows a discount of 25% on the Marked Price.

$$SP = MP - 25\% \text{ of } MP = 140 - (0.25 * 140) = 140 - 35 = ₹ 105.$$

This is the price for the quantity he *claims* to sell (1kg).

3. Effect of false weight:

He uses a weight of 800g instead of 1kg (1000g).

This means he sells 800g of goods for ₹ 105.

The actual Cost Price of the goods he sold (800g) is:

$$CP \text{ of } 800g = (CP \text{ of } 1kg / 1000g) * 800g = (₹ 100 / 1000) * 800 = ₹ 80.$$

4. Overall Profit:

$$\text{Actual Selling Price (SP)} = ₹ 105$$

$$\text{Actual Cost Price (CP)} = ₹ 80$$

$$\text{Profit} = SP - CP = 105 - 80 = ₹ 25.$$

5. Overall Profit Percentage:

$$\text{Profit Percentage} = (\text{Profit} / \text{Actual CP}) * 100$$

$$\text{Profit Percentage} = (25 / 80) * 100 = (5 / 16) * 100 = 31.25\%.$$

Final Answer : “31.25%”

Answer: (B)



Q3.

Solution

Concept: The difference between Compound Interest (CI) and Simple Interest (SI) for 3 years can be calculated using their respective formulas: $SI = (P \times R \times T)/100$ and $CI = P(1 + R/100)^T - P$. For 3 years, the difference can also be approximated by a specific formula: $CI - SI = P(R/100)^2(3 + R/100)$.

Solution: Let the Principal be P.

Rate (R) = 10% per annum = 0.10.

Time (T) = 3 years.

1. Calculate Simple Interest (SI):

$$SI = P * R * T = P * 0.10 * 3 = 0.30P$$

2. Calculate Compound Interest (CI):

$$CI = P * (1 + R)^T - P$$

$$CI = P * (1 + 0.10)^3 - P$$

$$CI = P * (1.1)^3 - P$$

$$CI = P * 1.331 - P$$

$$CI = 0.331P$$

3. Find the difference:

$$\text{Difference} = CI - SI = 0.331P - 0.30P = 0.031P$$

4. Solve for Principal (P):

Given that the difference is ₹ 155.

$$0.031P = 155$$

$$P = 155 / 0.031$$

$$P = 155 / (31/1000)$$

$$P = (155 * 1000) / 31$$

$$P = 5 * 1000$$

$$P = ₹ 5000$$

Final Answer : “₹ 5000”

Answer: (B)



Q4.

Solution

Concept: To find the ratio of 'a:d' from a series of chained ratios like 'a:b', 'b:c', 'c:d', multiply the individual ratios as fractions.

Solution: Given ratios:

$$a:b = 2:3 \Rightarrow a/b = 2/3$$

$$b:c = 4:5 \Rightarrow b/c = 4/5$$

$$c:d = 6:7 \Rightarrow c/d = 6/7$$

To find the ratio a:d, we can multiply these ratios:

$$(a/b) * (b/c) * (c/d) = (a/d)$$

Substitute the given values:

$$a/d = (2/3) * (4/5) * (6/7)$$

Multiply the numerators and denominators:

$$a/d = (2 * 4 * 6) / (3 * 5 * 7)$$

$$a/d = 48 / 105$$

Simplify the fraction by dividing both numerator and denominator by their greatest common divisor, which is 3:

$$a/d = (48 \div 3) / (105 \div 3)$$

$$a/d = 16 / 35$$

So, the ratio a:d is 16:35.

Final Answer : "16:35"

Answer: (A)



Q5.

Solution

Concept: Work and Time problems can be solved by calculating the amount of work done per day (efficiency) and then determining the time required for a task. Total work can be assumed as 1 unit or the LCM of the individual times.

Solution: 1. Individual work rates:

A can do the work in 12 days, so A's 1-day work = $1/12$.

B can do the work in 15 days, so B's 1-day work = $1/15$.

2. Work done by A and B together:

(A+B)'s 1-day work = $1/12 + 1/15 = (5 + 4) / 60 = 9/60 = 3/20$.

They work together for 3 days.

Work done by (A+B) in 3 days = $3 * (3/20) = 9/20$.

3. Remaining work:

Remaining work = Total work - Work done = $1 - 9/20 = 11/20$.

4. Work done by A and C together:

A is joined by C, and they finish the remaining work ($11/20$) in 3 days.

(A+C)'s 1-day work = $(11/20) / 3 = 11/60$.

5. C's individual work rate:

C's 1-day work = (A+C)'s 1-day work - A's 1-day work

C's 1-day work = $11/60 - 1/12$

To subtract, find a common denominator:

C's 1-day work = $11/60 - (1 * 5) / (12 * 5) = 11/60 - 5/60 = 6/60 = 1/10$.

6. Time taken by C alone:

If C does $1/10$ of the work in 1 day, C alone can do the entire work in 10 days.

Final Answer : "10 days"

Answer: (A)



Q6.

Solution

Concept: When a train passes a man running in the same direction, the distance covered is the length of the train, and the relative speed is the difference between their speeds. All units must be consistent (e.g., meters and seconds, or kilometers and hours).

Solution: Let the speed of the train be S_T km/hr.

Speed of the man $S_M = 6$ km/hr.

Length of the train = Distance (D) = 150 m.

Time (T) = 9 seconds.

1. Convert units:

It's easier to work in meters and seconds first, then convert back to km/hr.

Relative speed will be in m/s.

Speed of man in m/s = $6 \text{ km/hr} * (5/18) \text{ m/s/km/hr} = 30/18 \text{ m/s} = 5/3 \text{ m/s}$.

2. Calculate relative speed:

Since the man is running in the same direction as the train, the relative speed (S_{rel}) is the difference between their speeds.

$S_{rel} = (S_T - S_M)$ km/hr.

In m/s, $S_{rel} = (S_T - 6) * (5/18)$ m/s.

3. Apply distance = speed * time formula:

$D = S_{rel} * T$

$150 \text{ m} = ((S_T - 6) * (5/18)) \text{ m/s} * 9 \text{ s}$

4. Solve for S_T :

$150 = (S_T - 6) * (5/18) * 9$

$150 = (S_T - 6) * (5/2)$

Multiply both sides by 2/5:

$150 * (2/5) = S_T - 6$

$30 * 2 = S_T - 6$

$60 = S_T - 6$

$S_T = 60 + 6$

$S_T = 66 \text{ km/hr}$.

