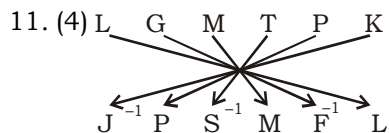
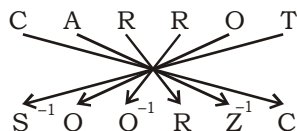


10. (4)  $\underline{\text{e f g h i j}} / \underline{\text{e f g h i j}} / \underline{\text{e f g h i j}}$   
 $\underline{\text{j}} / \underline{\text{e f g h i j}}$

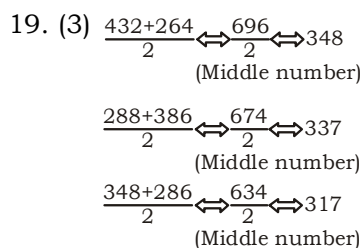


Similarly,



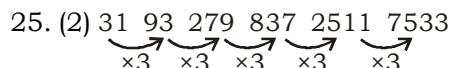
12. (1) FRIENDS \* FANS = 28  
 7 letter word × 4 letter word = 28  
 INDIANS \* PICS = 35  
 7 letter word × 5 letter word = 35  
 Similarly,  
 INCREASES \* PRICES =  
 9 letter word × 6 letter word = 54

13. (3)  
 14. (3) 6 blacks are only white.  
 15. (1) Male → Female  
 Dog → Bitch  
 Cock → Hen  
 16. (3) Except option 3 all number are multiplied by 2  
 17. (2)  $84 \div 7 \div 4 - 16 \times 8 \div 2 + 14$   
 $84 \div 7 \times 4 + 16 \div 8 \times 2 - 14$   
 $= 12 \times 4 + 4 - 14$   
 $= 48 + 4 - 14 = 38$   
 18. (2) Dentist is the specialist of teeth orthopedician is the specialist of Bones. In same the way cardiologist is the specialist of heart.



20. (1)  $8 \xrightarrow{\text{opposite}} 2$   
 $3 \xrightarrow{\text{opposite}} 6$   
 $4 \xrightarrow{\text{opposite}} 1$   
 1 is not adjacent to number 4 because both are opposite to each other.

21. (1)  
 22. (4)  $\begin{matrix} @ \text{ opposite} + \\ \# \text{ opposite} 6 \\ 4 \text{ opposite} \% \end{matrix}$   
 Only option 4 is correct because all number can be adjacent to each other.  
 23. (2) except (lizard, crocodile, jungle) all are the particular category  
 24. (4)  
 Aryan<sup>+</sup>  
 |  
 Bhanu<sup>-</sup>—Chirag<sup>+</sup>—Dewan<sup>+</sup> ↔ Esha<sup>-</sup>  
 Esha is daughter-in-law of Aryan.



**ANSWER KEY**

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

**QUANTITATIVE APTITUDE**

1. (1) Sum of ages of Ram and Shyam =  $(28 \times 2) = 56$  y  
 Sum of ages of Rahim and Shyam =  $(26 \times 2) = 52$  y  
 Sum of ages of Rahim and Ram =  $(30 \times 2) = 60$  y  
 $\therefore$  Sum of ages of Ram, Rahim and Shyam  $\rightarrow$   
 $2(\text{Ram} + \text{Rahim} + \text{Shyam}) = 56 + 52 + 60$   
 Or, Ram + Rahim + Shyam =  $\frac{168}{2}$   
 Or, Ram + Rahim + Shyam = 84  
 $\therefore$  Age Ram =  $(84 - 52)y = 32$  y  
 Age Shyam =  $(84 - 60)y = 24$  y  
 Age Rahim =  $(84 - 56)y = 28$  y  
 2. (1) Before 8 y, sum of ages of father and son =  $(94 - 16)$  y = 78 y  
 Ratio of ages of father and son = 2 : 1 = 3  
 ATQ,  
 $3 = 78$   
 $1 = 26$   
 Age of son 8 y ago = 26  
 Age of father 8 y ago = 52

$\therefore$  10 y after, age of father =  $(52 + 8 + 10)$  y = 70 y  
 Age of Son =  $(26 + 8 + 10)$  y = 44  
 $\therefore$  Ratio of ages = 70 : 44 = 35 : 22

