QUANTITATIVE APTITUDE

1. (4) $\sec\theta - 2\cos\theta = \frac{7}{2}$

$\Rightarrow \sec\theta - \frac{2}{\sec\theta} = \frac{7}{2}$

$\Rightarrow 2\sec^2\theta - 4 - 7\sec\theta = 0$

$\Rightarrow 2\sec^2\theta - 8\sec\theta + \sec\theta - 4 = 0$

$\Rightarrow 2\sec\theta(\sec\theta - 4) + 1(\sec\theta - 4) = 0$

$\Rightarrow (2\sec\theta + 1)(\sec\theta - 4) = 0$

Now, $\sec\theta - 4 = 0$

$\sec\theta = 4$

2. (4) Let the two numbers are = Hx, Hy

HCF = H = 3, LCM = 54

ATQ,

H $(x + y)$ = 18

Sum of inverses = $\frac{1}{Hx} + \frac{1}{Hy} = \frac{(x+y)H}{Hxy} = \frac{18}{3\times 54} = \frac{1}{9}$

Alternative:-

Sum of their reciprocals

$= \frac{a+b}{LCM\times HCF} = \frac{18}{3\times 54} = \frac{1}{9}$

3. (4) English : Science = 2 : 1

English : Maths = 2 : 3

English : Science : Maths = 2 : 1 : 3

6 units = 126

1 units = 21

Obtained marks in English = 2 units = 42

4. (4) diagonal of square = $a\sqrt{2} = 8\sqrt{2}$ cm

a = 8

Length of another square = A

ATQ,

$A^2 = 64 \times 3 \Rightarrow A = 8\sqrt{3}$

diagonal of square $= 8\sqrt{3}\times\sqrt{2} = 8\sqrt{6}$

5. (4) $x + \frac{1}{x} = 2$

$\Rightarrow x^2 + 1 - 2x = 0$

$\Rightarrow (x-1)^2 = 0$

$\Rightarrow x = 1$

Now, $x^{57} + \frac{1}{x^{57}} = 1^{57} + \frac{1}{(1)^{57}}$

= 1+1 = 2

6. (4) $\sec 3\theta = \text{cosec}(4\theta - 15°)$

$\sec 3\theta = \text{cosec}(4\theta - 15°)$

If $\sec\alpha = \text{cosec}\beta$

then,

$\alpha+\beta = 90$

So, $3\theta + 4\theta - 15° = 90°$

$\Rightarrow 7\theta = 105°$

$\Rightarrow \theta = 15°$

Now, $\tan 3\theta = \tan 45° = 1$

7. (4) ATQ,

Overall profit in percentage

$= \frac{3}{4}\times 8\% - \frac{1}{4}\times 4\% = 6 - 1 = 5\%$

ATQ,

5% ≅ 600

then,

100% ≅ Rs.12000

The value of the consignment is Rs. 12000.

8. (1) For a given tangent, we can draw any one parallel tangent.

9. (2) Let, the amount of money

$= x\times\frac{80}{100}\times\frac{15}{100} = 120$

x = 1000

Alternative:-

Loses 20%, spends 85% of the rest.

$\frac{1}{5}$		$\frac{17}{20}$
Before		After
5	:	4
20	:	3
100	:	12

ATQ,

12 unit ≅ 120

100 units ≅ Rs.1000

10. (4) $mx^m = nx^n$

$\Rightarrow x^m = \frac{n}{m}x^n$ ...(I)

Now, $\frac{1}{x^m + x^n} + \frac{1}{x^m - x^n}$

$= \frac{1}{\frac{n}{m}x^n + x^n} + \frac{1}{\frac{n}{m}x^n - x^n}$

$= \frac{1}{x^n\left(\frac{n}{m}+1\right)} + \frac{1}{x^n\left(\frac{n}{m}-1\right)}$

$= \frac{m}{x^n(n+m)} + \frac{m}{x^n(n-m)}$

$= \frac{m}{x^n}\left[\frac{1}{n+m} + \frac{1}{n-m}\right] = \frac{2mn}{x^n(n^2-m^2)}$

11. (4) ATQ,

13)246837(18987

13

116

104

128

117

113

104

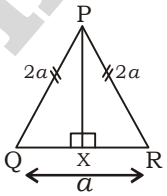
97

91

6

∴ 6 should be subtracted from 246837 to to make divisible by 13 .