Final Answer : "66 km/hr"

Answer: (B)



Q7.

Solution

Concept: Average = (Sum of values) / (Number of values). When a new value is added, the total sum and the number of values change, affecting the average.

Solution: 1. Initial total age of students:

Number of students = 40

Average age of students = 15 years

Total age of 40 students = Number of students * Average age

Total age = $40 * 15 = 600$ years.

2. After including the teacher:

Number of people = 40 students + 1 teacher = 41.

The average age increases by 1 year.

New average age = Initial average + 1 = $15 + 1 = 16$ years.

3. New total age:

Total age of (40 students + teacher) = New number of people * New average age

Total age = $41 * 16$.

Calculation: $41 * 16 = 41 * (10 + 6) = 410 + 246 = 656$ years.

4. Teacher's age:

Teacher's age = (Total age of students + teacher) - (Total age of students)

Teacher's age = $656 - 600 = 56$ years.

Final Answer : "56"

Answer: (B)



Q8.

Solution

Concept: Alligation (or rule of mixtures) can be used to find the ratio in which two ingredients with different prices should be mixed to get a mixture of a desired mean price. First, calculate the cost price of the mixture from its selling price and profit percentage.

Solution: 1. Calculate the Cost Price (CP) of the mixture:

Selling Price (SP) of the mixture = ₹ 68.20/kg

Gain = 10% Formula for CP when SP and Gain% are known: $CP = SP / (1 + \text{Gain}/100)$

CP of mixture = $68.20 / (1 + 10/100)$

CP of mixture = $68.20 / 1.10$

CP of mixture = $682 / 11 = ₹ 62/\text{kg}$.

2. Apply Alligation Rule:

We have two types of tea:

Type 1 (C1) = ₹ 60/kg

Type 2 (C2) = ₹ 65/kg

Mean Cost Price (Cm) = ₹ 62/kg (calculated above)

Ratio of quantities (Type 1 : Type 2) = $(C2 - Cm) : (Cm - C1)$

Ratio = $(65 - 62) : (62 - 60)$

Ratio = 3 : 2

Therefore, the grocer must mix tea at ₹ 60/kg and ₹ 65/kg in the ratio 3:2.

Final Answer : “3:2”

Answer: (A)



Q9.

Solution

Concept: In a partnership, profits are distributed in the ratio of the product of each partner's capital and the time it was invested.

Solution: Let the initial capital of A, B, and C be $3x$, $4x$, and $5x$ respectively. The total time period is 1 year (12 months).

1. A's Capital-Time Product:

A invests $3x$ for 12 months = $3x * 12 = 36x$.

2. B's Capital-Time Product:

B invests $4x$ for 12 months = $4x * 12 = 48x$.

3. C's Capital-Time Product:

C invests $5x$ for the first 6 months.

C withdraws half capital, so remaining capital is $5x/2 = 2.5x$ for the next 6 months.

C's product = $(5x * 6) + (2.5x * 6) = 30x + 15x = 45x$.

4. Ratio of Profits (A:B:C):

Ratio = $36x : 48x : 45x = 12 : 16 : 15$ (dividing by $3x$).

5. C's Share of Total Profit:

Total parts in ratio = $12 + 16 + 15 = 43$ parts.

Total profit = ₹ 11,000.

C's share = $(15 / 43) * ₹ 11,000 \approx ₹ 3837.21$.

Comparing this with the given options, ₹ 3,750 (Option B) is the closest value.

Final Answer : "₹ 3,750"

Answer: (B)



Q10.

Solution

Concept: When a filling pipe and an emptying pipe work together, their combined rate is the difference between their individual rates.

The time taken to fill the tank is the reciprocal of the net filling rate.

Solution: 1. Rate of Pipe A (filling):

Pipe A fills the tank in 10 hours.

So, Pipe A's 1-hour work = $1/10$ of the tank.

2. Rate of Pipe B (emptying):

Pipe B empties the tank in 15 hours.

So, Pipe B's 1-hour work = $1/15$ of the tank (negative work).

3. Combined rate of A and B:

When both pipes are opened together, the net filling rate is (Rate of A) - (Rate of B) because B is emptying.

Combined 1-hour work = $(1/10) - (1/15)$

Find a common denominator, which is 30:

Combined 1-hour work = $(3/30) - (2/30) = 1/30$ of the tank.

4. Time to fill the tank:

If $1/30$ of the tank is filled in 1 hour, then the entire tank will be filled in the reciprocal of this rate.

Time = $1 / (\text{Combined 1-hour work}) = 1 / (1/30) = 30$ hours.

Final Answer : "30 hours"

Answer: (B)



Q11.

Solution

Concept: For a number to be divisible by 80, it must be divisible by its co-prime factors 16 and 5. This implies the number must end in 0 and the number formed by the last four digits must be divisible by 16, or more practically, the entire number must be divisible by 16 after ensuring divisibility by 5 (by ending in 0).

Solution: The given number is $653xy$. For $653xy$ to be divisible by 80, it must be divisible by both 16 and 5.

1. Divisibility by 5:

For divisibility by 5, the last digit 'y' must be 0 or 5.

Since the number must also be divisible by 80 (which implies divisibility by 10), the last digit 'y' must be 0.

So, 'y = 0'. The number becomes $653x0$.

2. Divisibility by 16:

Now, $653x0$ must be divisible by 16.

We can express $653x0$ as ' $65300 + 10x$ '.

Let's find the remainder of 65300 when divided by 16:

$$65300 = 16 * 4081 + 4$$

So, for ' $65300 + 10x$ ' to be divisible by 16, ' $4 + 10x$ ' must be divisible by 16.

Let's test values for x (from 0 to 9):

If $x = 0$, ' $4 + 10(0) = 4$ ' (Not divisible by 16)

If $x = 1$, ' $4 + 10(1) = 14$ ' (Not divisible by 16)

If $x = 6$, ' $4 + 10(6) = 4 + 60 = 64$ '.

'64' is divisible by 16 (' $64 / 16 = 4$ ').

Thus, ' $x = 6$ ' is the only value that satisfies the condition.

3. Calculate $x + y$:

We found ' $x = 6$ ' and ' $y = 0$ '.

Therefore, ' $x + y = 6 + 0 = 6$ '.

Final Answer : "6"

Answer: (B)



Q12.

Solution

Concept: For any two positive integers, the product of the numbers is equal to the product of their Highest Common Factor (HCF) and Least Common Multiple (LCM).