3. (1) For circles having equal radius intersect each other such that each passes through centre of the other

$\sqrt{3} \times$  Radius of circle = length of common chord

$\sqrt{3} \times \frac{84}{4} =$  length of common chord

Length of chord =  $21\sqrt{3}$  cm

4. (2)  $98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + \dots + 12^2 - 11^2$   
 $= 195 + 191 + 187 + 183 + \dots + 23$

Let a = 1<sup>st</sup> term = 195, d = difference = -4, n = number of terms

We know n<sup>th</sup> term =  $t_n = a + (n - 1)d$   
 Or,  $23 = 195 + (n - 1) \times (-4)$   
 Or, n = 44  
 Sum of n terms

$= S_n = \frac{n}{2} [2a + (n - 1)d]$

$= \frac{44}{2} [(2 \times 195) + 43 \times (-4)]$   
 $= 22 [390 - 172]$   
 $= 4796$

5. (1) I. Total production of truck by all companies =  $(700 + 500 + 400 + 800 + 850) = 3250$

Total production of bike by all companies =  $900 + 650 + 700 + 450 + 500 = 3200$

$\therefore$  % of total production of truck to total production

of bikes =  $\frac{3250}{3200} \times 100 = 101.56\%$

∴ Statement is wrong

II. Total production of truck and bike by Company R = (700 + 900) = 1600

∴ Average production

$$= \frac{1600}{2} = 800$$

Statement is correct.

6. (4) A covers distance during 11 am to 12 pm = (40 × 1) = 40  
∴ They will meet after

$$= \frac{180}{40 - 30} \text{ hrs}$$

$$= 18 \text{ hrs}$$

∴ They will meet at (12:00 pm + 18 hrs)

$$= 06:00 \text{ am}$$

7. (4)  $x + \frac{1}{x-2} = 8$

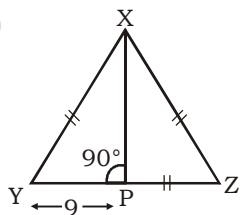
Or,  $(x-2) + \frac{1}{(x-2)} = 6$

Squaring of both sides

$$(x-2)^2 + \frac{1}{(x-2)^2} = (6)^2 - 2$$

Or,  $(x-2)^2 + \frac{1}{(x-2)^2} = 34$

8. (2)



From properties of triangle

We know,

$$\frac{XY}{XZ} = \frac{YP}{PZ}$$

Or,  $1 = \frac{YP}{PZ}$

Or,  $YP = PZ$

∴  $PZ = 9$

∴ Length of  $YZ = (YP + PZ) \text{ cm}$

$$= 9 + 9 \text{ cm}$$

$$= 18 \text{ cm}$$

9. (1)  $\tan 10^\circ \tan 80^\circ + \tan 20^\circ \tan 70^\circ + \tan 30^\circ \tan 60^\circ +$

$$\tan 40^\circ \tan 50^\circ$$

$$\Rightarrow \cot 80^\circ \tan 80^\circ + \cot 70^\circ \tan 70^\circ + \cot 60^\circ \tan 60^\circ + \cot 50^\circ \tan 50^\circ$$

$$\Rightarrow 1 + 1 + 1 + 1$$

$$\Rightarrow 4$$

$$\Rightarrow 4$$

10. (2) Total production of refrigerator = 200 + 140 + 120 + 80 + 40 + 100 = 680

∴ Average production by 6

$$\text{companies} = \frac{680}{6}$$

$$= 113.33$$

11. (1) Let, Ratio of cost price and selling price = 100 : 120

$$\downarrow \times 2$$

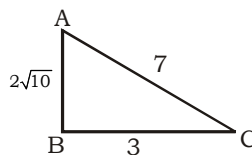
$$240$$

∴ Profit = (240 - 100) = 140

∴ %Profit =  $\frac{140}{100} \times 100$

$$= 140\%$$

12. (2)



$$3 \operatorname{cosec} A = 7$$

Or,  $\operatorname{cosec} A = \frac{7}{3}$

Now,

$$\cos A \tan A$$

$$= \frac{2\sqrt{10}}{7} \times \frac{3}{2\sqrt{10}}$$

$$= \frac{3}{7}$$

13. (3) Total income of company in year M and N = 850 + 350 = 1200

Total expenditure of company in year J, K, L

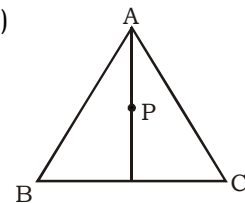
$$= 350 + 250 + 350$$

$$= 950$$

∴ Ratio of income and expenditure = 1200 : 950

$$= 24 : 19$$

14. (1)



