

QUANTITATIVE APTITUDE

1. (1) $25^3 - (75)^3 + (50)^3$
 We know, if $a + b + c = 0$
 then, $a^3 + b^3 + c^3 = 3abc$
 $25 - 75 + 50 = 0$
 Now, $3abc = 3 \times -75 \times 25 \times 50$
 $= -281250$

2. (3) Largest 5 digit number divisible number by 11, 33, 99, 121.

11	11, 33, 99, 121
13	1, 3, 9, 11
	1, 1, 3, 11

LCM = $121 \times 9 = 1089$

1089	99999 (91
	9801
	1989
	1089
	900 → Remainder

∴ Required number
 $= 99999 - 900 = 99099$

3. (2) $\tan A = \frac{2}{3}$,

$$\frac{(5\sin^2 A - 2\cos^2 A) + (15\sin^2 A + 3\cos^2 A)}{15\sin^2 A + 3\cos^2 A} = \frac{\cos^2 A(5\tan^2 A - 2)}{\cos^2 A(15\tan^2 A + 3)}$$

$$= \frac{5 \times \frac{4}{9} - 2}{15 \times \frac{4}{9} + 3} = \frac{\frac{20}{9} - 2}{\frac{60}{9} + 3} = \frac{\frac{20 - 18}{9}}{\frac{60 + 27}{9}} = \frac{2}{87}$$

4. (2) ATQ,

∴ Average production of x
 $= \frac{13+15+12+14+11}{5} = \frac{65}{5} = 13$

Average Production of Y
 $= \frac{12+14+13+15+13}{5}$

$$= \frac{67}{5} = 13.4$$

Average Production of z
 $= \frac{14+13+15+12+15}{5}$

$$= \frac{69}{5} = 13.8$$

Average production of z is very high.

5. (2) Let Forth proportion = x
 $12 : 24 :: 27 : x$
 $\Rightarrow 12x = 24 \times 27$
 $\Rightarrow x = 54$
 ATQ,

$$\frac{36 \times 36}{A} = 54$$

$$A = \frac{36 \times 36}{54} = 24$$

6. (2) $\tan \theta + \cot \theta = 2$,

$$\Rightarrow \tan \theta + \frac{1}{\tan \theta} = 2$$

$$\Rightarrow \tan^2 \theta + 1 - 2 \tan \theta = 0$$

$$\Rightarrow (\tan \theta - 1)^2 = 0$$

$$\Rightarrow \tan \theta = 1$$

ATQ,

$$\tan^2 \theta + \cot^2 \theta + 2 \tan^5 \theta \cot^4 \theta$$

$$1 + 1 + 2 \times (1)^5 (1)^4$$

$$1 + 1 + 2 = 4$$

7. (3) (I) Successive discount of 10% each

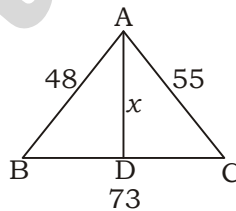
$$= 10 + 10 - \frac{10 \times 10}{100} = 19\%$$

(II) Successive discount = 15%, 5%

$$= 15 + 5 - \frac{15 \times 5}{100} = 19.75\%$$

(III) Discount of 20%

20% is the best discount.



8. (4)

Let, AD is median = x

By apollonian theorem

$$\Rightarrow 48^2 + 55^2 = 2 \left[\left(\frac{73}{2} \right)^2 + x^2 \right]$$

$$\Rightarrow 2304 + 3025 = 2 \left[\frac{5329}{4} + x^2 \right]$$

$$\Rightarrow \frac{5329}{2} - \frac{5329}{4} = x^2$$

$$\Rightarrow x^2 = \frac{5329}{4}$$

$$\Rightarrow x = \sqrt{\frac{5329}{4}} = x = 36.5 \text{ cm}$$

9. (4) $7 \overline{) 4567} (652$

42
36
35
17
14

3 → Remainder

The smallest number = $(7 - 3) = 4$

10. (2) A businessman cheats by using faulty weights, to tune of 12% each time, when buying and selling material.

$$\text{Profit\%} = 12 + 12 + \frac{12 \times 12}{100} = 24 + 1.44 = 25.44\%$$

11. (4) The required percentage

$$= \frac{90}{200} \times 100\% = 45\%$$

12. (4) The expenditure of Cement, Wood and Plastic.

$$= \frac{57^\circ + 40^\circ + 55^\circ}{360^\circ} \times 100$$

$$= \frac{152^\circ}{360^\circ} \times 100 = 42.22\%$$

13. (1) $ab - a - b + 1$

$$= a(b-1) - 1(b-1) = (a-1)(b-1)$$

So, option (1) is the right expression.