That is, $\text{Number1} * \text{Number2} = \text{HCF} * \text{LCM}$.

Solution: Let the two numbers be N1 and N2.

Given:

$$\text{LCM} (N1, N2) = 480$$

$$\text{HCF} (N1, N2) = 160$$

$$\text{One number} (N1) = 480$$

Using the property:

$$N1 * N2 = \text{HCF} * \text{LCM}$$

$$480 * N2 = 160 * 480$$

To find N2, divide both sides by 480:

$$N2 = (160 * 480) / 480$$

$$N2 = 160$$

Final Answer : “160”

Answer: (A)



Q13.

Solution

Concept: To compare surds (roots) with different indices, express them with a common index. This common index should be the Least Common Multiple (LCM) of the individual root indices. Then compare the numbers under the common root.

Solution: The given numbers are $\sqrt{2}$, $\sqrt[3]{3}$, and $\sqrt[4]{4}$.

These can be written in exponential form:

$$\sqrt{2} = 2^{1/2}$$

$$\sqrt[3]{3} = 3^{1/3}$$

$$\sqrt[4]{4} = 4^{1/4}$$

1. Find the LCM of the denominators of the exponents (the root indices):

The indices are 2, 3, and 4.

$$\text{LCM}(2, 3, 4) = 12.$$

2. Convert each term to have the common index (12):

For $\sqrt{2} = 2^{1/2}$:

$$2^{1/2} = 2^{(6/12)} = (2^6)^{1/12} = 64^{1/12} = \sqrt[12]{64}$$

For $\sqrt[3]{3} = 3^{1/3}$:

$$3^{1/3} = 3^{(4/12)} = (3^4)^{1/12} = 81^{1/12} = \sqrt[12]{81}$$

For $\sqrt[4]{4} = 4^{1/4}$:

$$4^{1/4} = 4^{(3/12)} = (4^3)^{1/12} = 64^{1/12} = \sqrt[12]{64}$$

(Note: $\sqrt[4]{4} = \sqrt[4]{2^2} = 2^{2/4} = 2^{1/2} = \sqrt{2}$, so these two are equal).

3. Compare the numbers:

We now need to compare $\sqrt[12]{64}$, $\sqrt[12]{81}$, and $\sqrt[12]{64}$.

Since the index of the root is the same, we simply compare the numbers under the root: 64, 81, 64.

The largest among these is 81.

Therefore, $\sqrt[12]{81}$ is the largest, which corresponds to $\sqrt[3]{3}$.

Final Answer : “ $\sqrt[3]{3}$ ”

Answer: (B)



Q14.

Solution

Concept: This problem utilizes the algebraic identity for the difference of cubes:
 $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$.

Solution: Let the given expression be:

$$E = \frac{0.05 \times 0.05 \times 0.05 - 0.04 \times 0.04 \times 0.04}{0.05 \times 0.05 + 0.05 \times 0.04 + 0.04 \times 0.04}$$

Let $a = 0.05$ and $b = 0.04$.

Then the expression can be written in the form:

$$E = \frac{a^3 - b^3}{a^2 + ab + b^2}$$

We know the algebraic identity for the difference of cubes:

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

Substitute this identity into the expression:

$$E = \frac{(a - b)(a^2 + ab + b^2)}{a^2 + ab + b^2}$$

Since $a^2 + ab + b^2$ is not zero (as $a=0.05$ and $b=0.04$ are positive numbers), we can cancel out the common term in the numerator and the denominator:

$$E = a - b$$

Now substitute the values of a and b back:

$$E = 0.05 - 0.04$$

$$E = 0.01$$

Final Answer : “0.01”

Answer: (A)



Q15.

Solution

Concept: This problem utilizes the algebraic identity for the sum of cubes: $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$, or more directly, $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$.

Solution: Given: $x + \frac{1}{x} = 5$

We need to find the value of $x^3 + \frac{1}{x^3}$.

We can use the identity $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$.

Let $a = x$ and $b = \frac{1}{x}$.

Substitute these into the identity:

$$\left(x + \frac{1}{x}\right)^3 = x^3 + \left(\frac{1}{x}\right)^3 + 3 \cdot x \cdot \frac{1}{x} \left(x + \frac{1}{x}\right)$$

Now substitute the given value $x + \frac{1}{x} = 5$:

$$5^3 = x^3 + \frac{1}{x^3} + 3 \cdot 1 \cdot (5)$$

$$125 = x^3 + \frac{1}{x^3} + 15$$

To find $x^3 + \frac{1}{x^3}$, subtract 15 from both sides:

$$x^3 + \frac{1}{x^3} = 125 - 15$$

$$x^3 + \frac{1}{x^3} = 110$$

Final Answer : “110”

Answer: (A)



Q16.

Solution

Concept: In a circle, a perpendicular drawn from the center to a chord bisects the chord.

This forms a right-angled triangle with the radius as the hypotenuse, half the chord as one leg, and the perpendicular distance from the center to the chord as the other leg.

The Pythagorean theorem ($a^2 + b^2 = c^2$) can then be applied.

Solution: Let O be the center of the circle.

Let AB be the chord, with length $AB = 24$ cm.

Let M be the point on AB such that OM is perpendicular to AB.

Given radius $OA = 13$ cm.

1. Bisecting the chord:

Since OM is perpendicular to the chord AB, it bisects AB.

Therefore, $AM = MB = AB / 2 = 24 / 2 = 12$ cm.

2. Applying Pythagorean theorem:

Consider the right-angled triangle OMA (angle OMA = 90°).

Hypotenuse $OA = 13$ cm (radius).

Leg $AM = 12$ cm (half of the chord).

Leg $OM =$ unknown length.

According to the Pythagorean theorem:

$$OA^2 = OM^2 + AM^2$$

$$13^2 = OM^2 + 12^2$$

$$169 = OM^2 + 144$$

3. Calculate OM:

$$OM^2 = 169 - 144$$

$$OM^2 = 25$$

$$OM = \sqrt{25}$$

$$OM = 5 \text{ cm.}$$

Final Answer : “5 cm”

Answer: (A)



Q17.

Solution

Concept: The sum of the interior angles of a polygon with 'n' sides is given by the formula: Sum = $(n - 2) \times 180^\circ$.

Solution: Given that the sum of the interior angles of a regular polygon is 1440° .

Let 'n' be the number of sides of the polygon.