We know for equilateral triangle height is equal to median and centroid divide the median in 2 : 1

∴ Length of height =  $\frac{\sqrt{3}}{2} \times$

side unit

$$= \frac{\sqrt{3}}{2} \times 16\sqrt{3} \text{ cm}$$

$$= 24 \text{ cm}$$

∴ Distance of P from BC

$$= \left( \frac{1}{3} \times 24 \right) \text{ cm} = 8 \text{ cm}$$

15. (2) Ratio of cost price and marked price = 100 : 140

$$\downarrow -28$$

$$112$$

∴ Profit = (112 - 100)

$$= 12$$

∴ Profit % =  $\frac{12}{100} \times 100$

$$= 12\%$$

16. (4) Rama alone does work (5×4) hrs

$$= 20 \text{ hrs}$$

Seema alone does work (3×10) hrs

$$= 30 \text{ hrs}$$

Ratio of time of Rama and Seema = 20 : 30 = 2 : 3

Ratio of efficiency of Rama and Seema = 3 : 2

∴ Total work = (20 × 3) unit

$$= 60 \text{ unit}$$

∴ They will finish work in

$$\frac{60}{5} \text{ hrs}$$

$$= 12 \text{ hrs}$$

∴ They need to work  $\frac{12}{6}$  hr

per day to complete = 2 hr

## GENERAL AWARENESS

- 1.(1)
- 2.(4) UNESCO was founded in 1945 to develop the "intellectual and moral solidarity of mankind" as a means of building lasting peace. It is located in Paris, France. India has 14 intangible cultural heritage elements on the prestigious UNESCO
- 3.(4) Alt+O - used to open the Format file menu.  
Alt+N - Open the Insert tab to insert tables, pictures and shapes, headers, or text boxes.  
Ctrl+O - Opens the dialog box or page for selecting a file to open.
- 4.(2) Adam Smith dealt extensively with the topic in his 1776 epic economic work, The Wealth of Nations. Often referred to as the Father of Economics, Smith explained the concept of supply and demand as an "invisible hand" that naturally guides the economy.
- 5.(2) The HAL Dhruv is a utility helicopter designed and developed by Hindustan Aeronautics Limited in November 1984.  
Hindustan Aeronautics Limited - 1940  
Bharat Heavy Electricals Limited- 1964  
Defence Research and Development Organisation - 1958  
Indian Space Research Organisation - 1969
- 6.(2)
- 7.(3)
- 8.(4) All Sports - 3 × 3 basketball, 3 × 3 wheelchair basketball, Diving, Swimming, Para swimming Athletics Para Athletics, Badminton, beach, volleyball, boxing, cricket t20, Cycling - mountain bike, Cycling - road, Cycling - track and para track, Gymnastics - artistic, Gymnastics - rhythmic, Hockey, Judo, Lawn bowls and para lawn bowls, Netball, Para powerlifting, Rugby sevens, Squash, Table tennis and para table tennis, Triathlon and para triathlon, Weightlifting, Wrestling

17. (3)  $(x + 1)(x^2 - x + 1)$   
 $= (x)^3 - (1)^3$  [We know  $a^3 + b^3$   
 $= (a + b)(a^2 - ab + b^2)$   
 $= x^3 - 1$

18. (2) For equilateral triangle,

$$\text{Inradius} = \frac{\text{side}}{2\sqrt{3}}$$

$$\text{Or, side} = \text{Inradius} \times 2\sqrt{3}$$

$$\text{Or, side} = 4 \times 2\sqrt{3}$$

$$\text{Or, side} = 8\sqrt{3}$$

$$\therefore \text{circumradius} = \frac{\text{side}}{\sqrt{3}} \text{ unit}$$

$$= \frac{8\sqrt{3}}{\sqrt{3}} \text{ cm}$$

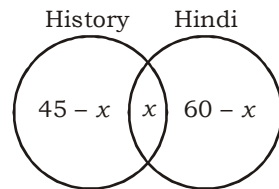
$$= 8 \text{ cm}$$

19. (3)  $1440 - 200 \div 50 \times 2 + 3$   
 $= 1440 - 40 \times 2 + 3$   
 $= 1440 - 80 + 3$   
 $= 1435$

20. (3) Let  $x\%$  student passed in both subjects.

