

QUANTITATIVE APTITUDE

1. (2) Ratio of Speed →

1 st Car	2 nd Car
20	: 30
2	: 3

Ratio of Time → 3 : 2

1 unit — 4 hours
3 unit — 3×4=12 hours

$$\text{Total time} = 1 \frac{1}{2} + 2 \frac{1}{2} = 4 \text{ hours}$$

2. (4) Discount-25%

Successive discount

$$= 15\% + 10\% - \frac{15\% \times 10\%}{100}$$

$$= 25\% - 1.5\% = 23.5\%$$

The difference between discount and successive discount

$$= 25\% - 23.5\% = 1.5\%$$

According to the question

$$1.5\% \equiv 25$$

$$\Rightarrow 15\% \equiv 250$$

$$\Rightarrow 100\% \equiv 1666.67$$

3. (2) $15\% = \frac{3}{20}$

$$1000 : 1300$$

$$20 : 23$$

$$\frac{200}{2} : \frac{299}{2} \Rightarrow 100 : 149.5$$

$$\frac{200}{2} : \frac{299}{2} \Rightarrow 100 : 149.5$$

Net Profit = 49.5%

4. (2) According to the question

$$\begin{array}{r} 765 \overline{) 87501} \\ \underline{765} \\ \text{diff. } 1100 \\ \underline{474} \\ 3351 \\ \underline{3060} \\ 291 \end{array}$$

$$\Rightarrow 87501 + 474 = 87975$$

5. (2) $\frac{\cos A}{1 + \tan A} - \frac{\sin A}{1 + \cot A}$

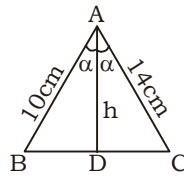
$$= \frac{\cos A}{1 + \frac{\sin A}{\cos A}} - \frac{\sin A}{1 + \frac{\cos A}{\sin A}}$$

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

$$= \frac{(\cos A + \sin A)(\cos A - \sin A)}{(\cos A + \sin A)}$$

$$= (\cos A - \sin A)$$

6. (2) In triangle ABC,



$$\frac{AB}{AC} = \frac{BD}{DC}$$

$$\Rightarrow \frac{10}{14} = \frac{BD}{DC} \Rightarrow \frac{BD}{DC} = \frac{5}{7}$$

7. (3) Ratio of number of people of C and E = 144 : 280 = 18 : 35

8. (2)

$$\frac{P \times 4 \times 1}{100} + \frac{(5000 - P) \times 5 \times 1}{100} = 223$$

$$\Rightarrow 4P + 25000 - 5P = 22300$$

$$\Rightarrow P = 25000 - 22300$$

$$\Rightarrow P = 2700$$

9. (3) Number of trucks sold by L and J

80 and 40 respectively.

Required percentage

$$= \frac{80}{40} \times 100 = 200\%$$

10. (2) The volume of a sphere = $\frac{4}{3} \pi r^3$

ATQ,

$$\frac{4}{3} \pi r^3 = 24416.64$$

$$\Rightarrow \frac{4}{3} \times 3.14 \times r^3 = 24416.64$$

$$\Rightarrow r^3 = 5832$$

$$\Rightarrow r = 18$$

Surface area = $4\pi r^2$

$$= 4 \times 3.14 \times 18 \times 18 = 4069.44 \text{ cm}^2$$

11. (1)

$$\frac{1}{1 + \cos(90 - \theta)} + \frac{1}{1 - \cos(90 - \theta)}$$

$$= \frac{1}{1 + \sin \theta} + \frac{1}{1 - \sin \theta}$$

$$= \frac{1 - \sin \theta + 1 + \sin \theta}{1 - \sin^2 \theta}$$

$$= \frac{2}{\cos^2 \theta} = 2 \sec^2 \theta$$

$$12. (3) \left(4a + \frac{5}{a} + 5\right) = 14$$

$$4a + \frac{5}{a} = 14 - 5 = 9$$

Squaring both side

$$\left(4a + \frac{5}{a}\right)^2 = 9^2$$

$$\Rightarrow 16a^2 + \frac{25}{a^2} + 2 \times 4a \times \frac{5}{a} = 81$$

$$\Rightarrow 16a^2 + \frac{25}{a^2} = 81 - 40$$

$$\Rightarrow 16a^2 + \frac{25}{a^2} = 41$$

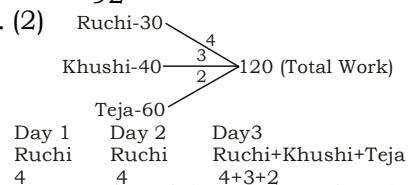
13. (1) Total students of section C = 18 + 10 + 8 + 56 = 92

Passed in Science but failed in mathematics = 8

Percentage of students of section C passed in science but failed in mathematics

$$= \frac{8}{92} \times 100 = 8.7\%$$

14. (2)



Total work in 3 days = 17 unit. 17 unit work is completed in 3 days

19 unit work is completed in 3×7 = 21 days

Remaining work = 120 - 119 = 1 unit

Remaining work will be done by Ruchi in $\frac{1}{4}$ day.