12. (4)



PQ = PR = 2a, QR = a

PX ⊥ QR,

QX = $\frac{QR}{2} = \frac{a}{2}$

PX = $\sqrt{4a^2 - \frac{a^2}{4}} \Rightarrow \sqrt{\frac{16a^2 - a^2}{4}}$

$\Rightarrow$ PX = $\frac{\sqrt{15}}{2}$a

13. (2) The central angle of B

100% = 360°

15% = $\frac{360\times 15}{100}$

$= \frac{36\times 15}{2\times 5} = 54°$

14. (4) $5x^2 + 7x + 5 = 0$

$\Rightarrow x + \frac{7}{5} + \frac{1}{x} = 0$

$\Rightarrow x + \frac{1}{x} = -\frac{7}{5}$

cubing both side

$\Rightarrow x^3 + \frac{1}{x^3} + 3x\frac{1}{x}\left(\frac{-7}{5}\right) = \left(\frac{-343}{125}\right)$

$\Rightarrow x^3 + \frac{1}{x^3} = \frac{-343}{125} + \frac{21}{5}$

$\Rightarrow x^3 + \frac{1}{x^3} = \frac{-343+525}{125}$

$\Rightarrow x^3 + \frac{1}{x^3} = \frac{182}{125}$

15. (3) Let, the rate of interest = R
ATQ,

$$\frac{3\times23000\times R}{100}+\frac{19000\times4\times R}{100}=3625$$

$\Rightarrow 690R + 760R = 3625$
$\Rightarrow 1450R = 3625$

$$\Rightarrow R=\frac{3625}{1450} \Rightarrow R = 2.5\%$$

16. (3) Radius of hemisphere = 6.3cm

$$\text{Volume} = \frac{2}{3}\times\frac{22}{7}\times6.3\times6.3\times6.3$$

$= 523.90cm^2$

17. (3) $\Delta ABC \sim \Delta DEF$
AB = 9.1cm , DE = 6.5 cm
Perimeter of ΔDEF = 25 cm

$$\frac{AB}{DE}=\frac{P_1}{P_2}$$

$$\frac{9.1}{6.5}=\frac{P_1}{25}$$

$$P_1=\frac{25\times9.1}{6.5}$$

P_1 = 35cm

18. (1) Let, the efficiency of man = M and efficiency of women = W
ATQ,

$$(M+4W)\frac{65}{4}=(3M+4W)\left(\frac{13}{2}\right)$$

$$\Rightarrow(M+4W)\left(\frac{65}{4}\right)=(3M+4W)\left(\frac{13}{2}\right)$$

$\Rightarrow (M+4W)\times5 = (3M+4W)\times2$
$\Rightarrow 6M + 8W = 5M + 20W$

$$\Rightarrow M = 12W \Rightarrow \frac{M}{W}=\frac{12}{1}$$

$$\text{Total work} = (12+4\times1)\frac{65}{4}$$

$$=\frac{16\times65}{4}=4\times65$$

Let, 13 women can complete the same work in x days.
ATQ, $65 \times 4 = 13W \times x$
$65 \times 4 = 13 \times 1 \times x$
$x = 20$ days
$\therefore$ 13 women complete the same work in 20 days.

19. (3) Ratio of number of calculator sold by S_5 and S_1 = 80 : 40
$\therefore$ The required percentage

$$=\frac{80}{40}\times100 = 200\%$$

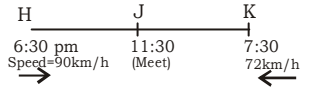
20. (2) $Cos^2 15° = Cos^2 (60 – 45)$
$= (cos60° cos45° + sin60° sin45°)^2$

$$=\left(\frac{1}{2}\times\frac{1}{\sqrt{2}}+\frac{\sqrt{3}}{2}\times\frac{1}{\sqrt{2}}\right)$$

$$=\left(\frac{\sqrt{3}+1}{2\sqrt{2}}\right)^2$$

$$=\frac{3+1+2\sqrt{3}}{8}=\frac{\left(2+\sqrt{3}\right)}{4}$$

21. (1)



Both took 4 hours from 7:30 to 11:30 Distance covered by them
= 90 × 4 = 360
K to J = 72 × 4 = 288
Ratio of distance
HJ : KJ = (360 + 90) : 288
= 450 : 288
= 25 : 16