Using the formula:

$$\text{Sum of interior angles} = (n - 2) \times 180^\circ$$

$$1440^\circ = (n - 2) \times 180^\circ$$

To find (n-2), divide 1440 by 180:

$$n - 2 = 1440/180$$

$$n - 2 = 144/18$$

$$n - 2 = 8$$

Now, solve for n:

$$n = 8 + 2$$

$$n = 10$$

The polygon has 10 sides (it is a decagon).

Final Answer : "10"

Answer: (B)



Q18.

Solution

Concept: This is a system of linear equations.

It can be solved using elimination or substitution methods to find the values of 'x' and 'y', and then their sum.

Solution: Given the two equations:

$$1) 2x + 3y = 12$$

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

We will use the elimination method.

Multiply equation (1) by 2 and equation (2) by 3 to make the coefficients of 'y' equal and opposite:

Multiply (1) by 2:

$$(2x + 3y = 12) \times 2 \implies 4x + 6y = 24 \text{ (Equation 3)}$$

Multiply (2) by 3:

$$(3x - 2y = 5) \times 3 \implies 9x - 6y = 15 \text{ (Equation 4)}$$

Now, add Equation 3 and Equation 4:

$$(4x + 6y) + (9x - 6y) = 24 + 15$$

$$13x = 39$$

$$x = 39/13$$

$$x = 3$$

Substitute the value of $x=3$ into Equation 1:

$$2(3) + 3y = 12$$

$$6 + 3y = 12$$

$$3y = 12 - 6$$

$$3y = 6$$

$$y = 6/3$$

$$y = 2$$

Finally, find the value of $x + y$:

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

Final Answer : "5"

Answer: (C)



Q19.

Solution

Concept: The area of the shaded region is the difference between the area of the circle and the area of the inscribed square.

For a square inscribed in a circle, the diagonal of the square is equal to the diameter of the circle.

Solution: Given:

$$\text{Radius of the circle (r)} = 7\sqrt{2} \text{ cm}$$

$$\pi = 22/7$$

1. Area of the Circle:

$$\text{Area of Circle} = \pi r^2$$

$$\text{Area of Circle} = (22/7) \times (7\sqrt{2})^2$$

$$\text{Area of Circle} = (22/7) \times (49 \times 2)$$

$$\text{Area of Circle} = (22/7) \times 98$$

$$\text{Area of Circle} = 22 \times 14$$

$$\text{Area of Circle} = 308 \text{ cm}^2.$$

2. Area of the Inscribed Square:

The diagonal of the inscribed square is equal to the diameter of the circle.

$$\text{Diameter (d)} = 2r = 2 \times 7\sqrt{2} = 14\sqrt{2} \text{ cm.}$$

Let 's' be the side length of the square.

$$\text{In a square, the diagonal } d = s\sqrt{2}.$$

$$\text{So, } s\sqrt{2} = 14\sqrt{2}$$

$$s = 14 \text{ cm.}$$

$$\text{Area of Square} = s^2 = 14^2 = 196 \text{ cm}^2.$$

$$\text{(Alternatively, Area of square} = \frac{1}{2}d^2 = \frac{1}{2}(14\sqrt{2})^2 = \frac{1}{2}(196 \times 2) = 196 \text{ cm}^2).$$

3. Area of the Shaded Region:

$$\text{Area of Shaded Region} = \text{Area of Circle} - \text{Area of Square}$$

$$\text{Area of Shaded Region} = 308 - 196$$

$$\text{Area of Shaded Region} = 112 \text{ cm}^2.$$

Final Answer : “112 cm²”

Answer: (A)



Q20.

Solution

Concept: The volume of the remaining space is the difference between the volume of the cylinder and the volume of the cone.

$$\text{Volume of cylinder} = \pi r^2 h$$

$$\text{Volume of cone} = \frac{1}{3} \pi r^2 h$$

Solution: Given:

$$\text{Radius (r)} = 6 \text{ cm}$$

$$\text{Height (h)} = 14 \text{ cm}$$

The cone and cylinder have the same height and base radius.

(Assume $\pi = 22/7$ for calculation as it is common for such questions with these dimensions).

1. Volume of the Cylinder:

$$V_{\text{cylinder}} = \pi r^2 h$$

$$V_{\text{cylinder}} = (22/7) \times (6 \text{ cm})^2 \times (14 \text{ cm})$$

$$V_{\text{cylinder}} = (22/7) \times 36 \times 14$$

$$V_{\text{cylinder}} = 22 \times 36 \times (14/7)$$

$$V_{\text{cylinder}} = 22 \times 36 \times 2$$

$$V_{\text{cylinder}} = 22 \times 72$$

$$V_{\text{cylinder}} = 1584 \text{ cm}^3.$$

2. Volume of the Cone:

$$V_{\text{cone}} = \frac{1}{3} \pi r^2 h$$

Since $\pi r^2 h$ is the volume of the cylinder, we can write:

$$V_{\text{cone}} = \frac{1}{3} V_{\text{cylinder}}$$

$$V_{\text{cone}} = \frac{1}{3} \times 1584$$

$$V_{\text{cone}} = 528 \text{ cm}^3.$$

3. Volume of the remaining space:

$$\text{Volume of remaining space} = V_{\text{cylinder}} - V_{\text{cone}}$$

$$\text{Volume of remaining space} = 1584 - 528$$

$$\text{Volume of remaining space} = 1056 \text{ cm}^3.$$

(Alternatively, Volume of remaining space = $V_{\text{cylinder}} - \frac{1}{3} V_{\text{cylinder}} = \frac{2}{3} V_{\text{cylinder}} = \frac{2}{3} \times 1584 = 2 \times 528 = 1056 \text{ cm}^3$).

Final Answer : “1056 cm³”

Answer: (A)



Q21.

Solution

Concept: The volume of a sphere is directly proportional to the cube of its radius.

The formula for the volume of a sphere is $V = \frac{4}{3}\pi r^3$.

Solution: Let the original radius of the sphere be r_1 .

The original volume of the sphere is $V_1 = \frac{4}{3}\pi r_1^3$.

Now, the radius of the sphere is doubled.

So, the new radius $r_2 = 2r_1$.