Failed students = 8%

$\therefore$  Passed students = 92%



ATQ,

$$45\% - x + x\% + 60\% - x\% = 92\%$$

$$\text{Or, } 105\% - x\% = 92\%$$

$$\text{Or, } x\% = 13\%$$

$\therefore$  13% student passed in both subjects.

21. (3) Let height of two cylinders are 2, 3

Radii of two cylinders are 6, 5

$$\therefore \text{Ratio of their volumes} = \pi \times (6)^2 \times 2 : \pi \times (5)^2 \times 3$$

$$= 24 : 25$$

22. (1)  $2\sec^2\theta - 9\sec\theta + 7 = 0$

$$\text{Or, } 2\sec^2\theta - 2\sec\theta - 7\sec\theta + 7 = 0$$

$$\text{Or, } 2\sec\theta(\sec\theta - 1) - 7(\sec\theta - 1) = 0$$

$$\text{Or, } (2\sec\theta - 7)(\sec\theta - 1) = 0$$

$$\text{Either } 2\sec\theta - 7 = 0$$

$$\text{Or, } \sec\theta = \frac{7}{2}$$

(It is not possible)

$$\text{Or } \sec\theta = 1$$

$$\text{Or, } \sec\theta = \sec 0^\circ$$

$$\text{Or, } \theta = 0^\circ$$

$$\text{Now, } \cos^2\theta + \sec^2\theta$$

$$= (\cos 0^\circ)^2 + (\sec 0^\circ)^2$$

$$= (1)^2 + (1)^2$$

$$= 2$$

23. (3) Total production of bike by 5 companies = 300 + 175 + 200 + 75 + 100 = 850

$$\therefore \text{Average of production } (J_1) = 170$$

Total production of truck by 5 companies

$$= 200 + 100 + 50 + 250 + 275 = 875$$

$$\therefore \text{Average production } (J_2) = 175$$

$$\therefore \text{The ratio of } J_1 : J_2 = 170 : 175$$

$$= 34 : 35$$

24. (4)  $\overset{2 \text{ yr}}{\curvearrowright} \overset{1 \text{ yr}}{\curvearrowright}$   
P 6580 7896

$$\therefore \text{Interest} = 7896 - 6580 = 1316$$

$$\therefore \text{Interest Rate} = \frac{1316}{6580} \times 100 = 20\%$$

25. (1)  $\frac{5}{6}$  of  $\frac{6}{25} - \frac{5}{6} \times \frac{12}{33} + \frac{5}{11} \div \frac{25}{33}$   
 $\frac{1}{6} \div \frac{1}{2} + \frac{1}{6} \times \frac{1}{2} - \frac{1}{2}$  of  $\frac{1}{6}$

