

QUANTITATIVE APTITUDE

1. (1)

$$\begin{aligned} & \cos^2 35^\circ + \cos 55^\circ \sin 35^\circ + \frac{\tan 34^\circ}{\cot^2 56^\circ} \\ &= \cos^2 35^\circ + \cos(90^\circ - 35^\circ) \sin 35^\circ + \\ & \quad \frac{\tan(90^\circ - 56^\circ)}{\cot 56^\circ} \\ &= \cos^2 35^\circ + \sin^2 35^\circ + 1 \\ &= 1 + 1 = 2 \end{aligned}$$

2. (3) ATQ,

Total surface area of cube
 $= 6a^2 = 1536$
 $\Rightarrow a^2 = 256$
 $\Rightarrow a = 16$

Volume of cube $= a^3$
 $= 16 \times 16 \times 16 = 4096 \text{m}^3$

3. (2) ATQ,

$$3 - 1 = \frac{1 \times 26 \times R}{100}$$

$$\Rightarrow R = \frac{200}{26} \%$$

Now,

$$4 = \frac{1 \times 200 \times T}{100 \times 26}$$

$$\Rightarrow T = 52 \text{ years}$$

In 52 years the sum will become 5 time of itself.

4. (3) $363 \overline{) N(x}$

Remainder = 17

$$N = 363x + 17$$

$$\frac{N}{11} \Rightarrow \frac{363x + 17}{11}$$

$$\Rightarrow \frac{0 \times x + 6}{11} \Rightarrow \frac{6}{11} \Rightarrow 6 \text{ Remain-}$$

5. (1) ATQ,

$$a - b = 2$$

squaring both side

$$a^2 + b^2 - 2ab = 4 \quad \dots \text{(I)}$$

and,

$$a^3 - b^3 = 80$$

$$\Rightarrow (a - b)(a^2 + b^2 + ab) = 80$$

$$\Rightarrow a^2 + b^2 + ab = 40 \quad \dots \text{(II)}$$

From (I) and (II)

$$3ab = 36$$

$$\Rightarrow ab = \frac{36}{3} = 12$$

6. (4) ATQ,

$$\frac{1}{x^2 + a^2} = x^2 - a^2$$

$$\Rightarrow x^4 - a^4 = 1$$

$$\Rightarrow x^4 = 1 + a^4$$

$$\Rightarrow x = (a^4 + 1)^{\frac{1}{4}}$$

7. (1) Average of the high rates of the shares in all the four stock exchanges for kolgate

$$\text{is} = \frac{34 + 60 + 25 + 20}{4} = \frac{139}{4} = 34.75$$

8. (3) Let the speed of stream y km/hr]

ATQ,

$$(x + y)1 = (x - y) \times 3$$

$$\Rightarrow x + y = 3x - 3y$$

$$\Rightarrow 2x = 4y$$

$$\Rightarrow x : y = 2 : 1$$

ATQ,

$$2 \text{ unit} \equiv 5 \frac{1}{3}$$

$$7 \text{ unit} \equiv \frac{16}{3 \times 2}$$

$$= \frac{8}{3} \times \frac{5}{18} = \frac{20}{27} \text{ m/s}$$

9. (4) Remainder = 3

$$\text{LCM of } 7, 11, 9 = 693$$

\therefore The Largest 5 digit number = 99999

$$693 \overline{) 99999} (144$$

$$\frac{693}{3069}$$

$$\frac{2772}{2979}$$

$$\frac{2772}{2772}$$

$$\frac{2772}{2772}$$

$$\frac{2772}{2772}$$

$$\frac{2772}{2772} \rightarrow \text{Remainder}$$

The largest five-digit number which when divided by 7, 9, 11 leaves the same remainder as 3 is.

$$= 99999 - 207 + 3 = 99795$$

10. (4) Required ratio = $\left(\frac{\sqrt{3}}{\sqrt{2}}\right)^{\frac{1}{2}} =$

$$\sqrt[4]{3} : \sqrt[4]{2}$$

11. (3) ATQ,

Total sale of P, R, S

$$= 26^\circ + 12^\circ + 70^\circ = 108^\circ$$

$$\text{Total sale of Q, T, U} = 150^\circ + 37^\circ + 15^\circ = 202^\circ$$

Required percentage

$$= \frac{94}{202} \times 100 = 46.53\%$$

12. (3) $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}} + \sqrt{\frac{1-\cos\theta}{1+\cos\theta}}$
 $= \frac{1 + \cos\theta + 1 - \cos\theta}{\sqrt{1 - \cos^2\theta}}$

$$= \frac{2}{\sqrt{\sin^2\theta}} = 2 \operatorname{cosec}\theta$$

13. (2) ATQ,

Total marks of A

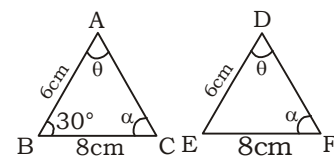
$$= 180 + 240 + 360 + 300 + 60 + 330 = 1470$$