Calculate the new volume V_2 using the new radius:

$$V_2 = \frac{4}{3}\pi r_2^3$$

Substitute $r_2 = 2r_1$:

$$V_2 = \frac{4}{3}\pi (2r_1)^3$$

$$V_2 = \frac{4}{3}\pi (8r_1^3)$$

$$V_2 = 8 \times \left(\frac{4}{3}\pi r_1^3\right)$$

Notice that the term $\left(\frac{4}{3}\pi r_1^3\right)$ is the original volume V_1 .

So, $V_2 = 8 \times V_1$.

This means the new volume will be 8 times the original volume.

Final Answer : “8 times”

Answer: (C)



Q22.

Solution

Concept: Decipher the letter-coding pattern. If the initial complex pattern derived from the example doesn't yield an option, consider a simpler, more uniform shift as the intended rule.

Solution: Given: MUMBAI is coded as NWNCBJ.

Let's analyze the shift for each letter:

M (+1) -> N

U (+2) -> W

M (+1) -> N

B (+1) -> C

A (+1) -> B

I (+1) -> J

The observed pattern is '+1, +2, +1, +1, +1, +1'.

Applying this pattern to DELHI:

D (+1) -> E

E (+2) -> G

L (+1) -> M

H (+1) -> I

I (+1) -> J

This results in EGMIJ. However, this is not among the given options.

In such cases, a simpler, uniform pattern is often intended, treating slight deviations in the example (like U->W) as potential distractors. Let's assume a straightforward '+1' shift for *all* letters.

Applying a uniform '+1' shift to DELHI:

D (+1) -> E

E (+1) -> F

L (+1) -> M

H (+1) -> I

I (+1) -> J

This results in EFMIJ. This matches one of the provided options (Option A), making it the most plausible intended answer.

Final Answer : "EFMIJ"

Answer: (A)



Q23.

Solution

Concept: In such coding-decoding problems, each letter is often assigned its alphabetical position (A=1, B=2, ...), and the given number is the sum of these positions.

Solution: 1. Analyze RAIN:

R is the 18th letter.

A is the 1st letter.

I is the 9th letter.

N is the 14th letter.

Sum = $18 + 1 + 9 + 14 = 42$.

This matches the given code.

2. Analyze SUN:

S is the 19th letter.

U is the 21st letter.

N is the 14th letter.

Sum = $19 + 21 + 14 = 54$.

This matches the given code.

3. Apply the pattern to CLOUD:

C is the 3rd letter.

L is the 12th letter.

O is the 15th letter.

U is the 21st letter.

D is the 4th letter.

Sum = $3 + 12 + 15 + 21 + 4 = 55$.

Final Answer : “55”

Answer: (A)



Q24.

Solution

Concept: Blood relation problems require careful step-by-step decoding of the relationships mentioned.

Solution: Let's break down Vikas's statement: "She is the daughter of my grandfather's only son."

1. "My grandfather's only son":

Vikas's grandfather has only one son. This son must be Vikas's father.

2. "The daughter of my father":

The girl is the daughter of Vikas's father.

Therefore, the girl is Vikas's sister.

Final Answer : "Sister"

Answer: (B)



Q25.

Solution

Concept: Interpret the symbols provided to establish the relationships between individuals and then combine them to find the overall relationship.

Solution: Given:

$A + B$ means A is the father of B.

$A - B$ means A is the sister of B.

We need to interpret $P - R + Q$.

1. $P - R$:

Using the second rule ($A - B$ means A is the sister of B), $P - R$ means P is the sister of R.

This implies P is female.

2. $R + Q$:

Using the first rule ($A + B$ means A is the father of B), $R + Q$ means R is the father of Q.

This implies R is male.

3. Combine the relationships:

P is the sister of R.

R is the father of Q.

This means P is the sister of Q's father.

The sister of one's father is their paternal aunt.

Therefore, P is the aunt of Q.

Final Answer : "P is the aunt of Q"

Answer: (A)



Q26.

Solution

Concept: Direction sense problems involve tracing movements on a compass, typically visualized on a 2D plane.

Turns (right/left) depend on the current direction of movement.

Solution: Let's denote the starting point as the origin (0,0).

1. Walks 5km South:

Current position: (0, -5). Direction of movement: South.

2. Turns right and walks 3km:

If facing South, a right turn means facing West.

Walks 3km West from (0, -5).

Current position: (-3, -5). Direction of movement: West.

3. Turns left and walks 5km:

If facing West, a left turn means facing South.

Walks 5km South from (-3, -5).

Current position: (-3, -10).

From the starting point (0,0), the final position is 3km West and 10km South.

This direction is South-West.

Final Answer : "South-West"

Answer: (C)



Q27.

Solution

Concept: Identify the rotational shift applied to the cardinal and intercardinal directions. Apply this same shift to the target direction.

Solution: Let's list the directions and their approximate angles (clockwise from North):

North (N): 0° (or 360°)

North-East (NE): 45°

East (E): 90°

South-East (SE): 135°

South (S): 180°

South-West (SW): 225°

West (W): 270°

North-West (NW): 315°

1. North-East becomes West:

NE (45°) becomes W (270°).

The angular change = $270^\circ - 45^\circ = 225^\circ$ clockwise rotation.

Alternatively, NE \rightarrow N \rightarrow NW \rightarrow W is 3 steps anti-clockwise ($3 * 45^\circ = 135^\circ$ anti-clockwise).

2. South-East becomes North:

SE (135°) becomes N (0° or 360°).

The angular change = $360^\circ - 135^\circ = 225^\circ$ clockwise rotation.

Alternatively, SE \rightarrow E \rightarrow N is 3 steps anti-clockwise ($3 * 45^\circ = 135^\circ$ anti-clockwise).

Both given transformations consistently imply a 135° anti-clockwise rotation (or 225° clockwise rotation).

Let's use 135° anti-clockwise as it's a smaller number.

3. What will West become?

West is 270° .

Apply a 135° anti-clockwise rotation:

$270^\circ - 135^\circ = 135^\circ$.

135° corresponds to South-East.

Final Answer : "South-East"

Answer: (A)



Q28.

Solution

Concept: Identify the pattern in the differences between consecutive terms in the series.

Solution: Given series: 2, 6, 12, 20, 30, ?

Let's find the differences between successive terms:

$$6 - 2 = 4$$

$$12 - 6 = 6$$

$$20 - 12 = 8$$

$$30 - 20 = 10$$

The differences form an arithmetic progression: 4, 6, 8, 10.

Each term is increasing by 2.

The next difference in this sequence should be $10 + 2 = 12$.

So, the next term in the main series will be $30 + 12 = 42$.

