QUANTITATIVE APTITUDE

1. (3)
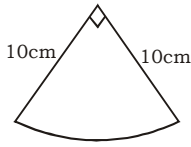
Area of sector = $\pi r^2 \dfrac{\theta}{360}$

$= \dfrac{22}{7} \times 100 \times \dfrac{90}{360}$

$= 78.5 \text{ cm}^2$

2. (1) We know that,
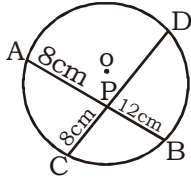
AP × PB = CP × PD

8 × 12 = 8 × x

$\Rightarrow$ x = 12cm

∴ Length of PD = 12cm

3. (2) MP = 3000

Bought $= 3000 \times \dfrac{85}{100} \times \dfrac{85}{100}$

$= 2167.5$

Total cost $= 2167.5 + 250$

$= 2417.5$

SP $= \dfrac{2417.5 \times 120}{100} = 2901$

4. (2) Speed of B $= \dfrac{1000 - 950}{5}$

$= \dfrac{50}{5} = 10 \text{ m/sec.}$

Time of B $= \dfrac{1000}{10} = 100 \text{ sec.}$

Speed of A $= \dfrac{1000}{100 - 5} = \dfrac{200}{19} \text{ m/s}$

Difference between the speed of A and B

$= \dfrac{200}{19} - 10 = \dfrac{10}{19}$

5. (4) The ratio of cost price of A_1 to the selling price of $A_4 = $ 350 : 550

7 : 11

Let the cost price of a article = 1

6. (1) Selling price of 28 articles = cost price of 17 articles

∴ CP : SP = 28 : 17

∴ Loss $= \dfrac{11}{28} \times 100 = 39 \dfrac{2}{7} \%$

7. (2) $28\% = \dfrac{7}{25}$

	Before	Now
Cost	25	: 32
Consume	32	: 25
	25×32	: 25×32

Both are equal

ATQ, $= \dfrac{7}{32} \times 100 = 21.88\%$

8. (4) ATQ,

P + 3SI = 767 ...(I)

P + 4SI = 806 ...(II)

equation (II) - (III)

SI = 39

SI of 3 years = 117

Principal = 767 – 117 = Rs.650

9. (1) ATQ,

Tennis Cricket

54 72

Required percentage

$= \dfrac{18}{54} \times 100\% = 33.33\%$

10. (1) cot13° cot27° cot45°cot63° cot77°

cot(90°–77°) cot(90°–63°)×1

$\dfrac{1}{\tan 63°} \times \dfrac{1}{\tan 77°}$

$\dfrac{\tan 77° \times \tan 63°}{\tan 63° \times \tan 77°} = 1$

11. (1) Let the number

$= x, (x+2), (x+4), (x+6), (x+8), (x+10), (x+12)$ and $(x+14)$

ATQ,

$8x + 56 = 8 \times 48$

$\Rightarrow$ $x + 7 = 48$

$\Rightarrow$ x = 41

∴ Required sum (41 + 8) + (41 + 12) = 102

12. (4) $\dfrac{1}{3} : \dfrac{1}{5} : \dfrac{1}{6} = 10 : 6 : 5$

21 units = 147

Length of smallest side $= \dfrac{147}{21} \times 5 = 35 \text{ cm}$
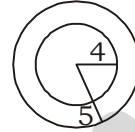
13. (1) (sinA + CosA) (1 – sinA cosA)

[∵ 1 = sin²θ+cos²θ]

∴ (sinA + cosA) (sin²A+cos²A– sinA cosA)

= sin³A+cos³A

14. (3) ATQ,

$\dfrac{2\pi R}{2\pi r} = \dfrac{5}{4} \Rightarrow \dfrac{R}{r} = \dfrac{5}{4}$

ATQ,

1 unit = 50 m

4 unit = 200 m

15. (3) 2a + 3b = 10

Squaring both side,

$4a^2 + 9b^2 + 12ab = 100$

$\Rightarrow$ $4a^2 + 9b^2 = 100 - 36 = 64$

16. (4) The number of students who opted for other than statistics subject in school A and D.