Total marks of B

$$= 90 + 420 + 390 + 210 + 270 + 120 = 1500$$

$$\text{Required difference} = 1500 - 1470 = 30$$

14. (4)



$$\triangle ABC \cong \triangle DEF$$

$$\angle B = \angle E$$

$$\angle A = \angle D$$

$$\text{and, } \angle C = \angle F$$

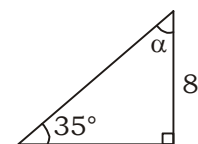
$$\therefore \alpha + \theta = (180^\circ - 30^\circ) = 150^\circ$$

$$\therefore \angle D + \angle C = 150^\circ$$

15. (3) ATQ,

The number of students who obtained 60% and above in all subject = D and F = 2 students

16. (3) ATQ,



$$\alpha + 35^\circ + 90^\circ = 180$$

$\alpha =$ So, other angles are $55^\circ, 90^\circ$

17. (2) ATQ,

$$11\% = \frac{11}{100}$$

$$\text{Less weight } 22\% = \frac{11}{50}$$

$$\text{CP} : \text{SP}$$

$$100 : 89$$

$$39 : 50$$

$$\hline 78 : 89$$

$$\text{Required Profit}\% = \frac{11}{78} \times 100$$

$$= 14.1\%$$

18. (4) ATQ, Ratio of two Investment
2 : 3

Profit	200,	300	⇒ 500	}
10% ↓	↓	Loss	20%	
+20	-60	⇒ 460		
220	240			

= Required loss percentage

$$\frac{40}{500} \times 100\% = 8\%$$

19. (3) Case (I) $100^2 - 99^2 + 98^2 - 97^2 + \dots + 22^2 - 21^2$
 $= 1(100 + 99) + (98 + 97) \times 1 + (96 + 95) + \dots + (22 + 21) \times 1$
 $= 199 + 195 + 191 + \dots + 43$

$$\therefore \text{Number of terms} = \frac{199 - 43}{4} + 1$$

$$= \frac{156}{4} + 1 = 40$$

$$\text{Sum} = \frac{40}{2} \times (199 + 43)$$

$$= 20 \times 242 = 4840 \text{ satisfy}$$

(ii)

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

$$\left(k + \frac{1}{k}\right)$$

$$\left(k^4 - \frac{1}{k^4}\right)$$

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

$$\neq k^{16} - \frac{1}{k^{16}}$$

∴ Only option I is right.

20. (2) ATQ,

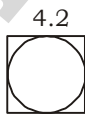
Let the number of extra days is x

$$(60 \times 20) + (80 \times 60) = 60(80 + x)$$

$$\Rightarrow 1200 + 4800 = 4800 + 60x$$

$$\Rightarrow x = 20 \text{ days}$$

21. (3) ATQ,



Length of Side of cube = 4.2 cm

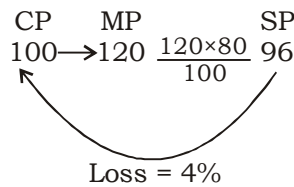
$$\text{Radius of sphere} = \frac{4.2}{2} = 2.1 \text{ cm}$$

Volume of sphere

$$= \frac{4}{3} \times \frac{22}{7} \times 2.1 \times 2.1 \times 2.1$$

$$= 88 \times 0.441 = 38.808 \text{ cm}^3$$

22. (2) Let,



23. (4) $\cos x \operatorname{cosec} x - \sin x \operatorname{sec} x$

$$= \frac{\cos x}{\sin x} - \frac{\sin x}{\cos x} = \frac{\cos^2 x - \sin^2 x}{\sin x \cdot \cos x}$$

$$= \frac{2 \cos 2x}{2 \sin x \cos x} = \frac{2 \cos 2x}{\sin 2x} = 2 \cot 2x$$

24. (2) ATQ,

$$\text{Given } A \propto B^{\frac{1}{2}}, A \propto C^{\frac{1}{3}}$$

$$A \propto \frac{(B)^{\frac{1}{2}}}{(C)^{\frac{1}{3}}}$$

$$A_1 = 15, B_1 = 27, C_1 = 2, A_2 = 9, C_2 = 2, B_2 = ?$$

$$\frac{A_1 (C_1)^{\frac{1}{3}}}{(B_1)^{\frac{1}{2}}} = \frac{A_2 (C_2)^{\frac{1}{3}}}{(B_2)^{\frac{1}{2}}}$$