14. (3) $100^2 - 99^2 + 98^2 - 97^2 + \dots + 12^2 - 11^2$

$$= (100-99)(100+99) + (98-97)(98+97) + \dots + (12-11)(12+11)$$

$$= 199 + 195 + \dots + 23$$

$$\text{Number of term} = \frac{199 - 23}{4} + 1 = 45$$

$$\text{Sum} = \frac{45}{2} (199 + 23)$$

$$= \frac{45 \times 222}{2}$$

$$= 111 \times 45 = 4995$$

15. (1) Income = 26500, Expenditure = 20500

Saving = $26500 - 20500 = 6000$
 His salary is increased by 12%, then his salary will be

$$= \frac{26500 \times 112}{100}$$

$$= 265 \times 112 = 29680$$

His expenditure is increased by 6% then his salary will be.

$$20500 \times \frac{106}{100} = 205 \times 106 = 21730$$

Now,
Saving = (29680 - 21730) = 7,950
Savings increase

$$= \frac{1950}{6000} \times 100\% = 32.5\%$$

16. (1) Total number of accountants in 2019.
= (35+26+15+20+14) - (0+16++5+ 38+24)
= 110 - 83 = 27

17. (1) Perimeter 13, Possible triangle =
(5, 4, 4), (4, 6, 3), (2, 5, 6),
(5, 5, 3), (6, 6, 1)
5 triangles are possible.

18. (3) Time = 2 years 6 months = $\frac{5}{2}$ years

Principle = 10

Amount = 17

S.I. = 7

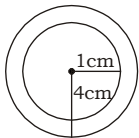
ATQ,

Let, Rate of interest = R%

$$7 = 10 \times \frac{5}{2} \times \frac{R}{100}$$

$$R = \frac{7 \times 2 \times 100}{50} = R = 28\%$$

19. (1)



volume of hollow sphere =

$$\frac{4}{3} \pi (R^3 - r^3) = \frac{4}{3} \pi (64 - 1)$$

$$= \frac{4\pi \times 63}{3} = 84\pi \text{ cm}^3$$

20. (2) Speed = 50 km/h
Returns in increasing of speed by 60%
Increase in speed.

$$= \frac{50 \times 160}{100} = 80 \text{ km/h}$$

$$\text{Average speed} = \frac{2 \times 50 \times 80}{130}$$

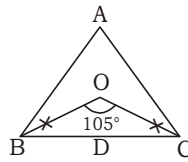
$$= \frac{800}{13} = 61.53 \text{ km/h}$$

21. (4) By hit and trial method, The speed of 99 km/h is less than 24 m/s.

$$\text{Go through option } 99 \times \frac{5}{18} =$$

27.5m/5 is more
This statement is not correct statement.

