QUANTITATIVE APTITUDE

1. (1) Infinite number of circle can be drawn at pass through two fixed points.

2. (3) ATQ,
$x = \sqrt{12.8 \times 64.8}$
$x = \sqrt{12.8 \times 16.2 \times 4}$
$= \sqrt{6.4 \times 2 \times 8.1 \times 2 \times 4}$
$= 8 \times 4 \times .9 = 28.8$

3. (2) ATQ,
$cotA = \dfrac{15}{8}$
$\therefore tanA = \dfrac{8}{15}$
We know that
$tan2A = \dfrac{2tanA}{1+tan^2A} = \dfrac{\frac{2 \times 8}{15}}{1-\frac{64}{225}} =$

$\dfrac{\frac{16}{15}}{\frac{225-64}{225}} = \dfrac{16 \times 15}{161} = \dfrac{240}{161}$

4. (2) Required percentage
$= \dfrac{500}{200} \times 100 = 250\%$

5. (3) Required difference =
= (Monday+Tues)–(Friday + Saturday)
= $(20° + 45°) – (25° + 55°)$
= $65° – 80° = 15°$

6. (1) $3^{50}+9^{26}+27^{18}+9^{28}+9^{29}$
= $3^{50}(1+3^2+3^4+3^6+3^8)$
= $3^{50} \times (1+9+81+729+6561)$
= $3^{50} \times 7381$
= $3^{50} \times 11 \times 671$
∴ The number is divisible by 11.

7. (2) Let the amount of down payment = ₹ x
ATQ,
$(650000 – x) \times \dfrac{110}{100} = 25999 \times 20$
⇒ $7150,000 = 11x – 5000000$
⇒ $11x = 2150000$
⇒ $x = 195454.56$
⇒ x = Rs. 195455

8. (1) ATQ,

Profit 20%   12%
         18%
Ratio 6 : 2
       3 : 1 = 4 (Total)
The quantity rice sold at 12% profit = $2220 \times \dfrac{1}{4}$ = 555 kg.

9. (2) HCF of two or more numbers is the highest number which perfectly divides all the given numbers.

10. (2) ATQ,
J_1 = Average of (J+R) = $\dfrac{12+20}{2}$ =21%
J_2 = Average of (Q+T) = $\dfrac{15+20}{2}$ =17.5%
$(J_1 – J_2)$= 21–17.5 = 3.5%
∴ Value of $(J_2 – J_1)$
= $\dfrac{12000 \times 3.5}{100}$ = 420

11. (1) $\dfrac{a}{b}+\dfrac{b}{a}$ = 1
⇒ $a^2+b^2 = ab$
⇒ $a^2+b^2–ab = 0$
We know that,
$a^3+b^3 = (a+b)(a^2+b^2–ab)$
⇒ $a^3+b^3 = 2 \times 0$
⇒ $a^3+b^3 = 0$

12. (1) Required discount = $\dfrac{3}{15} \times 100\%$ = 20%

13. (1) ATQ,
$\begin{matrix}2020 & 100 & 100 \\ 2021 & 100-P & 100-q\end{matrix}$ = 1 : 1 = x
In 2021, $x = \dfrac{100-p}{100-q}$
ATQ,
1 : $\dfrac{100-P}{100-q}$ = $100-q$: $100-p$
Decriment = $100 – q – 100 + p = p – q$
∴ Required decrement percentage
= $\dfrac{(p-q) \times 100}{(100-q)}$

14. (3) ATQ,
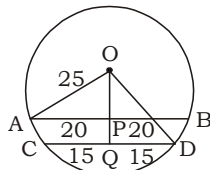
In ∆OAD
$OP^2 = 625 – 400$
⇒ $OP = \sqrt{225}$
⇒ OP = 15 cm
In ∆OQD, $OQ^2 = 625 – 225$
⇒ $OQ^2 = = 400$
⇒ OQ = 20 cm
∴ Required distance = PQ = 20 – 15 = 5 cm