$$\frac{15 \times (2)^{\frac{1}{3}}}{(27)^{\frac{1}{2}}} = \frac{39 \times (2)^{\frac{1}{3}}}{(B_2)^{\frac{1}{2}}}$$

$$\frac{5}{(27)^{\frac{1}{2}}} = \frac{3}{(B_2)^{\frac{1}{2}}}$$

squaring both side

$$\frac{25}{27} = \frac{9}{B} \Rightarrow B = \frac{243}{25}$$

25. (4) Weight of a new man =

$$150 - 3 \times 5 = 135 \text{ kg}$$

1. (1) 2. (3) 3. (2) 4. (3) 5. (1)

6. (4) 7. (1) 8. (3) 9. (4) 10. (4)

11. (3) 12. (3) 13. (2) 14. (4) 15. (3)

16. (3) 17. (2) 18. (4) 19. (3) 20. (2)

21. (3) 22. (2) 23. (4) 24. (2) 25. (4)

GENERAL AWARENESS

1. (2) Polypeptides are short chains of amino acids linked by peptide bonds.

A polymer is any class of natural or synthetic substances composed of very large molecules, called macro-molecules, which are multiples of simpler chemical units called monomers.

2. (1)

3. (3) Article (19-22) - Right to freedom
Article (14-18) - Right to equality

Article (23-24) - Right against exploitation
Article (29-30) - Cultural and Educational Rights.

4. (4) Direct taxes - Income tax, Real property tax, Personal property tax, taxes on assets.
Indirect taxes - Sales tax, Value added tax (VAT), GST, Excise duty, Custom duty.

5. (3) Stand-up India Scheme was launched in 2016, to Finance SCs/STs and /or Women Entrepreneurs. It aims to facilitate bank loans between 10 lakhs and 1 Crore.

Ujjwala Scheme was launched on the 1st May, 2016 to distribute 50 million LPG connections to women below Poverty Line families.

Kisan Urja Suraksha evam Utthan Mahabhiyan Yojana was launched in 2019 to increase the income of farmers and provide sources for irrigation and DE dieselising the agricultural sector.

6. (1) Tropical Evergreen Forest - Wern Babbler, Ebony, Blue and Gold Macaw, Harpy Eagle, Rhinoceros Hornbill.
Temperate Evergreen Forest - Moose, Reindeers, Elk, Caribou, Racoons, Owls.

7. (1) Dalhousie, dedicated India's first train on 16th April, 1853 that ran between Bombay to Thane. The train travelled 34 kilometers.

8. (2) Mohiniyattam Daners - Sunanda Mairs, Jayaprabha Menon, Pallvai Krishanan, Gopika Verma, Radha Dutta, Rema Srikant.

9. (1) Power - Watt (kg. m²s⁻³)
Force - Newton (kg. ms⁻²)
Energy - Joule (Kg. m²s⁻²)

10. (3)

11. (1) **Article 119** - Regulation by law of procedure in Parliament to financial business.

Article 121 - Restriction on discussion (with respect to conduct of any Judge of

Supreme Court and High Court) in Parliament.

Article 122 - Courts not to inquire into proceedings of Parliament.

12.(4) **Battle of Kanawa (16 March 1527)** - Babur and Rana Sanga

Second battle of Panipat (5 Nov, 1556) - Akbar and Hemu

Battle of Chausa (26 June, 1539) - Humayun and Shersha Suri

Third Battle of Panipat (14 Jan. 1761) - Ahmed Shah Abdali and Maratha Empire.

13. (4)

14. (3) Elite Boxer - 19 to 40
Junior Boxer - 15 to 16

15. (3) Nor wester is a local rainfall or thunder storm, experienced in April-May in North East part of India. Westerlies are Permanent winds that blow in the middle latitudes. They originate from high pressure areas and tends towards the poles and steer cyclones.

16. (4) **Jharkhand** - Sorhul, Hal Punhya, Bandna, Pottadakal, Karam Munda

Rajasthan - Puskar, Desert, Teej, Mewar, Gangar, Baneshwar, Kalayat, Urs

Gujarat - Rann Utsav, Uttarayan Shamlaji Bhavnath

Madhya Pradesh - Mandu, Khajuraho, Namaste Orchha, Tansen.

17. (1) Mesolithic Period (9000 BCE to 4000 BCE) - Bagar (Rajasthan), Langhraj (Gujarat) and Adamgarh (M.P.)