22. (4) ATQ,



$$\angle BOC = 90^\circ + \frac{A}{2}$$

$$105^\circ - 90^\circ = \frac{A}{2} \Rightarrow A = 30^\circ$$

23. (2) $\cot^2 A - \cos^2 A$

$$= \frac{\cos^2 A}{\sin^2 A} - \cos^2 A = \cos^2 A$$

$$(\operatorname{cosec}^2 A - 1) = \cot^2 A \cdot \cos^2 A$$

24. (3) Let the radius = r

$$\text{Volume of hemisphere} = \frac{2}{3} \pi r^2$$

ATQ,

$$\frac{2}{3} \times \frac{22}{7} \times r^3 = 19404$$

$$\Rightarrow r^3 = \frac{19404 \times 21}{44}$$

$$\Rightarrow r^3 = 441 \times 21$$

$$\Rightarrow r = (21 \times 21 \times 21)^{\frac{1}{3}}$$

$$\Rightarrow r = 21 \text{ cm}$$

25. (3) Let, number of extra days = D
ATQ,

$$(40 \times 15) - (40 \times 3) = (60 \times D)$$

$$\Rightarrow (40 \times 12) = (60 \times D)$$

$$\Rightarrow D = 8 \text{ days}$$

$$\text{Total number of days} = 8 + 3$$

$$\Rightarrow 11 \text{ days}$$

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

GENERAL AWARENESS

1. (1) Men's Indoor Hockey World Cup was first held in 2003. Australia won the 2018 title. In 2023, it will be held in Pretoria, South Africa.
2. (1) 3. (3)
4. (4) Population density of India (2011) - 382/km².
Highest - Bihar (1106), West Bengal (1028), and Kerala (860).
Lowest - Arunachal Pradesh (17)

5. (3) In 1791, Sanskrit College was started at Banaras. In 1958, the Sanskrit College become a university and in 1974 the name was changed to Sampurnanand Sanskrit University.

6. (1) China and India 2nd are leading produces of Rice.

India - West Bengal, Uttar Pradesh Punjab, Andhra Pradesh, Bihar, Chhattisgarh.

7. (2) Raj Subramaniam - CEO of FedEx.

Krishnan Ramanujam - President of TCS.

8. (3) Summer Olympic 2024 - Paris
Summer Olympic 2028 - Los Angeles

Winter Olympic 2022 - Beijing

9. (1) Ustad Sultan Khan - Vocalist
Ustad Vilayat Khan - Sitar
Ustad Zakir Hussain - Tabla
Ustad Bismillah Khan - Shehnai

10. (4) Bauxite is the most common ore of Aluminium. It is a sedimentary rock. When limestone, a sedimentary rock, gets buried deep in earth for years, the heat and pressure can charge it into a metamorphic rock called Marble.

Graphite is an igneous rock composed of two minerals, quartz and feldspar.

11. (3) Hennig Brand - Phosphorus
Mield Bohr - Atomic structure and quantum theory

John Dalton atomic theory suggested that all matters are comprised of indivisible and indestructible atoms with distinct mass and properties.

12. (2) Head of Foreign Frade - Amit Yadav

Minister of Commerce and Industry - Piyush Goel.

13. (3) Part IX of Indian constitution is related to the Panchayats. The modern Panchayati Raj was introduced in India by 73rd constitutional amendment 1992. Currently, it exists in all states except Nagaland, Meghalaya, Mizoram and Delhi.

14. (4)

15. (3) Ramayana - Valmiki
Purana and Mahabharata - Vyasa

16. (1) Muhmud Ghaznavi was the founder of Turkic Ghaznavid dynasty, ruling from 998 to 1030. On 28 Nov. 1001, he defeated Raja Jayapala at Battle of Peshawar. He attacked Somnath in 1025.

17. (1)

18. (3) Bharatanatyam three divisions - Nritha, Nritya and Natya order of Mohiniyattam performance - Cholkettu, Jatiswaram, Varnam Padama fillana, Slokam and Saptam.

19. (2) Kathakali - Kalamadalama Gopi, Raman Kutty Najo, Krishna Prasad, Kottakal Sivaraman, Panicker.

Kathak - Sitara Devi, Mrinalini Sarabhai, Damayavti Joshi, Rani Karna Uday Sankar, Roshan Kumar, Rohini Bhate.

20. (1) Sahitya Akadmi Award confers on writers the most outstanding books of the 22 languages of the 8th Schedule as well in English and Rajasthani. First awarded in 1954. In 2021, it was awarded to Navita Gokhle for 'Things to Leave Behind'.

21. (2) Rana Daggubati - Ceat Tyres.

Mahesh Babu - Idea Cellular, Santoor Shop, Royal state, TVS, Mahindra Tractors, Tata Sky, Mountain Dew. Sonu Sood - Barcelona, 'Desh ke Mentor'

22. (3) Abul Fazal wrote the Akbarnama.