Then the total work will be completed in $21 + \frac{1}{4} = \frac{85}{4}$ days.

15. (3)

$$2r = 3.5 \text{ cm}$$

Total surface area = $4\pi r^2$

$$= 4 \times \frac{22}{7} \times \frac{3.5}{2} \times \frac{3.5}{2} = 38.5 \text{ cm}^2$$

16. (2)

Let total money = 32 unit

$$\text{Ram loses} \Rightarrow 12 \frac{1}{2}\% = \frac{1}{8}$$

$$\text{Loses} \Rightarrow 32 \times \frac{1}{8} = 4 \text{ unit}$$

Remaining 32 - 4 = 28 unit

$$\text{Spending} \Rightarrow 75\% = \frac{3}{4}$$

$$\begin{aligned} \text{Spending amount} &\Rightarrow \frac{28 \times 3}{4} \\ &= 21 \text{ unit} \\ \text{Remaining} &\Rightarrow 32 - (4 + 21) = 7 \\ &\text{unit} \\ \text{ATQ,} \\ 7 \text{ unit} &\rightarrow 630 \end{aligned}$$

$$\begin{aligned} 32 \text{ unit} &\rightarrow \frac{630}{7} \times 32 = 2880 \\ \therefore \text{Initially Ram had} &\text{ ₹}2880 \end{aligned}$$

$$\begin{aligned} 17. (4) \quad x - \frac{1}{x} &= 13 \\ \text{squaring both side} \end{aligned}$$

$$\begin{aligned} \left(x - \frac{1}{x}\right)^2 &= 13^2 \\ \Rightarrow x^2 + \frac{1}{x^2} - 2 &= 169 \end{aligned}$$

$$\begin{aligned} \Rightarrow x^2 + \frac{1}{x^2} &= 171 \\ \text{Squaring both side} \end{aligned}$$

$$\Rightarrow \left(x - \frac{1}{x}\right)^2 = 13^2$$

$$\Rightarrow x^2 + \frac{1}{x^2} - 2 = 169$$

$$\begin{aligned} \Rightarrow x^2 + \frac{1}{x^2} &= 171 \\ \text{squaring both side} \end{aligned}$$

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)^2 = (171)^2$$

$$\Rightarrow x^4 + \frac{1}{x^4} + 2 = 29241$$

$$\Rightarrow x^4 + \frac{1}{x^4} = 29239$$

$$\begin{aligned} 18. (4) \quad \text{The average no. of } M_2 \text{ Ma} \\ \text{chines} &= \frac{14 + 8 + 8 + 12}{4} = \frac{42}{4} = 10.5 \end{aligned}$$

S_1 and S_4 stores have more no. of M_2 machines. then the average number of M_2 machines per store.

$$\begin{aligned} 19. (4) \quad a:b=c:d \\ \Rightarrow \frac{a}{b} = \frac{c}{d} \quad \Rightarrow \frac{b}{a} = \frac{d}{c} \end{aligned}$$

$$\Rightarrow \frac{b}{a} + 1 = \frac{d}{c} + 1$$

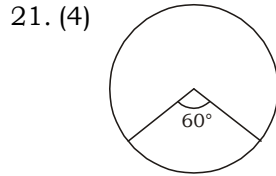
$$\Rightarrow \frac{a+b}{a} = \frac{d+c}{c}$$

$$\Rightarrow \frac{c}{a} = \frac{d+c}{a+b}$$

$$\Rightarrow \frac{a}{c} = \frac{a+b}{c+d}$$

$$\Rightarrow a : c = (a+b) : (c+d)$$

$$\begin{aligned} 20. (2) \quad x^4 + x^2 + 25 \\ &= x^4 + 10x^2 + 25 - 9x^2 \\ &= (x^2 + 5)^2 - (3x)^2 \\ &= (x^2 + 5 + 3x)(x^2 + 5 - 3x) \\ &= (x^2 + 3x + 5)(x^2 - 3x + 5) \end{aligned}$$



$$\begin{aligned} \text{The area of a sector} &= \pi r^2 \times \frac{\theta}{360} \\ \text{ATQ,} \end{aligned}$$