$= \dfrac{450 \times 80 + 400 \times 85}{2 \times 100}$

$= \dfrac{360 + 340}{2} = \dfrac{700}{2}$

$= 350$

17. (3) 4x–7y = 11,

On squaring both side,

$16x^2 + 49y^2 - 56xy = 121$

$\Rightarrow$ $16x^2 + 49y^2 = 121 + 56 \times 8$

$= 121 + 448$

$\Rightarrow$ $16x^2 + 49y^2 = 569$

18. (1) Smallest perfect square exactly divisible by 16, 18, 36.

2	16,	18,	36
2	8,	9,	19
4	4,	9,	9
9	1,	9,	9
	1,	1,	1

LCM = 2×2×4×9 = 144

19. (1) $\sin\theta = \dfrac{1}{2}$

sinθ = sin 30°

$\Rightarrow$ θ = 30°

[∵ 3cosθ – 4cos²θ = cos3θ]

= cos90°

= 0

20. (2) mean proportional = $\sqrt{ab}$

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

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

$$= a + b$$

21. (2) Number divisible by 9 between 43 and 481
45, 54, 63 477
First number a = 45
Last number = 477
difference = 9

$$[\because n = \frac{l-a}{d} +1]$$

$$= \frac{477-45}{9} +1$$

$$= 53 - 5+1$$

$$= 54 - 5 = 49$$

22. (1) A—10 , B—16 $\rangle 80 \langle$ 8 , 5

ATQ,
Work done in 2 days = 8 + 5
= 13 units
Work done in 12 day =
13 × 6 = 78 units

Total time taken = $12 + \frac{2}{8} =$

$12\frac{1}{4}$ days

23. (1)

$$\left(k-\frac{1}{k}\right)\left(k^2+\frac{1}{k^2}\right)\left(k^4+\frac{1}{k4}\right)\left(k^8+\frac{1}{k^8}\right)\left(k^{16}+\frac{1}{k^{16}}\right)\left(k^{32}+\frac{1}{k^{32}}\right)$$

$$\frac{\left(k+\frac{1}{k}\right)\left(k-\frac{1}{k}\right)\left(k^2+\frac{1}{k^2}\right)\left(k^4+\frac{1}{k^4}\right)\left(k^8+\frac{1}{k^8}\right)\left(k^{16}+\frac{1}{k^{16}}\right)\left(k^{32}+\frac{1}{k^{32}}\right)}{\left(k+\frac{1}{k}\right)}$$

$$= \frac{\left(k^2-\frac{1}{k^2}\right)\left(k^2+\frac{1}{k^2}\right)\left(k^4+\frac{1}{k^4}\right)\left(k^8+\frac{1}{k^8}\right)\left(k^{16}+\frac{1}{k^{16}}\right)\left(k^{32}+\frac{1}{k^{32}}\right)}{\left(k+\frac{1}{k}\right)}$$

$$= \frac{\left(k^4-\frac{1}{k^4}\right)\left(k^4+\frac{1}{k^4}\right)\left(k^8+\frac{1}{k^8}\right)\left(k^{16}+\frac{1}{k^{16}}\right)\left(k^{32}+\frac{1}{k^{32}}\right)}{\left(k+\frac{1}{k}\right)}$$

$$= \frac{\left(k^8-\frac{1}{k^8}\right)\left(k^8+\frac{1}{k^8}\right)\left(k^{16}+\frac{1}{k^{16}}\right)\left(k^{32}+\frac{1}{k^{32}}\right)}{\left(k+\frac{1}{k}\right)}$$

$$= \frac{\left(k^{16}-\frac{1}{k^{16}}\right)\left(k^{16}+\frac{1}{k^{16}}\right)\left(k^{32}+\frac{1}{k^{32}}\right)}{\left(k+\frac{1}{k}\right)}$$

$$= \frac{\left(k^{32}-\frac{1}{k^{32}}\right)\left(k^{32}+\frac{1}{k^{32}}\right)}{\left(k+\frac{1}{k}\right)} = \frac{k^{64}-\frac{1}{k^{64}}}{k+\frac{1}{k}}$$

24. (3) Required percentage

$$\frac{324}{324+560+720+256+650} \times 100$$

$$= \frac{324}{2510} \times 100 = 12.91\%$$

25. (2) Volume of sphere = $\frac{4}{3}\pi r^3$

$$\frac{4}{3} \times \frac{22}{7} \times r^3 = \frac{539}{3}$$

$$\frac{8}{7}r^3 = 49$$

$$r^3 = \frac{49 \times 7}{8}$$

$$r^3 = \frac{7}{2}$$

$\therefore$ Surface area = $4\pi r^2$

$$= 4 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} = 154 \text{ cm}^2$$