Final Answer : "42"

Answer: (B)



Q29.

Solution

Concept: In an alphabetical series of groups of letters, analyze the pattern of change for each corresponding letter position within the groups.

Solution: Given series: BDF, CFI, DHL, ?

Let's analyze the pattern for each position:

1. First Letter:

B → C (B+1)

C → D (C+1)

Following this pattern, the next first letter should be D+1 = E.

2. Second Letter:

D → F (D+2)

F → H (F+2)

Following this pattern, the next second letter should be H+2 = J.

3. Third Letter:

F → I (F+3)

I → L (I+3)

Following this pattern, the next third letter should be L+3 = O.

Combining these, the next term in the series is EJO.

Final Answer : "EJO"

Answer: (B)



Q30.

Solution

Concept: Identify if the numbers in the series are powers of consecutive integers.

Solution: Given series: 1, 8, 27, 64, ?

Let's examine each term:

$$1 = 1 \times 1 \times 1 = 1^3$$

$$8 = 2 \times 2 \times 2 = 2^3$$

$$27 = 3 \times 3 \times 3 = 3^3$$

$$64 = 4 \times 4 \times 4 = 4^3$$

The pattern is the cube of consecutive natural numbers.

The next number in the series should be the cube of 5.

$$5^3 = 5 \times 5 \times 5 = 125.$$

Final Answer : "125"

Answer: (C)



Q31.

Solution

Concept: Syllogism problems require drawing valid conclusions from given statements using logical deduction, often visualized with Venn diagrams.

Solution: Statements:

(I) All Pens are Erasers. ($\text{Pens} \subset \text{Erasers}$)

(II) Some Erasers are Pencils. ($\text{Erasers} \cap \text{Pencils} \neq \emptyset$)

Let's analyze each conclusion:

1. Conclusion (I): Some Pencils are Pens.

From statement (I), we know Pens are entirely within Erasers.

From statement (II), Pencils overlap with some part of Erasers. This overlap could be with the Erasers that are also Pens, or it could be entirely with the Erasers that are not Pens.

Since it is not a definite overlap with Pens, this conclusion "Some Pencils are Pens" does not necessarily follow.

It's a possibility, but not a certainty.

2. Conclusion (II): All Erasers are Pens.

Statement (I) says "All Pens are Erasers". This means Pens are a subset of Erasers.

This does not imply that all Erasers are also Pens.

There could be Erasers that are not Pens. For example, if there are 10 Erasers and 5 of them are Pens, the other 5 Erasers are not Pens.

Therefore, this conclusion does not follow.

Since neither conclusion necessarily follows from the given statements, neither is valid.

Final Answer : "Neither follows"

Answer: (D)



Q32.

Solution

Concept: Venn diagrams represent the relationships between sets.

Determine whether categories are subsets (one inside another), overlapping (sharing some elements), or disjoint (no common elements).

Solution: Let's analyze the relationships between the three categories: Women, Mothers, Engineers.

1. Mothers and Women: All mothers are women.

Therefore, the circle representing "Mothers" must be entirely contained within the circle representing "Women".

2. Engineers:

Engineers can be women (female engineers).

Engineers can be mothers (mothers who are engineers).

Engineers can be men (male engineers), meaning some engineers are neither women nor mothers.

Not all women are engineers, and not all engineers are women.

Not all mothers are engineers, and not all engineers are mothers.

Based on these relationships:

We need one circle (Mothers) completely inside another (Women).

A third circle (Engineers) should overlap with both the "Women" circle (to show women engineers, including mothers who are engineers) and also extend outside the "Women" circle (to show male engineers).

Diagram A shows exactly this: an inner circle (Mothers) within an outer circle (Women), and a third circle (Engineers) that partially overlaps both and also extends beyond the outer circle.

Final Answer : "A"

Answer: (A)



Q33.

Solution

Concept: Seating arrangement problems require placing individuals based on given relational clues, typically in a linear or circular arrangement.

Solution: Let's arrange the five friends (A, B, C, D, E) in a row facing North (so left is left and right is right).

We have 5 positions: _ _ _ _ _

1. "D is at the extreme right end."

_ _ _ _ D

2. "C is between B and D."

Since D is at the right end, the only way C can be between B and D is if the arrangement is B C D.

So, the arrangement becomes: _ _ B C D

3. "A is to the immediate left of E."

This means A and E sit together as a block: (A E).

The remaining two empty spots are at the beginning: _ _ B C D.

Placing (A E) in these spots gives: A E B C D.

The final arrangement from left to right is: A, E, B, C, D.

To find who is in the middle of five friends, we look for the 3rd person.

1st: A

2nd: E

3rd: B

4th: C

5th: D

The person in the middle is B.

Final Answer : "B"

Answer: (B)



Q34.

Solution

Concept: Circular arrangement problems require visualizing relative positions (opposite, left/right, between) around a central point.

Solution: Let's arrange the six people (P, Q, R, S, T, U) around a circular table facing the center.

1. "P is opposite Q."

Let's place P and Q directly across from each other.

P _ _ Q _ _

2. "T is to the immediate left of Q."

Since everyone is facing the center, if you are sitting at Q, your left is a specific seat.

P _ T Q _ _

3. "R is between P and S."

This means the sequence P, R, S (or S, R, P) must appear consecutively. Looking at our current arrangement (P _ T Q _ _), if R is between P and S, the two empty spots next to P must be for R and S.

So, it must be S R P. S R P T Q _

4. Identify the 6th person:

The remaining person is U. There is one empty spot left in the arrangement.

S R P U T Q

Now, let's determine who is to the immediate right of Q.

Looking at the arrangement, starting from Q and moving to the right (clockwise): U is immediately to the right of Q.

Final Answer : "U (the 6th person)"

Answer: (C)



Q35.

Solution

Concept: For a linear ranking, the total number of items is equal to the sum of a person's rank from the top and their rank from the bottom, minus one (because the person is counted twice).

Formula: Total = Rank from Top + Rank from Bottom - 1.

Solution: Given:

Total number of students in the class = 50

Rohit's rank from the top = 15th

We need to find Rohit's rank from the bottom.

Using the formula: Total = Rank from Top + Rank from Bottom - 1

$$50 = 15 + \text{Rank from Bottom} - 1$$

$$50 = 14 + \text{Rank from Bottom}$$

$$\text{Rank from Bottom} = 50 - 14$$

$$\text{Rank from Bottom} = 36$$

So, Rohit is 36th from the bottom of the class.