$$\begin{aligned} 66 &= \frac{22}{7} \times r^2 \times \frac{60}{360} \\ \Rightarrow r^2 &= 3 \times 7 \times 6 \end{aligned}$$

$$\Rightarrow r = 3\sqrt{14}$$

$$\begin{aligned} 22. (3) \quad \frac{12}{5}, \frac{14}{15}, \frac{16}{17} \\ \text{HCF} \end{aligned}$$

$$= \frac{\text{HCF of } (12, 14, 16)}{\text{LCM of } (5, 15, 17)} = \frac{2}{55}$$

$$23. (4) \quad \cos q + \sin q = \frac{31}{25}$$

$$\begin{aligned} \text{Squaring both side} \\ \Rightarrow \cos^2 q + \sin^2 q + 2 \sin q \cdot \cos q &= \end{aligned}$$

$$\frac{961}{625}$$

$$\Rightarrow 1 + 2 \sin q \cdot \cos q = \frac{961}{625}$$

$$\Rightarrow 2 \sin q \cdot \cos q = \frac{961}{625} - 1$$

$$\Rightarrow -2 \sin q \cdot \cos q = \frac{-336}{625}$$

$$\Rightarrow 1 - 2 \sin q \cdot \cos q = 1 - \frac{336}{625}$$

$$\Rightarrow (\cos q - \sin q)^2 = \frac{289}{625}$$

$$\Rightarrow \cos q - \sin q = \frac{17}{25} \quad \dots \text{(II)}$$

Now, adding (i) and (ii)

$$\cos q + \sin q = \frac{31}{25}$$

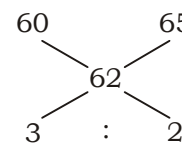
$$\cos q - \sin q = \frac{17}{25}$$

$$2 \cos q = \frac{31 + 17}{25} = \frac{48}{25}$$

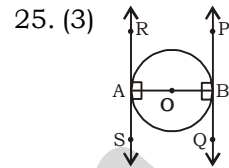
$$\Rightarrow \cos q = \frac{24}{25}$$

$$\Rightarrow \cos^2 q = \frac{576}{625}$$

$$24. (1) \quad \begin{array}{cc} \text{Boys} & \text{Girls} \\ 60 & 65 \end{array}$$



$$\begin{aligned} \text{ATQ,} \\ 5 \text{ unit} &\rightarrow 60 \\ 1 \text{ unit} &\rightarrow 12 \\ 3 \text{ unit} &\rightarrow 3 \times 12 = 36 \end{aligned}$$



Here AB is a diameter of the circle with center O, two tangent PQ and RS draw at points A and B respectively. Radius will be perpendicular to these tangents.

Thus, $OA \perp RS$ and $OB \perp PQ$
 $\angle OAR = \angle OBP = \angle OBQ = 90^\circ$
 Therefore,

$\angle OAR = \angle OBQ$ (Alternate interior angles)

$\angle OAS = \angle OBP$ (Alternate interior angles)

Since, alternate interior angles are equal, lines PQ and RS will be parallel.

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

GENERAL AWARENESS

1. (2) There are three major types of rocks:

Igneous rocks, Sedimentary rocks and Metamorphic rocks.

Study of Rocks - Petrology

Study of Fossils - Palentology

2. (1)
 3. (1) Motto of 2022, Beijing Olympic was 'Together For a Shared Future.' In 2022, April Khan was the India's flag bearer.

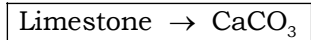
4. (2)

5. (3) $\boxed{\text{NNP} = \text{GNP} - \text{Depreciation}}$

6. (2) $\text{Na}_2\text{B}_4\text{O}_7 \cdot \text{WH}_2\text{O} \rightarrow \text{Borax}$ (Sodium tetraborate decahydrate)

It is ionic compound the best used for Borax is as a cleaner.