22. (2) Average speed = $\frac{\text{total distance}}{\text{total time}}$

$$=\frac{5+5+5+5}{\frac{30}{60}}=\frac{20}{\frac{1}{2}}$$

= 40km/h

23. (2) The ratio of import during the year 2016–2017 and 2015 to 2016 is = 1200 : 738
Percentage of increment is

$$=\frac{462}{738}\times100 \Rightarrow 62.60\%$$

24. (4) Rohan give money to Ankit

$$=55000\times\frac{85}{100}$$

= 550 × 85 = Rs. 46750

25. (3) Average market price of all the articles

$$=\frac{1100+700+900+600+400+500+1000}{7}$$

$$=\frac{5200}{7}=742.85$$

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

GENERAL AWARENESS

1. (2) The words 'Socialist' and 'Secular' were inserted into the preamble by the 42nd Amendment 1976. Words 'unity of nation' was changed into 'unity and integrity of the nation'.
2. (2) Malik Ahmed founded the state of Ahmednagar and established the Nizam Dynasty. Shah Jahan (1628-1658) merged Ahmednagar into Mughal Empire.
3. (3) Wheat, Peas and Gram are Rabi Crops that require low temperature. Rice is a Kharif Crop.
4. (2) Displacement - The change in position of an object.
Velocity (m/s) - Rate of change of displacement with respect to time.
Acceleration (m/s^2) - Rate of change of velocity with respect to time.
5. (4) Roughage - Oats, Spinach, broccoli, carrot, barley, brown rice, apple, banana raisins, apricots, plum.
Carbohydrate - Sweat Potatoes, Quinoa, Oats, Banana, Apple, Brown rice, Peas, Berry, Beetroot, Yogurt.
Fats - Red meat, butter, cheese, ice cream
Protein - Eggs, Almonds, Lentils, Peanuts Bean, Pumpkin Seeds.
6. (3) Council of Scientific and Industrial Research was established in 1942. It is an autonomous body. Its motto is "The Innovation Engine of India." Prime Minister is the President of CSIR.
7. (3) McMahon line was the result of Shimla Treaty 1914, took place between British India and Tibet. The length of McMahon line is 890 km.
Redcliffe Line (3323 km) - India & Pakistan
Palk Strait - India & Sri Lanka
Durand line - India and Afghanistan

8. (2) Paris Indian Society was founded by Bhikaji Kama, S.R. Rana. Munchershah Burjorji Godrel.
9. (3) Article 54 - Election of President.
Article 55 - Manner of election
Article 56 - Term of office.
Article 60 - Oath
Article 61 - Impeachment
Shri Jagdeep Dhankhar is the14th Vice President of India.
11. (3) Siman Marius - named four moons of Jupiter: lo, Europa, Ganymede and Callisto.
13. (4) **Some other goals :-**
Incorporating various irrigation methods, Dual cropping in the present farmland, Mechanization of major agricultural practices.
14. (3) Copper, gol---d, silver and alloys of bronze were used by Harappans for different purposes like making toys, utensils jewellery, seats and sealings among others. Harappan people did not know about Iron. Bronze statues were made by the 'lost wax technique'.
15. (4) **Article 53 -** executive power of the union shall be vested in President.
Article 124- There shall be a Supreme Court of India consisting the chief Justice of India.
Dhananjaya Y. Chandrachud is the 50th Chief Justice of India.
17. (3) Bal Gangadhar Tilak - Swaraj is my birth right and I shall have it. Sardar Vallabhbhai Patel - Manpower without unity is not a strength unless it is harmonized and united properly. It then becomes a spiritual power. He had said that Satyagrah is not a creed for the weak or the cowardly.
18. (4) National Initiative for promoting upskilling of Nirman workers (NIPUN) aims to train over 1 lakh construction workers. It is an initiative of the ministry of Housing and Urban Affairs. It is running under the Deendayal Antyodaya Yojan-National Urban Livelihood Mission.
Minister of Housing and Urban Affairs - Hardeep Singh Puri.
19. (1) Hojagiri is a folk dance of Tripura.
20. (3) Hideki Yukawa - proposed the existence of a new kind of particle, the Meson, in order to explain how protons and neutrons in the nucleus interact. Giovanni Cassini - discovered the gap in the ring system of Saturn, in 1675.
21. (4) Winter - Dec to Jan
Spring - Feb to March
Summer - April to June
Mansoon- July to Sep
22. (2) Youth Olympic Games is a multi sport event for athletes between 15 and 18 years old.
Summer Youth Olympic 2026 - Dakar, Senegal
Winter Youth Olympic 2024 - Gangwon, South Korea
23. (1) Length of pitch - 20.12 m
Width of pitch - 3.05 m
The length of bat may be no more than 38 inches (96.5 mm) and the width no more than 4.25 inches (10.8 mm)
24. (1) Self help group is a financial intermediatory Committee composed of 12 to 25 local women between the ages of 18 and 50.
25. (1)

1. (2) 2. (2) 3. (3) 4. (2) 5. (4)
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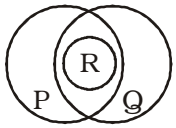
21.(4) 22.(2) 23.(1) 24.(1) 25.(1)