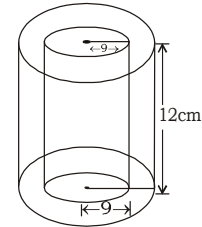15. (1) $4x^2 + y^2 = 40$,
$(2x + y)^2 = 4x^2 + y^2 +4xy$
$= 40 + 24$
$2x + y = \sqrt{64}$
$2x + 4 = 8$

16. (1) Let amount paid by piyush = x
ATQ,
$\dfrac{x \times 116 \times 132}{100 \times 100}$ = 3828 ⇒ x = 2500
∴ Amount paid by piyush = ₹ 2500

17. (2) ATQ,

Surface area of pipe
= $2\pi h(R+r)+2\pi(R^2–r^2)$
= $2 \times \dfrac{22}{7} \times 12 \times 19+2 \times \dfrac{22}{7} \times (100 – 81)$
= $\dfrac{22 \times 2}{7}(12 \times 19+19)$
= $\dfrac{10868}{7}$ =1552.57 cm²

18. (2) Let the number of student is initially = m
ATQ,
6m = m+(m–18)+(m–36)+.....(m – 26)
⇒ 6m = 8m – 18(1+2+3+4....7)
⇒ 6m = 8m – $\dfrac{18 \times 4 \times 7}{2}$
→ m = 252

19. (4) $\dfrac{cos37°}{sin53°}$
= $\dfrac{cos(90°-53°)}{sin53°} = \dfrac{sin53°}{sin53°}$ = 1

Column 1

20. (3) $\cos\left(-\dfrac{17\pi}{3}\right)$

= $\cos\left(-\dfrac{17\pi}{3}\right) = -\cos(17 \times 60°)$

= $-\cos 1020°$

= $-\cos(360° \times 3 - 60°)$

= $\cos 60° = \dfrac{1}{2}$

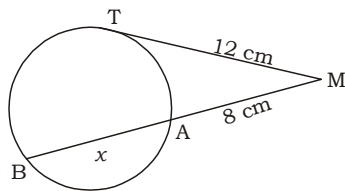21. (3) Time taken by the dog to catch the cat=

$\dfrac{280}{(24-10) \times \dfrac{5}{18}}$

= $\dfrac{280 \times 18}{5 \times 14}$ = 72 second

= 1 minute 12 second

22. (2) ATQ,

We know that,
$MT^2 = MA \times MB$

$\Rightarrow (12)^2 = 8(8+x)$

$\Rightarrow 144 = 64 + 8x$

$\Rightarrow x = 10$ cm

Length of chord AB is = 10 cm

23. (3) $P = 7 + 4\sqrt{3}$

$\therefore \dfrac{1}{P} = \dfrac{1}{7+4\sqrt{3}} \times \dfrac{7-4\sqrt{3}}{7-4\sqrt{3}} = 7 - 4\sqrt{3}$

and,

$P + \dfrac{1}{P} = 14$

Now,

$P^3 + \dfrac{1}{P^3} = (14)^3 - 3 \times 14 = 2744 - 42$

$\Rightarrow P^3 + \dfrac{1}{P^3} = 2702$

Now,

$\dfrac{P^6 + P^4 + P^2 + 1}{P^3} = P^3 + P + \dfrac{1}{P} + \dfrac{1}{P^3}$

= 2702 + 14 = 2716

Column 2

24. (3) ATQ,

$\dfrac{\sqrt{3}}{2}a = 7\sqrt{3}$

$a = 14$

Area of triangle

= $\dfrac{\sqrt{3}}{4} \times 14 \times 14 = 44\sqrt{3}$ cm²

25. (4) Average of Boys in S_1 and S_2

= $\dfrac{31+7}{2}$ = 19%

Average of Boys in S_6 and S_8

= $\dfrac{11+15}{2}$ = 13%

Required percentage

= $\dfrac{19}{13} \times 100$ = 146.15%

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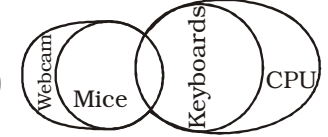21. (3) 22. (2) 23. (3) 24. (3) 25. (4)