7. (2) OYO (On Your Own) was founded in 2012 by Ritesh Agarwal. Its Headquarters is in Gurugram, Haryana.
8. (2) **State National Parks**
 Bihar Valmiki
 Tripura Clouded and Raj bari
 Haryana Sultanpur and Kalswar
 Jharkhand Betla
9. (4) The playing Court is 40 m long and 20 m wide. The goals are surrounded by the crease, of radius 6 m. A standard match has two 30 min. halves, 25 min at ages 12 to 15 and 20 min at ages 8 to 11. Total number of players is 7.
10. (4)
11. (2) D2D (Distributor-to-Distributor) is NOT a classification of E-Commerce. It is a radio technology that enables devices to communicate directly with each other, that is without routing the data paths through a network infrastructure.
12. (1) A.K. Anil Kumar-Vice President of International Astronautical Federation. Prashant Kumar - M.D. and C.E.O of YES Bank Sunil Barthwal -Secretary of department of Commerce. Lok Sabha seats in Meghalaya - 2
 Rajya Sabha seats in Meghalaya - 1
13. (2) There are 2 main types of cell division.
 (i) Mitosis - one cell divides to produce two new cells that are genetically identical to itself.
 (ii) Meiosis-sexually reproducing organisms that reduces the number of Chromosomes in gametes.
14. (1) The first session of INC was proposed at Poona, the venue was shifted, to Bombay, (due to out break of plague) at 'Gokuldas Tejpal Sanskrit Pathsala'. 72 delegates participated in it. The President of this session (1885) was W.C. Bannerjee.
15. (2) One Ampere current represents one coulomb of electrical charge (6.24×10^{18} charge carriers) moving past a specific point in one second.
16. (3) Lithosphere (Land) - 10 kms to 200 kms
 Hydrosphere (Water) - 10 kms to 20 kms
 Biosphere (living things) - about 20 km
 Atmosphere (Air) - 480 kms
17. (1) Pandit Ravishankar Prasad - Sitar
 Pandit Hariprasad Chaurasia - Flute
 Pandit Jasraj - Vocalist
 Pandit Shiv Kumar Sharma - Awards - Sangeet Natak Akadami (1986), Padma Shri in 1991 and Padma Vibhushan in 2001.
18. (3) $MgCO_3$ - Magnesium Carbonate
 MgO_2 - Magnesium Peroxide
 $Mg(OH)_2$ - Magnesium Hydroxide
19. (2) Article 22 - Protection against arrest and detention in certain cases.
 Article 23 - Prohibition of traffic in human beings and forced labour.
 Article 25 - Freedom of conscience and free profession, practice and propagation of religion
20. (3) Rayon is not a natural fibre. It is man-made fibre prepared from a natural raw material called cellulose by chemical treatment.
21. (3) Article 52- The president of India.
 Article 54 - Election of the President (elected member of both houses and elected member of legislative assemblies).
 Article 55 - Manner of election of President
 Article 56 - Term of office of President (5 years)
22. (2) Pongal is a harvest festival celebrated in Tamil Nadu. Pongal has four festive day. Bhogi Pongal, Thai Pongal, Mattu Pongal and Kaanum Pongal.
 Puthandu celebrated on the first day of Chaitra month. Ugadi is celebrated as the New Year in Andhra Pradesh, Karnatka and Telangana. Onam is the harvest festival of Kerala.
23. (3) List of other item seized by Cholas Ganesha status and several statue of Durga, a Kali statue from the Palas of Bengal, a nandi statue from the eastern Chalukyas, an image of Bhairava from Kalings of Odissa.
 Rajendra I (1014 AD - 1044 AD) defeated Pala ruler, Malvipala in 1022 AD and assumed the title of Gangaikonda.
24. (3)
25. (1) Limestone is found in associated rock composed of calcium carbonates & Magnesium Carbonates. It is found in sedimentary rock.



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

GENERAL INTELLIGENCE & REASONING

1. (2) From figure i and iii we get,

$$4 < \begin{matrix} 6 \\ 3 \end{matrix} - \begin{matrix} 2 \\ 5 \end{matrix}$$

$$\text{So, } 1 \leftrightarrow 4$$

$$6 \leftrightarrow 3$$

$$2 \leftrightarrow 5$$

So, 4 is the number on the face opposite to the face having '1'.

2. (1)
- | |
|-----------|
| P |
| ECONOMIST |
| Q |
| SIMONOCF |

3. (3) $\frac{1+4}{3} = \frac{5+4}{7} = \frac{9+4}{11} = \frac{13+4}{15}$

4. (2)
- | | | | | | |
|----|----|----|----|----|----|
| M | O | B | I | L | E |
| +3 | +3 | +3 | +3 | +3 | +3 |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| P | R | E | L | O | H |

- and
- | | | | | | |
|----|----|----|----|----|----|
| S | I | L | E | N | T |
| +3 | +3 | +3 | +3 | +3 | +3 |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| V | L | O | H | Q | W |

Similarly,

P	A	I	N	T	I	N	G
+3	+3	+3	+3	+3	+3	+3	+3
↓	↓	↓	↓	↓	↓	↓	↓
S	D	L	Q	W	L	Q	J

5. (1) $(36 - 18) \times 5 = 90$
 $(15 - 8) \times 5 = 35$
 Similarly,
 $(14 - 5) \times 5 = 45$