$$= \frac{30}{300} - \frac{10}{33} + \frac{3}{5}$$

$$= \frac{1}{3} + \frac{1}{12} - \frac{1}{12}$$

$$= \frac{131}{110}$$

### ANSWER KEY

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

- 9.(4) The nine gems of Akbar were: Abul Fazl, Faizi, Tansen, Birbal, Todar Mal, Raja Man Singh, Abdul Rahim Khan-I-Khana, Fakir Aziao-Din, Mullah Do Piazza.
- 10.(3) 130 - Seat of Supreme Court.  
132 - Appellate jurisdiction of Supreme Court in appeals from High Courts in certain cases.  
133 - Appellate jurisdiction of Supreme Court in appeals from High Courts in regard to Civil matters.  
134 - Appellate jurisdiction of Supreme Court in regard to criminal matters.
- 11.(1)
- 12.(1) Reliance Industries was founded in 1958.  
Mukesh Ambani - founder of Jio industry  
Akash Amabani - Chairman of Jio industry  
Jio was founded on 15 February 2007
- 13.(3) The part of the Peninsular plateau lying to the north of the Narmada river, covering a major area of the Malwa plateau, is known as the Central Highlands. It includes the Aravallis, the Malwa Plateau, and the Vindhyan range.  
The Deccan plateau lies to the direct south of the river Narmada.  
It is bordered by Western Ghats in the west. The Eastern Ghats in the east. Mahadeo hills, Satpura and Maikal range in the north.
- 14.(3)
- 15.(1) Earth Day - April 22  
Theme for 2023 is also Invest in Our Planet.
- 16.(1) Thrissur is known as Gold Capital of India.  
Ahmedabad, also known as the 'Manchester of India', is considered to be the cotton capital of India.
- 17.(2) Hemant Karkare, Ashok Kamte, Vijay Salaskar, Tukaram Omble, Major Sandeep Unnikrishnan and Havildar Gajender Singh awarded the Ashoka Chakra posthumously for the gallantry shown in Mumbai.
- Sapper V Sathish of the NSG, police constables Arun Chitte, Ambadas Powar and Inspector Shashank Shinde of the Maharashtra police besides Home Guard Mukesh Jadhav awarded the Kirti Chakra.
- 18.(4) The literacy rate in the country is 74.04 per cent, 82.14 for males and 65.46 for females.  
Sex ratio is defined as the number of females per 1000 males in a given population.  
Kerala has a sex ratio of 1084.
- 19.(1) Kailasa temple - Maharashtra  
Virupaksha temple - Karnataka  
Jagannatha temple - Odisha
- 20.(2) National Commission for Women was founded in 1992. Its Chairman is Rekha Sharma.  
India's National Commission for Backward Classes is a constitutional body (123rd Constitutional Amendment Bill, 2017 and 102nd Amendment Act, 2018 in the constitution to make it a constitutional body under Article 338B of the Indian Constitution) under the Ministry of Social Justice and Empowerment, established on 14 August 1993. It was constituted pursuant to the provisions of the National Commission for Backward Classes Act, 1993.  
Competition Commission of India was founded on 14 October 2003.  
Sangeeta Verma - Chairperson  
P K Singh - Secretary
- 21.(2) The Chauri Chaura Incident took place on 4 February 1922 at Chauri Chaura in the Gorakhpur district of United Provinces (now Uttar Pradesh) in British India. The police there fired upon a large group of protesters participating in the Non-cooperation movement. In retaliation, the demonstrators attacked and set fire to a police station, which killed all of its occupants. The incident led to the death of three civilians and 22 policemen. Mahatma Gandhi halted the Non-Cooperation Movement on the national level on 12 February 1922 as a direct result of the incident. In spite of Gandhi's decision, 19 arrested demonstrators were sentenced to death and 14 to life imprisonment by the British colonial authorities.
- 22.(3) The northernmost part of India is the Indira Col in Jammu and Kashmir which is at 37°6'N latitude. The Tropic of Cancer divides India into two almost equal parts. However the southernmost point of the Indian mainland is Kanniyakumari in Tamil Nadu which is at 8°4'N latitude.  
East to West extent is 2933 kilometres.
- 23.(3) **Opera** is a multi-platform web browser developed by its namesake company Opera. The browser is based on Chromium, but distinguishes itself from other Chromium-based browsers (Chrome, Edge, etc.) through its user interface and other features.  
Opera was initially released on 10 April 1995, making it one of the oldest desktop web browsers still actively developed. It was commercial software for its first ten years and had its own proprietary layout engine, Presto. In 2013, it switched from the Presto engine to Chromium.  
**Safari** is a web browser developed by Apple. It is built into Apple's operating systems, including macOS, iOS, and iPadOS, and uses Apple's open-source browser engine WebKit, which was derived from KHTML. Safari was introduced in Mac OS X Panther in January 2003.  
**Mosaic** was released in 1993  
**Google Chrome** is a cross-platform web browser developed by Google. It was first released in 2008 for Microsoft Windows, built with free software components from Apple WebKit and Mozilla Firefox. Versions were later released for Linux, macOS, iOS, and also for Android, where it is the default browser
- 24.(1) 25.(3)

#### ANSWER KEY

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