Final Answer : "36th"

Answer: (B)



Q36.

Solution

Concept: When a mirror is placed vertically to the right, the mirror image of a word appears horizontally flipped. Each letter is horizontally inverted, and the order of the letters is reversed.

Solution: The word is QUALITY.

When the mirror is placed vertically to the right, the image will be read from right to left, and each letter will be horizontally flipped.

Let's check the individual letter reflections:

Q -> (horizontally flipped Q)

U -> U (symmetrical)

A -> A (symmetrical)

L -> (horizontally flipped L)

I -> I (symmetrical)

T -> T (symmetrical)

Y -> Y (symmetrical)

Now, reverse the order of the letters and apply the flips:

Original word (left to right): Q U A L I T Y

Reflected word (left to right): Y T I A U

Comparing this with the given options:

A) YTILAUQ (letters are reversed, but no individual letter flips are shown for L or Q)

B) YTILAUQ (Incorrect letters)

C) QUAITY (Only L is flipped, and the order is not reversed)

D) YTIAUQ (Letters are reversed, L is flipped to , and Q is shown as a standard Q. This is the closest and most commonly accepted representation for multiple-choice questions, where simple Q is used if a proper flipped Q symbol is unavailable or for simplification. The flip of L and the reversal of the word order are key.)

Given the options, option D accurately represents the horizontal flip of the asymmetric letter 'L' and the reversal of the word, which are the main characteristics of a vertical mirror image.

Final Answer : "YTIAUQ"

Answer: (D)



Q37.

Solution

Concept: In paper folding and punching problems, each fold creates additional layers of paper. When a hole is punched, it passes through all layers at that point. Upon unfolding, each layer that was punched will reveal a hole.

The number of holes is usually 2^N if a single hole is punched in the innermost layer formed by N folds, provided the punch is not on a fold line.

Solution: Let's trace the folding process and count the layers:

1. Square paper: Initially, there is 1 layer of paper.

2. Folded diagonally: The square is folded along its diagonal, resulting in a triangle shape.

At this stage, the paper has 2 layers.

3. Once more into a triangle: This implies the triangular paper is folded again.

A common way to fold a triangle "into a triangle" is to fold it in half (e.g., along its altitude or by bringing one vertex to another). This typically doubles the layers again.

So, after this second fold, the paper will have $2 \times 2 = 4$ layers.

4. A hole is punched in the center: This hole is punched through all 4 layers of the folded paper at that specific point.

When the paper is completely unfolded, each of the 4 layers that were punched will reveal a hole. Therefore, there will be 4 holes.

Final Answer : "4"

Answer: (C)

Q38.

Solution

Concept: Current Affairs related to national awards and their recipients, particularly Bharat Ratna, which is India's highest civilian honor.

Solution: In January 2024, the government announced the Bharat Ratna (posthumously) for former Bihar Chief Minister Karpoori Thakur. He was recognized for his significant contributions to social justice and his efforts for the upliftment of the backward classes.

While L.K. Advani, M.S. Swaminathan, and P.V. Narasimha Rao were also awarded the Bharat Ratna in 2024 (Swaminathan and Rao posthumously), Karpoori Thakur's award was specifically highlighted for his work in social justice.

Final Answer : "Karpoori Thakur"

Answer: (A)



Q39.

Solution

Concept: Knowledge of major international sports events and their host countries/regions.

Solution: The ICC Men's T20 World Cup 2024 was co-hosted by the West Indies and the United States of America (USA). This marked the first time the USA hosted matches of a Cricket World Cup.

Final Answer : "West Indies USA"

Answer: (C)

Q40.

Solution

Concept: Understanding the organizational structure and key appointments of significant government bodies like NITI Aayog (National Institution for Transforming India).

Solution: NITI Aayog is the premier policy 'Think Tank' of the Government of India. The Chairperson of NITI Aayog is the Prime Minister of India, who is the ex-officio head. The Vice-Chairperson is currently Suman Bery. The CEO is currently B.V.R. Subrahmanyam. Narendra Modi is the current Prime Minister of India.

Therefore, Narendra Modi is the current ex-officio Chairperson of NITI Aayog.

Final Answer : "Narendra Modi"

Answer: (C)



Q41.

Solution

Concept: Knowledge of the rotating presidency of international forums like the G20 (Group of Twenty).

Solution: The G20 Presidency rotates annually among its member countries.

In 2023, India held the G20 Presidency.

For the year 2024, Brazil assumed the G20 Presidency, effective from December 1, 2023, to November 30, 2024.

South Africa will hold the presidency in 2025.

Final Answer : “Brazil”

Answer: (B)

Q42.

Solution

Concept: Awareness of major international summits and initiatives by global organizations.

Solution: The "Summit of the Future 2024" is a high-level meeting convened by the United Nations (UN). It is designed to forge a new global consensus on how to deliver a better present and safeguard the future.

It aims to accelerate efforts to meet existing international commitments and address new challenges.

Final Answer : “United Nations”

Answer: (B)



Q43.

Solution

Concept: This question tests knowledge of recent major sporting events, specifically the Grand Slam tennis tournaments. Keeping up-to-date with winners of prestigious championships like Wimbledon is a common requirement for current affairs sections in competitive exams.

Solution: The Wimbledon Championships are one of the four Grand Slam tennis tournaments, known for being played on grass courts. The 2024 edition of Wimbledon saw significant competition in the men's singles category.

The Men's Singles title at the 2024 Wimbledon Championships was triumphantly won by Carlos Alcaraz of Spain. He secured his victory by defeating the formidable Serbian tennis legend, Novak Djokovic, in a highly anticipated final match. This win marked a significant achievement in Alcaraz's career, adding another major title to his growing list of accomplishments.

Final Answer : "Carlos Alcaraz"

Answer: (B)



Q44.

Solution

Concept: This question pertains to the emergency provisions enshrined in the Indian Constitution. These articles grant the President specific powers to deal with extraordinary situations, ensuring the stability and integrity of the nation. Understanding the different types of emergencies and their respective articles is crucial for Indian Polity.

Solution: The Indian Constitution outlines three main types of emergency provisions for different exigencies:

Article 352: Deals with a 'National Emergency,' which can be declared due to war, external aggression, or armed rebellion.