1. (3) 2. (1) 3. (2) 4. (2) 5. (4)
6. (1) 7. (2) 8. (4) 9. (1) 10.(1)
11.(1)12. (4)13. (1) 14. (3) 15.(3)
16.(4)17. (3)18. (1) 19. (1) 20.(2)
21.(2)22. (1)23. (1) 24. (3) 25.(2)

GENERAL AWARENESS

1. (2) Summer Olympics are held in every leap year and Winter Olympics are held 2 years after the leap year.
2024 Summer - Paris
2028 Summer - Los Angeles
2022 Winter - China
2026 Winter - Cortina

2. (2)

3. (3) Tokyo Olympics silver medallist Ravi Kumar Dahiya became the first Indian male wrestler to win 3 gold medals at the Asian Championships when he finished on the top step of the podium in the 57kg category in Mongolia on Saturday.
Ravi Kumar Dahiya won the gold medal bout in the men's 57kg freestyle category, beating Kazakhstan's Rakhat Kalzhan on technical superiority. Ravi had won gold at the 2020 edition of the Asian Wrestling Championships in Delhi and in Almaty last year.

4. (4) Ministry of Housing and Urban Affairs launched 'SAVNidhi se Samriddhi) Scheme for 28 and their families on Phase I and in Phase II the Scheme covered approx. 35 lakh street vendors.

5. (1)   6. (4)   7. (1)

8. (2) The First Grammy Award Ceremony was held on the 4th of May, 1959. Pandit Ravi Shankar, Zubin Mehta, TH Vinayakram, Zakir Hussain, H. Sridhar, P.A. Deepak, Viswa Moha, Bhatt, A.R. Rahman, Tanvi Shah, Neelavaswani, Ricky Kej are the Grammy Awardees Indians.

9. (4)

10. (3) Plasmid are small extrachromosomal double stranded circular DNA present in bacteria. They are separated from a chromosomal DNA and replicate individually. Very rarely they are present in archean and eukaryotic organism. They usually carry some gene like antibiotic resistance gene into host organism.

11. (3) Since October 1989, Election Commission is a three-member commission
Rajiv Kumar - Chief Election Commissioner
Anup Chandra Pandey and Arun Goel are the other Election Commissioners of India.
Minister of Law and Justice - Kiran Rijuju

12. (3) Rashtrakuta came to be known as Rashtrakutas of Manyakheta, a rising power in South India in 753 AD. At the same time Pala dynasty of Bengal and Prathihara dynasty of Malwa were going force in eastern and north western India, resp. Manyakheta is located on the bank of river Kagina.

13. (4) Nishagandhi Puraskaram award is given by Tourism Department of Kerala in the field of dance and Music. The seven day Nishagandhi is held in January. The award was started in 2013 to popularise the festival.

In 2020, C.V. Chandrashekar was awarded for his contribution in Bharatanatyam.

14. (3) Sattriya is the folk dance of Assam.

15. (4) Rajee Narayan - Bharatanatyam Dancer
S Swaminathan - Father of Green Revolution in India
Debjani Chaliha - Manipuri dancer
Uday Shankar - Dancer and Choreographer
Ustad Allaudin Khan, Balaram Sivaraman, Bimal Prasad Chalina, Sumati Morarjee and Vithal Nagesh Shrirodkar were also awarded in 1971.

16. (2) 86th Amendment Act, 2002 provided Right to Education. It was inserted in Article 21A. This Act Amends article 51A (K) states 'Who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age to his child or, as the case may be, ward between the age of 6 and 14 years.

17. (4) Aryabhata was born in 476 CE and died in 550 CE. He gives ideas regarding explanation of lunar eclipse and solar eclipse, rotation of Earth on its axis, reflection of light by moon, solution of single variable, quadratic equation, value of diameter of Earth.

18. (3) South America - Atocama
North America - Great Basin, Mohave, Chihuahuan and Sonoran
Australia - Gibson

19. (1)

20. (1) Grinnel was the first person to introduce the concept of "ecological niche" used in his 1917 paper titled 'The niche relationships of the California. Turrenson - Coined the terms ecotype and agamospecies.