First Volume - Akbar's fore fathers

2nd - Akbar's regions

3rd (Aine-i Akbari) - administration, household, army, revenue etc.

23. (1)

24. (4)

- i. Mitochondria a. Energy generation
- ii. Ribosomes b. Protein synthesis
- iii. Nucleus c. Regulation of activity of a cell
- iv. Lysosomes d. Digestive system of a cell

25. (2)

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

GENERAL INTELLIGENCE & REASONING

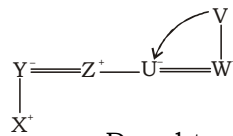
1. (2)

- 6-60-1200 → 6×10=60, 60×20=1200
- 7-70-1600 → 7×10=70, 70×20=1400— odd
- 5-50-1000 → 5×10=50, 50×20=1000
- 4-40-800 → 4×10=40, 40×20=800

2. (4) $\begin{matrix} C & A & S & T & & B & U & S & H \\ +1 & +2 & +3 & +4 & & +1 & +2 & +3 & +4 \\ \hline D & C & V & X & & C & W & V & L \end{matrix}$

Similarly, $\begin{matrix} & & A & R & M & Y \\ +1 & +2 & +3 & +4 & & \\ \hline & & B & T & P & C \end{matrix}$

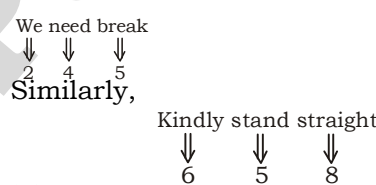
3. (2) If X @ Y & Z # U & W @ V. U related to V



4. (2) AMRW → A +12 M +5 R +5 W
XFIK → X +8 F +3 I +2 K — odd
PBGL → P +12 B +5 G +5 L

5. (2) By hit land trial method
4 × 6 - 3 + 9 ÷ 1 = 25
interchanging 3 and 4
3 × 6 - 4 + 9 ÷ 1 = 25
18 - 4 + 9 = 25
18 + 5 = 25
23 = 25 (incorrect equation)

6. (2) (alphabet counting)
Complete the drawing do not leave early
8 3 7 2 3 5 5



7. (2) 11 × 9 - 8 = 91
18 × 9 - 8 = 154
15 × 9 - 8 = 127

8. (3) 3 × 4 ÷ 2 + 7 - 5 = 16
interchanging + and -, 7 and 3
7 × 4 ÷ 2 - 3 + 5 = 16
14 - 3 + 5 = 16
16 = 16 (correct equation)

9. (1) The order of words in a dictionary is.
6. Humanity
3. Humanoid
2. Humbug
7. Humectants
4. Humidity
1. Humility
5. Humoresque
Order - 6,3,2,7,4,1,5

10. (2) $\begin{matrix} D & A & I & S & Y & & R & O & S & E & S \\ +2 & +2 & +0 & -2 & -2 & & +2 & +2 & +0 & -2 & -2 \\ \hline F & C & I & Q & W & & T & Q & S & C & Q \end{matrix}$

Similarly, $\begin{matrix} L & O & T & U & S \\ +2 & +2 & +0 & -2 & -2 \\ \hline N & Q & T & S & Q \end{matrix}$

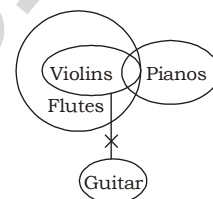
11. (3) (50 ÷ 3) * 15 + 25 - 10 = 25
putting ÷ and *
(50 × 3) ÷ 15 + 25 - 10 = 25
150 ÷ 15 + 25 = 25
10 + 15 = 25
25 = 25 (correct equation)

12. (1) 23 × 7 = 161, 23 × 9 = 207
47 × 7 = 329, 47 × 9 = 423

Similarly, 64 × 7 = 448, 64 × 9 = 576

13. (4) $\begin{matrix} 1 & 3 & 6 & 18 & 36 & 108 & 216 \\ \times 3 & \times 2 & \times 3 & \times 2 & \times 3 & \times 2 \end{matrix}$

14. (3) The possible venn diagram is



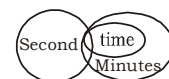
15. (3) The right answer is 3.
16. (1) The right answer is 1.
17. (4) 18 : 234 → 234 divided by 18
16 : 176 → 176 divided by 16
14 : 126 → 126 divided by 14

18. (4) The right answer is 4.
19. (3) The right answer is 3.
20. (1) Lens is the main part of a camera. Similarly, cartridge is the main part of a printer.