GENERAL AWARENESS

1. (1)
2. (1) **Shalabhoga -** Land donated for the maintenance of school.
Pallichchhandam - Land donated to Jain Institution.
Brahmadeya - Land donated to Brahmanas.
3. (4) **Rajiv Gauba -** Cabinet Secretary of India
RAW was formed on the 21st of September 1968. Its motto is Dharmo Raksati Raksitah.
4. (3) **Mukul Rohatgi -** 12th Attorney General of India.
Sunil Barthwal - Secretary of Department of Commerce
5. (1) First Commonwealth Games was held in 1930. In 2010, it was held in Delhi, from 3th to 14th Oct. It was held in 2022 in **Birmingham** and will be held in 2026 in **Victoria**.
6. (2) Chitin- A fibrous substance consisting of polysaccharides, which is major constituent in the exoskeleton of arthropods and the cell wall of fungi.
Carotenoids are yellow, red and orange organic pigments that are produced by plants' algae and fungi.
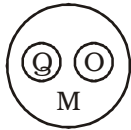
Column 3

7. (4) India and Bangladesh share a 4096 km long border, the 5th longest border in the World. Indian states are : West Bengal (2217 km), Assam (262 km), Tripura (856), Mizoram (180), Meghalaya (443).
8. (3) Veda Samaj was established by Keshab Chandra Sen and K. Sridharalu Naidu in 1864. It was inspired by Brahmo Samaj.
Arya Samaj was established by Swami Dayanand Saraswati in 1875 in Bombay.
Prarthana Samaj was established by Atmaram Pandurang.
Satyashodhak Samaj was founded by Jyotiba Phule in 1973.
9. (4) Karaga is folk dance of Karnataka. It is performed on a full moon day.
Onam is a Hindu harvest festival of Kerala.
Bihu is a set of three festivals in Assam - Rangoli (Bohag Bihu), Kangali (Kati Bihu) and Bhogali (Nagh Bihu).
10. (1) GST is an indirect tax. It is divided into five tax slabs : 0%, 5%, 12%, 18% and 28% Petroleum products, alcoholic drinks and electricity are not taxed under GST. It came into effect from 1st July, 2017 through the implementation of 101th Amendment of Indian Constitution.
11. (1) Ur - a general assembly of the village.
12. (3) **Mridangam -** T.K. Murthy, D.R. Mohan Rao, T.S. Nanda Kumar, Trichy Sankaram.
Bansuri - Hariprasad Chaurasia, Pannalal Ghosh, Chetan Joshi, Ranu majumdar
Veena - Ravi Karan, Gopal Shankar Mishra, E Gayatri, Allauddin Khan, Zoharbai.
Santoor - Pandit Shivkumar Sharma.
13. (1) Puducherry become the union territory after the implementation of 14th Amendment Act.
Lieutenant Governor - Dr. Tamilisai Soundara Rajan (Add. Charge)
C.M. of Puducherry - N Rangaswamy
No. of Lok Sabha Seats - 1
No. of Rajya Sabha Seats - 1