21. (1)

22. (2) Primary Sector are Agriculture, mining, fishing forestry, dairy, etc.
Secondary Sector -Textile production, Manufacturing and Handicraft.

Tertiary Sector - Transport, financial & real estate, business and personal services, education, health and social work.

23. (4) Leaching is mass transfer process which takes place through the extraction of a substance from solid material that has come into contact with the liquid.
Catabolism - all chemical or enzymatic reactions involved in the break-down of organic or inorganic materials like proteins, sugar, fatty acid etc.
Humification is a process of formation of Humic substances decomposed from plant remains.

24. (4) Amit Shah - Home Minister
Nitin Gadkari - Minister of Road Transport and Highway Union Minister of Commerce and Industry launched the US Startup SETU Supporting Entrepreneurs in Transformation and upskilling programs in Bay Area of San Francisco, USA.

25. (3)

1. (2) 2. (2) 3. (3) 4. (4) 5. (1)
6. (4) 7. (1) 8. (2) 9. (4) 10.(3)
11.(3) 12.(3) 13.(4) 14.(3) 15.(4)
16.(2) 17.(4) 18.(3) 19.(1) 20.(1)
21.(1) 22.(2) 23.(4) 24.(4) 25.(3)

GENERAL INTELLIGENCE & REASONING

1. (4) $R \xrightarrow{+3} U \xrightarrow{+3} X \xrightarrow{+3} A \xrightarrow{+3} D$
$E \xrightarrow{-7} X \xrightarrow{-7} Q \xrightarrow{-7} J \xrightarrow{-7} C$
$V \xrightarrow{+8} D \xrightarrow{+8} L \xrightarrow{+8} T \xrightarrow{+8} B$
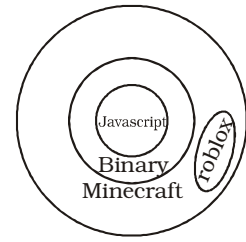
2. (3)

3. (4)
O I L S   P A I N
$+2 \quad +2 \quad +3 \quad +4$ $+2 \quad +2 \quad +3 \quad +4$
U N L S   P K D T

Similarly,

Q U I K
$+2 \quad +2 \quad +3 \quad +4$
M K X U

4. (4)

5. (1) Rotated anti-clockwise 90°.

6. (3)

7. (1)
$Z \xrightarrow{-1} Y \xrightarrow{-1} \boxed{X} \xrightarrow{-1} W \xrightarrow{-1} V$
$U \xrightarrow{-1} T \xrightarrow{-1} \boxed{S} \xrightarrow{-1} R \xrightarrow{-1} Q$
$P \xrightarrow{-1} O \xrightarrow{-1} \boxed{N} \xrightarrow{-1} M \xrightarrow{-1} L$
$K \xrightarrow{-1} J \xrightarrow{-1} \boxed{I} \xrightarrow{-1} H \xrightarrow{-1} G$

8. (2) 10–4÷20+16×8 = 16.
interchanging 4, and 8, × and –
then,
10×8÷20+16–4 = 16
$\Rightarrow 10 \times \dfrac{8}{20} + 12 = 16$
$\Rightarrow 4+12 = 16 \Rightarrow 16 = 16$

9. (1) 9×5+2 = 45+2 = 47
14×5+2 = 70+2 = **72**
18×5+2 = 90+2 = 92

10. (3) $\left[\{(32 \times 20) - (2 \div 3)\} + (2 - 4)\right] \div 3$
+ means ÷, – means +, '×' means '–' and ÷ means ×
$\left[\{(32 - 20) + (2 \times 3)\} \div (2 + 4)\right] \times 3$
$= \left[\{12 + 6\} \div 6\right] \times 3$
$= [18 \div 6] \times 3 = 3 \times 3 = 9$

11. (1)   12. (4)

13. (3) 7+1×2–6÷3 = 13.
By interchanging 1 and 7.
$\Rightarrow 1+7 \times 2 - 6 \div 3 = 13$
$\Rightarrow 1+14 - 2 = 13$
$\Rightarrow 13 = 13$

14. (4) 16×7 = 112
18×3 = 54
14×5 = 70
22×7 = 154
26×5 = 130 ≠ 132

15. (4) D # E # F # & G @ H # I
D
↓
E⁻
↓
F⁻
↓
G⁺ ⇔ H⁻
↓
I⁻

So, G is E's Daughter's son.