21. (2) From fig i to fig iii
 $2 < \begin{matrix} 5 & 6 \\ 4 & 1 \end{matrix} > 2 \leftrightarrow 3$

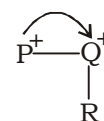
22. (2) $\begin{matrix} B & L & J & S \\ +4 & +3 & +2 & +1 \\ \hline F & O & L & T \\ +4 & +3 & +2 & +1 \\ \hline J & R & N & U \\ +4 & +3 & +2 & +1 \\ \hline N & U & P & V \\ +4 & +3 & +2 & +1 \\ \hline R & X & R & W \end{matrix}$

23. (3) The possible venn diagram is.



Neither conclusion follows

24. (4) By hit and trial method
P - Q × R



Q is brother of P.

25. (3) C A B Q
 ↓ +4 ↓ +8 ↓ +12 ↓
 C E J C
 ↓ +4 ↓ +8 ↓ +12 ↓
 C I R O
 ↓ +4 ↓ +8 ↓ +12 ↓
 C M Z A
 ↓ +4 ↓ +8 ↓ +12 ↓
 C Q H M

1. (2) 2. (4) 3. (2) 4. (2) 5. (2)
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ENGLISH LANGUAGE AND COMPREHENSION

1. (1) "till" is correct term. It means upto that time.
 3. (2) "careless with" is correct expression.
 Meaning - be negligent about something.
 5. (1) meaning of other idioms

Donkey's years- for a very long time.

Duck in the thunderstorm - Looking hopelessly sad and dejected.

Die in harness - Die before retirement.

Damocles' sword -

- Something bad seems very likely to happen to you:
 7. (4) "Every" takes singular verb (was).
 12. (2) "tyranny" is incorrectly spelt as "tyrany". Meaning - autocracy, dictatorship. (तानाशाही)
 Tranquillity - peace, serenity (शांति)
 13. (2) "ketchup" is wrongly spelt as "kecthup".

Meaning - sauce (चटनी).

1. (1) 2. (4) 3. (2) 4. (3) 5. (1)
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 16. (2) 17. (2) 18. (1) 19. (2) 20. (4)
 21. (4) 22. (4) 23. (1) 24. (1) 25. (3)

Words

Meaning in English

Apiculture

the breeding of bees.

Erudition

Profound knowledge acquired from learning and scholarship.

Forbearance

the quality of being patient

Idiosyncrasy

weird behaviour

Nonchalant

Casually calm and relaxed.

Ex: - We handled the whole frenetic situation with a nonchalant attitude.

Syn. Indifferent; unconcerned, insouciant, apathetic.

Omnipotent

having the ability or skill to do everything, all-powerful

Pisciculture

The controlled breeding and rearing of fish.

Remnant

A piece of something that is left after the rest has gone.

Ex:- These few trees are the remnants of a huge forest.

Sericulture

The production of silk and the rearing of silkworms for this purpose.

Tyranny

the cruel and unfair use of power by a person or small group to control a country or state.

Syn. autocracy, despotism, dictatorship, monarchy

Valour

great courage and lack of fear, especially in war, bravery, intrepidity

Ant. cowardice.

Meaning in Hindi

मधुमक्खी पालन

विद्वत्ता

आत्म-संयम

विचित्र व्यवहार

बेपरवाह

कुछ करने की असीमित

शक्ति, सर्वशक्तिमान

मत्स्य पालन

किसी चीज का बचा हुआ

टुकड़ा (अवशेष)

रेशम का कीड़ों का पालन

तानाशाही

साहस और निर्भीकता

(विशेषतः युद्ध में)