14. (2) Troposphere (0 to 12-18 km), Stratosphere (12-50 km), Mesosphere (50-80 km), Thermosphere (800 km) and Exosphere (800 to 3000 km)
15. (3) pH of Milk - 6.7 to 6.9
16. (1) **Article 74 -** States that there will be a council of ministers as a head to aid and advice the president.
Article 75 - Prime minister shall be appointed by President and other ministers shall be appointed by the President on the advice of the Prime Minister.
17. (4) In 2022, 128 Padma Awards including 2 duo. The list comprises 4 Padma Vibhusan, 17 Padma Bushan and 107 Padma Shri. 34 awards are women and 13 posthumous awards.
Padma Vibhushan Awards:
Ms. Prabha Atre - (Art)
Posthumous R Khemka (Literature),
General Bipin Rawat (Civil Service) and Kalayan Singh (Public Affairs).
18. (4)   19. (4)
20. (4) Param hans Mandali was founded by Durgaram Mehtaji, Daboda Pandurang and a group of his friends.
21. (2)
22. (3) Indian Institute of Remote sensing was established in 1966. Its Chairman is S. Somnath and Director is Dr. R.P. Singh.
23. (1)
24. (4) Johannes Kepler known for his laws of planetary motion and his book Astronomia nova.
Robert Hooke discovered Law of Elasticity, and discover micro organisms in 1665 using a compound microscope that he built himself.
25. (3)

Column-A		Column-B	
i.	Kwashiorkor	a.	Protein deficiency
ii.	Weak bones	b.	Calcium and muscles deficiency
iii.	Anaemia	c.	Iron deficiency
iv.	Goitre	d.	Iodine deficiency

1. (1) 2. (1) 3. (4) 4. (3) 5. (1)
6. (2) 7. (4) 8. (3) 9. (4) 10.(1)

11.(1) 12.(3) 13.(1) 14.(2) 15.(3)
16.(1) 17.(4) 18.(4) 19.(4) 20.(4)
21.(2) 22.(3) 23.(1) 24.(4) 25.(3)

GENERAL INTELLIGENCE & REASONING

1. (4) A× B – C
A$^+$
|
B$^+$ — C
So, A is the father of C.
2. (2)
3. (4)
Octagon $\xrightarrow{\text{number of hand}}$ Eight
Heptagon $\xrightarrow{\text{number of hand}}$ Seven
4. (2) $(2+3)^3 = 5^3 = 125$
$(1+3)^3 = 4^3 = 64$
$(5+3)^3 = 8^3 = 512$
5. (2) $\dfrac{10^2 - 10}{2} = 45$

$\dfrac{11^2 - 11}{2} = 55$

$\dfrac{x^2 - x}{2} = 28$

x = 8
6. (2) $9+3×2-8÷1 = -1$
interchanging + and ÷
$\Rightarrow$ $9÷3×2-8+1 = -1$
$\Rightarrow$ $3×2-8+1 = -1$
$\Rightarrow$ $6-8+2 = -1$
$\Rightarrow$ $-1 = -1$
7. (3) $\sqrt{243 - 162} = \sqrt{81} = 9$
$\sqrt{108 - 72} = \sqrt{36} = 6$
$\sqrt{48 - 32} = \sqrt{16} = 4$
8. (1) $(8)^2 - 3 = 64-3 = 61 \neq 60$
$(6)^2 - 3 = 36-3 = 33$
$(12)^2 - 3 = 144-3 = 141$
$(10)^2 - 3 = 100-3 = 97$
9. (3) $14+39 - \left(\sqrt{144} ÷ 4\right) + (5×3) - 6$
= 63 interchanging 4 and 3.
$14+39 - \left(\sqrt{144} ÷ 3\right) + (5×4) - 6$
= 63
$\Rightarrow$ $14+39-(12÷3)+(20)-6 = 63$
$\Rightarrow$ $14+39-4+14 = 63$
$\Rightarrow$ $53+10 = 63$
$\Rightarrow$ $63 = 63$
10. (2)
11. (4)
$\overset{+1}{\overset{\frown}{\quad}}$
M N   G
$\overset{+1}{\overset{\frown}{\quad}}$
S T   M
$\overset{+1}{\overset{\frown}{\quad}}$
A   B   U