16. (4) P – Q × R

P⁻
↓
Q⁺ → R

So, Q is the son of P.

17. (2) 4. Oblate
3. Oblige
2. Oblique
1. Oblivion
5. Oblong.

18. (3)

$$\begin{array}{c} \overset{+1}{I\ J\ M} \qquad \overset{+1}{A\ B\ E} \\ \underset{+1}{\overset{+3}{X\ Y\ A}} \qquad \underset{+1}{\overset{+3}{E\ F\ I}} \\ \underset{+2}{} \qquad \underset{+3}{} \end{array}$$
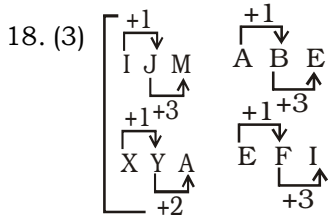
19. (2) $(20)^2 + 6 = 400+6 = 406$
$(14)^2+6 = 196+6 = 202 \neq 200$
$(10)^2+6 = 100+6 = 106$
$(12)^2+6 = 144+6 = 150$

20. (3) Cricket is played on pitch similarly, Badminton is played on court.

21. (4) $(12)^2–2×12 = 144–24 = 120$
$(20)^2–2×20 = 400–40 = 60$
$(3)^2–2×30 = 9–6 = 3$

22. (4)

G L A N D
+3 +3 +3 +3 +3
G Q D O J

Similarly,

M E A N S
+3 +3 +3 +3 +3
V Q D H P

C Y S T S
+3 +3 +3 +3 +3
V W V B F

23. (3)

	1	
	2	6
5	3	
	4	
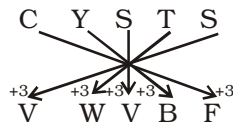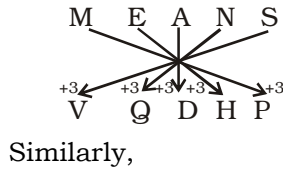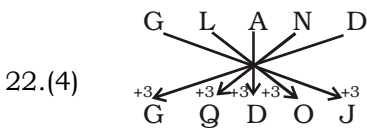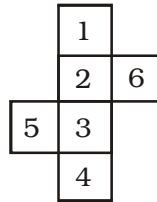
1 ↔ 3
2 ↔ 4
5 ↔ 6

24. (1) Birds are flying → 5 3 6 (Number of letters)
Nest is big → 3 2 3 (Number of letters)
Close door → 5 3 (Number of letters)
Complete your work → 8 4 4 (Number of letters)

25. (2)
A (D E)
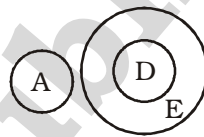
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ENGLISH LANGUAGE AND COMPREHENSION

1. (2) "it took" is the correct expression as the action is of past.

2. (1) Thyroid is incorrectly spelt as "thyriod" a large bilobed endocrine gland of vertebrates lying at the anterior base of the neck. (अवटुग्रन्थि)

4. (4) "as if she was" is correct substitute (as action took place in the past).

14. (1) "amateur" is incorrectly spelt. It meas a non-professional man. Here we need word immature (Not mature or fully grown up.)

16. (4) "fond of" is correct term.
Meaning - have a liking for

1. (2) 2. (1) 3. (2) 4. (4) 5. (4)
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Words	Meaning in English	Meaning in Hindi
Clade	A group of animals or other organisms derived from a common ancestor	जीवशाखा
Gourmet	someone who enjoys good food, and who knows a lot about food and wine	पाक कला का पारखी, पेटू
Intrinsic	Innate, inherent, inseparable from the thing itself.	(किसी वस्तु की) प्रकृति का अंतरंग; मूलभूत
Misanthrope	One who hates mankind; one who hates the human race.	मानवद्वेषी
Numismatist	a person who collects or studies coins and medals.	मुद्राशास्त्री, मुद्राविज्ञानी
Propagandize	To use or spread propaganda (Ideas, facts, or allegations spread deliberately to further one's cause or to damage an opposing cause).	अफवाह फैलाना निजी स्वार्थ के लिए