Palaeolithic (500000 BC to 10000 BC) - Sohan Valley, Narmada valley, Kurnoel Caves, Belan valley, Mayur b h a n j a , B h i m b e t a k a

Renugunta, Singhbhum. Chalcolithic - Diamabad, Inamgaon, Kayatha, Nagda, Vidisha, Eran, Navdatoli.

18. (2) Georg I - 1714 - 1727

Elizabeth I - 1558-1603

Queen Victoria - 1837 - 1901

Jame I - 1603-1625

19. (4) Rahul Dravid - The Nice Guy who finished first

Ravi Shashtri - The Players in My Life.

Milkha Singh - The Race of My Life.

20. (1) Green Revolution (Third Agricultural Revolution) after the Neolithic and British Agricultural Revolution started in the late 1906s (1966-67).

Norman Borlaug (father of Green Revolution) received Nobel Peace Prize in 1970.

M.S. Swaminathan was the father of Green Revolution in India.

21. (2) A player wins a set when they have won six games and are at least two games clear of their opponent. If a set is 6-6, it is usually decided by a tie break.

22. (4) Lipase - Breaks down fats in food

Amylase - Helps digest carbohydrates.

Collagen - make connective tissue.

23. (3)

State Chief Governor

Nagaland Neiphiu Rio Jagdish Mukhi
Lok Sabha seats - 1

Rajya Sabha seats - 1

24. (2) Balban - 1266-87

Anangpal - 1051-1081

Jala-ud- - 1290-96

din Khilji

Qutub-Din - 1206-1210

-Aibak

Prithvi Raj - 1177-1192

Chauhan

25. (4)

1. (2) 2. (1) 3. (3) 4. (4) 5. (3)

6. (1) 7. (1) 8. (2) 9. (1) 10.(3)

11.(1) 12.(4) 13.(4) 14.(3) 15.(3)

16.(4) 17.(1) 18.(2) 19.(4) 20.(1)

21.(2) 22.(4) 23.(3) 24.(2) 25.(4)

GENERAL INTELLIGENCE & REASONING

1. (3) The order of words in a dictionary is.

3. Accursed

1. Accusable

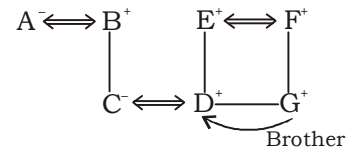
5. Accuser

2. Acerbity

4. Acetify

order- 3,1,5,2,4

2. (1) A & B # C & D @ E % F + G,



3. (1) The right answer is 1.

4. (3) The right answer is 3.

5. (3) $729 \begin{array}{c} 243 \\ \times \frac{1}{3} \\ \hline 81 \\ \times \frac{1}{3} \\ \hline 27 \\ \times \frac{1}{3} \\ \hline 9 \\ \times \frac{1}{3} \\ \hline 3 \end{array}$

6. (3) $\begin{array}{cccccc} O & X & Y & G & E & N & M & I & N & D \\ +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 \\ \hline Q & Z & A & I & G & P & O & K & P & F \end{array}$

Similarly, $\begin{array}{cccccc} & D & O & C & T & O & R \\ +2 & +2 & +2 & +2 & +2 & +2 \\ \hline F & Q & E & V & Q & T \end{array}$

7. (2) The right answer is 2.

8. (4) $5^2 = 25, 5^2 + 5 = 30$

$16^2 = 256, 16^2 + 16 = 272$

Similarly,

$13^2 = 169, 13^2 + 13 = 182$

9. (1) By hit and trial method

$4 \div 7 + 6 \div 2 \times 3 = 12$

interchanging 7 and 4

$7 - 4 + 6 \div 2 \times 3 = 12$

$3 + 9 = 12$

$12 = 12$

10. (1) $12 - 50 \rightarrow 12 \times 4 + 4 = 52 -$
- odd

$8 - 36 \rightarrow 8 \times 4 + 4 = 36$

$10 - 44 \rightarrow 10 \times 4 + 4 = 44$

$18 - 76 \rightarrow 18 \times 4 + 4 = 76$

11. (2)

$729 : 90 \rightarrow 9 \times 10 (\text{cube of small digit}) - 9^3 = 729$

$343 : 56 \rightarrow 7 \times 8 (\text{cube of small digit}) - 7^3 = 343$

$512 : 72 \rightarrow 8 \times 9 (\text{cube of small digit}) - 8^3 = 512$

12. (1)