Article 356: This article specifically addresses the failure of constitutional machinery in a State. It empowers the President to impose what is commonly known as 'President's Rule' in a State if he or she is satisfied, on receipt of a report from the Governor of the State or otherwise, that a situation has arisen in which the government of the State cannot be carried on in accordance with the provisions of the Constitution.

Article 360: Pertains to a 'Financial Emergency,' which can be declared if the financial stability or credit of India or any part of its territory is threatened.

Article 370: This article provided special status to the State of Jammu and Kashmir, but it has largely been abrogated in 2019.

Therefore, the article that empowers the President to impose President's Rule in a State due to the breakdown of constitutional machinery is Article 356.

Final Answer : "Article 356"

Answer: (B)



Q45.

Solution

Concept: This question tests knowledge of key revolutionary organizations and their founders during the Indian freedom struggle. Understanding the various factions and their contributions is essential for grasping the complexities of India's path to independence.

Solution: The 'Hindustan Socialist Republican Association' (HSRA) was a prominent revolutionary organization in British India. It was formed in 1928, primarily as a rebranding and ideological shift of the earlier 'Hindustan Republican Association' (HRA), with the addition of 'Socialist' to emphasize its new commitment to socialist ideals and a classless society.

The HSRA was founded at a historic meeting held at Feroz Shah Kotla in Delhi. The key figures instrumental in its formation and leadership were Bhagat Singh and Chandrashekhar Azad, along with other revolutionaries like Sukhdev, Shivaram Rajguru, and Jatin Das. They sought to achieve independence through armed revolution and aimed to establish a socialist republic in India.

Final Answer : "Bhagat Singh and Chandrashekhar Azad"

Answer: (A)

Q46.

Solution

Concept: This question focuses on a landmark event in the Indian independence movement. The Dandi March symbolizes Mahatma Gandhi's philosophy of non-violent civil disobedience (Satyagraha) and played a crucial role in mobilizing mass support against British rule.

Solution: The Dandi March, also famously known as the Salt Satyagraha, was a pivotal act of non-violent civil disobedience initiated by Mahatma Gandhi. It was a direct protest against the British salt tax, which prohibited Indians from collecting or selling salt, forcing them to buy expensive British-made salt. Gandhi argued that this tax was unjust and impacted the poorest citizens disproportionately.

The iconic march commenced on March 12, 1930, from Gandhi's Sabarmati Ashram near Ahmedabad and concluded on April 6, 1930, at Dandi, a coastal village. This event galvanized the Indian population and marked a significant escalation in the struggle for independence, drawing international attention to the Indian cause.

Final Answer : "1930"

Answer: (B)



Q47.

Solution

Concept: This question tests geographical knowledge, specifically concerning major infrastructure projects like dams and their associated rivers in India. Dams are crucial for irrigation, hydroelectric power generation, and flood control, making them important geographical features to recognize.

Solution: The Hirakud Dam is an impressive engineering marvel located in the state of Odisha, India. It stands as one of the longest earth-fill dams in the world.

This multi-purpose dam is constructed across the Mahanadi River. The Mahanadi is one of the major rivers of East Central India, flowing through the states of Chhattisgarh and Odisha. The Hirakud Dam plays a vital role in controlling floods in the Mahanadi delta, providing irrigation facilities to vast agricultural lands, and generating hydroelectric power, contributing significantly to the regional economy and development.

Final Answer : “Mahanadi”

Answer: (B)

Q48.

Solution

Concept: This question falls under General Science, specifically human biology and nutrition. It probes the understanding of essential vitamins and the specific health issues that arise from their deficiencies. Knowledge of vitamin functions is fundamental for understanding human health.

Solution: Night blindness, medically termed nyctalopia, is a condition where a person experiences difficulty seeing in low light conditions or at night. The ability of our eyes to adapt to changes in light intensity relies heavily on specific photoreceptor cells in the retina and the pigments they contain.

This condition is most commonly caused by a deficiency of Vitamin A (also known as retinol). Vitamin A is a fat-soluble vitamin crucial for vision, particularly for the production of rhodopsin, a light-sensitive pigment found in the rod cells of the retina. Rhodopsin is essential for vision in dim light. Without sufficient Vitamin A, the regeneration of rhodopsin is impaired, leading to night blindness.

Final Answer : “Vitamin A”

Answer: (C)



Q49.

Solution

Concept: This question is based on the principles of optics, focusing on image formation by lenses. Specifically, it asks about the consistent characteristics of images formed by a concave lens. Understanding the nature of lenses (converging vs. diverging) is key to predicting image properties.

Solution: A concave lens is a diverging lens, meaning it causes parallel light rays to spread out after passing through it. Due to this diverging property, a concave lens always forms a specific type of image, regardless of the object's position (as long as it's real and placed anywhere in front of the lens).

The characteristics of the image formed by a concave lens are consistently:

Virtual: The image cannot be projected onto a screen because the light rays only appear to diverge from a point, rather than actually converging there.

Erect: The image is upright, having the same orientation as the object, not inverted.

Diminished: The image is always smaller in size than the actual object.

It is formed on the same side of the lens as the object, between the optical center and the principal focus (F1).

Therefore, a concave lens always forms an image that is Virtual and Erect.

Final Answer : “Virtual and Erect”

Answer: (A)



Q50.

Solution

Concept: This question tests knowledge of international environmental agreements, particularly the Paris Agreement, which is a cornerstone of global climate action. Understanding its core objectives and targets is vital for current affairs and environmental science sections.

Solution: The Paris Agreement is a landmark international treaty adopted in 2015 at COP21 in Paris, France. It is legally binding and sets out a global framework to avoid dangerous climate change by limiting global warming.

The central aim of the Agreement is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius (2.0°C) above pre-industrial levels. Furthermore, it also explicitly states that countries should pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (1.5°C), recognizing that this would significantly reduce the risks and impacts of climate change.

The options often reflect the primary or more conservative target. "Well below 2.0°C " encompasses the ambition, with 1.5°C being the aspirational and increasingly critical target.

Final Answer : " 2.0°C "

Answer: (B)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	2	B	3	B	4	A	5	A
6	B	7	B	8	A	9	B	10	B
11	B	12	A	13	B	14	A	15	A
16	A	17	B	18	C	19	A	20	A
21	C	22	A	23	A	24	B	25	A
26	C	27	A	28	B	29	B	30	C
31	D	32	A	33	B	34	C	35	B
36	D	37	C	38	A	39	C	40	C
41	B	42	B	43	B	44	B	45	A
46	B	47	B	48	C	49	A	50	B