12. (3)
$\overset{-3}{\overset{\frown}{\quad}}$
H   E   D
N U L L I F Y
↕ ↕ ↕ ↓ ↕ ↕ ↕ and
M F O L R U B
S K Y W A L K
↕ ↕ ↕ ↓ ↕ ↕ ↕
H P B W Z O P
Similarly;
F L A G G E R
↕ ↕ ↕ ↓ ↕ ↕ ↕
U O Z G T V I
13. (2) 121, 169, 189, 361, 529, 841
$(11)^2$ $(13)^2$ $(17)^2$ $(19)^2$ $(23)^2$ $(29)^2$
$\xrightarrow{\hspace{3cm}}$
Assending Prime No.
14. (2) Bitch is the female of the dog. Stallion is Male Horse while Mare is Female Horse
15. (1) $4 \Big\langle \begin{array}{c} 3-1 \\ 5-2 \end{array}$
$4 \leftrightarrow 6$
16. (1)   17. (2)
18. (1)

19. (1) From equation (I)
$9÷3×6+5-4$
interchanging × and –, 4 and 5
$9÷3-6+4×5$
= $3-6+20$
= $-3+20 = 17$
From equation (ii)
$5-4×3+6÷2$
interchanging × and –, 4 and 5.
$4×5-3+6÷2$
= $20-3+3 = 20$
20. (2) 2. Miscalculate
4. Miscall
5. Miscasting
1. Miscellaneous
3. Mischance.
21. (4) L @ M – N $ O % P
M$^-$
|
L$^+$ — N — O$^+$ — P
So, L is brother of P.
22.(1) M $\overset{-2}{\to}$ K $\overset{-2}{\to}$ I $\overset{-2}{\to}$ G $\overset{-2}{\to}$ E
D $\overset{+1}{\to}$ E $\overset{+1}{\to}$ F $\overset{+1}{\to}$ G $\overset{+1}{\to}$ H
S $\overset{-1}{\to}$ R $\overset{-1}{\to}$ Q $\overset{-1}{\to}$ P $\overset{-1}{\to}$ O
A $\overset{+2}{\to}$ C $\overset{+2}{\to}$ E $\overset{+2}{\to}$ G $\overset{+2}{\to}$ I

23.(1) BELOVED →
2+5+12+15+22+5+4 = 65
F L O W E R →
6+12+15+23+5+18 = 79
QUIVER →
17+21+9+22+5+18 = 92

24.(4)

25.(3) N → N → N → N → N
$D \xrightarrow{-4} Z \xrightarrow{-4} V \xrightarrow{-4} R \xrightarrow{-4} N$

$R \xrightarrow{-8} J \xrightarrow{-8} B \xrightarrow{-8} T \xrightarrow{-8} L$
$F \xrightarrow{+14} T \xrightarrow{+14} H \xrightarrow{+14} V \xrightarrow{+14} J$

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

| ENGLISH LANGUAGE AND COMPREHENSION |

1. (4) "no choice but to" is correct substitute.
Means - only option left .

7. (1) "by means of" is correct expression. Meaning- with the help of.

17. (4) "Antarctic" is wrongly spelt as "Antactic"

19. (3) Replace "highly" with "high".

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

Words	Meaning in English	Meaning in Hindi
Baffle	to be impossible to understand; to confuse somebody very much. *Syn. to perplex, mystify, riddle*	चकरा देना; उलझन में डाल देना
Congruity	the quality of being the same as, or in agreement with, other facts or principles.	तालमेल, सामंजस्य
Concord	A state of agreement; harmony; union.	एकता
Equilibrium	a state of balance , especially between forces or influences that are working in opposite ways.	संतुलन की स्थिति (विशेषत: विरोधी शक्तियों या प्रभावों के बीच)
Sceptic	A person who doubts that something is true, right, etc.	संशयवादी
Yellow bellies	not having courage, easily frightened, cowards.	डरपोक, कायर
Zealot	A person who is very enthusiastic and has strong beliefs, especially about religion and politics.	(विशेषकर धर्म एवं राजनीति के विषय में) अतिउत्साही; कट्टरपंथी