STAR reverse RATS opposite IZGH place value 92678

FLAG reverse GALF opposite TZOU place value 20261521

LOGO reverse OGOL opposite LTLO place value 12201215

13. (4) By hit and trial method

$72 + (7 \times 8) - (126 \div 14) - (4)^2 = 150$

interchanging 14 and 7

$72 + (14 \times 8) - (126 \div 7) - 4^2 = 150$

$72 + 112 - 18 - 16 = 150$

$184 - 34 = 150$

$150 = 150$

14. (4) $17 + 17^2 + 4607 = 17^3$

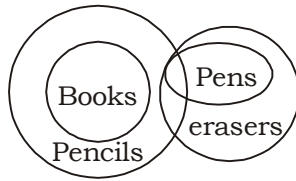
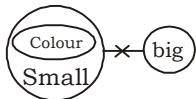
$23 + 23^2 + 11615 = 23^3$

$11 + 11^2 + 1199 = 11^3$

15. (3) $\begin{array}{cccc} A & R & E & A \\ +1 & +0 & +1 & +0 \\ \hline B & R & F & A \end{array} \quad \begin{array}{cccc} B & A & B & Y \\ +1 & +0 & +1 & +0 \\ \hline C & A & C & Y \end{array}$

Similarly, $\begin{array}{cccc} G & O & L & D \\ +1 & +0 & +1 & +0 \\ \hline H & O & M & D \end{array}$

16. (3) The possible venn diagram is 20. (3) The possible venn diagram is



17. (1) ZWSQ → Z -3 W -4 S -2 Q - odd
 TRNL → T -2 R -4 N -2 L
 PNJH → P -2 N -4 J -2 H
 JHDB → J -2 H -4 D -2 B

18. (3)
- | | | |
|-----|-----|-----|
| T | M | T |
| +6↓ | +2↓ | +8↓ |
| Z | O | B |
| +6↓ | +2↓ | +8↓ |
| F | Q | J |
| +6↓ | +2↓ | +8↓ |
| L | S | R |
| +6↓ | +2↓ | +8↓ |
| R | U | Z |

19. (1)
- | | | |
|-----|-----|-----|
| W | N | M |
| -2↓ | -2↓ | +2↓ |
| U | L | O |
| -2↓ | -2↓ | +2↓ |
| S | J | Q |
| -2↓ | -2↓ | +2↓ |
| Q | H | S |
| -2↓ | -2↓ | +2↓ |
| O | F | U |

21. (2) By hit and trial method
 $P \div Q + R$



P is mother of R.

22. (3) The right answer is 3.
 23. (1) Race is done on a track. Similarly, Athletics is performed in a stadium.
 24. (4) The right answer is 4.
 25. (2) $4 \times 3 - 1 + 8 \div 2 = 9$
 interchanging \div and \times 1 and 3
 $4 \div 1 - 3 + 8 \times 2 = 9$
 $4 - 3 + 16 = 9$
 $1 + 16 = 9$
 $17 = 9$ (incorrect equation)
1. (3) 2. (1) 3. (1) 4. (3) 5. (3)
 6. (3) 7. (2) 8. (4) 9. (1) 10. (1)
 11. (2) 12. (1) 13. (4) 14. (4) 15. (3)
 16. (3) 17. (1) 18. (3) 19. (1) 20. (3)
 21. (2) 22. (3) 23. (1) 24. (4) 25. (2)

ENGLISH LANGUAGE AND COMPREHENSION

2. (2) Replace "are" with "were" as the sentence is in past.
 4. (3) replace "will never have" with "would never have". (For past conditional sentences)
 5. (2) "Harassment" is incorrectly spelt.
 Meaning- persistent attacks and criticism causing worry and distress. (उत्पीड़न)
 10. (2) "policeman" is incorrectly Spelt. Wrongly spelt.
 Meaning- a male member of a police force. (सिपाही)
 14. (3) "she" takes singular verb "was". And "caught" is a appropriate term for the context (for illegitimate behaviour).
 20. (1) replace "on" with "of".
 "forget all of it " is correct expression.
1. (4) 2. (2) 3. (1) 4. (3) 5. (2)
 6. (1) 7. (3) 8. (4) 9. (4) 10. (2)
 11. (1) 12. (2) 13. (3) 14. (3) 15. (4)
 16. (3) 17. (1) 18. (1) 19. (4) 20. (1)
 21. (1) 22. (2) 23. (4) 24. (4) 25. (3)

Words

Hit below
 Impede

Meaning in English

unfair remark or blow the belt
 to make it difficult for somebody/something to move or go forward.
Syn. hinder, resist.
Ant. assist, help.
 kindness shown by somebody who has the power to punish somebody.
Syn. clemency, forgiveness, compassion.

Mercy

Meaning in Hindi

जो कृत्य जायज ना हो
 बाधा या अड़चन डालना

दया, रहम