GENERAL INTELLIGENCE & REASONING

1. (2)
2. (4) 25*2*220*11*43
Putting –, +, ÷, =
$\Rightarrow$ 25–2+220 ÷11 = 43
$\Rightarrow$ 23+20 = 43
$\Rightarrow$ 43 = 43
3. (3) 7×2–1 = 13
16×2–1 = 31
46×2–1 = 91
4. (1)
5. (4) [{(44#38)#(2#5)}#(4#2)]#5#10
Putting –, +, ×, ÷, ×, × =
[{(44–38)+(2×5)}÷(4×2)]×5 = 10
$\Rightarrow$ [{6+10}÷8]×5 = 10
$\Rightarrow$ [16÷8]×5 = 10
$\Rightarrow$ 2×5 = 10
$\Rightarrow$ 10 = 10
6. (1) P+Q÷R
P^+
$\downarrow$
$Q^- \rightarrow R$
So, P is the father of R.
7. (2) P–Q–R*S $ T
P^-
$\downarrow$
$Q^- \Leftrightarrow T^+$
$\downarrow \quad \downarrow$
$R^- \rightarrow S^+$
So, P is mother-in-law of T.
8. (1)
9. (4) Botanist is a person who studies plants.
Similarly,
Zoologists is a person who studies Animals.
10. (4) 7×4×2 = 56
8×3×2 = 48
9×10×2 = 180
11. (2) $A \xrightarrow{+2} C \xrightarrow{+2} (E) \xrightarrow{+2} G \xrightarrow{+2} I$
$C \xrightarrow{+3} F \xrightarrow{+3} (I) \xrightarrow{+3} L \xrightarrow{+3} O$
$F \xrightarrow{+2} H \xrightarrow{+2} (J) \xrightarrow{+2} L \xrightarrow{+2} N$
$D \xrightarrow{+3} G \xrightarrow{+3} (J) \xrightarrow{+3} M \xrightarrow{+3} P$
12. (1) 5. Chock
2. Chocoholic
1. Chocolate
4. Chocolatier
3. Chocolaty.
13.(3) From fig (1) and (3)
$3 \nearrow 2-6$
$3 \searrow 1-4$
$3 \leftrightarrow 5$
14. (3) 5130 1701 567 **189** 63 21
÷3 ÷3 ÷3 ÷3 ÷3
15. (2)
16. (1) $(14)^2-5 = 196-5 = 191 \neq 193$
$(15)^2-5 = 225-5 = 220$
$(16)^2-5 = 256-5 = 251$
$(17)^2-5 = 289-5 = 284$
17. (3) Schools are for students.
Similarly,
Hospital are for Patients.
18. (1) 

19. (4) TECHNOLOGY
NHCLTGLOGY

and

G E N E R A T I O N
R E N E R A T I O N

Similarly,

A P O C A L Y P S E
A C O P A L Y P S E

20. (1) $4\times7+6-3\div1 = 20$
Interchanging + and –, 7 and 6.
$\Rightarrow 4\times6-7+3\div1 = 20$
$\Rightarrow 24-7+3 = 20$
$\Rightarrow 20 = 20$

21.(3) $A \xrightarrow{+5} F \xrightarrow{+5} K \xrightarrow{+5} P \xrightarrow{+5} U$
$B \xrightarrow{-6} V \xrightarrow{-6} P \xrightarrow{-6} J \xrightarrow{-6} D$
$C \xrightarrow{+7} J \xrightarrow{+7} Q \xrightarrow{+7} X \xrightarrow{+7} E$
$D \xrightarrow{-8} V \xrightarrow{-8} N \xrightarrow{-8} F \xrightarrow{-8} X$

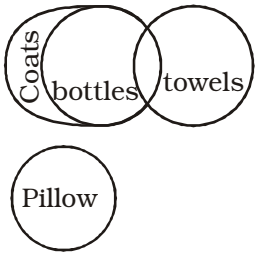
22. (1) A B R O A D
+3 +4 +3 +4 +3 +4
D F O R D H
and,
A C C E S S
+3 +4 +3 +4
D G E C V W

Similarly,

A G E N C Y
+3 +4 +3 +4
D K N E F C

23.(3) $(9-4)^2 = 4^2 = 16$
$(7-4)^2 = 3^2 = 9$
$(11-5)^2 = 6^2 = 36$

24. (4)



25. (2) P R –2
+2 K I
J F +2
–4 O Q
U W –2
+2 F D
X Z –2
+2 C A

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

1. (4) Remove 'in'.
8. (4) "earn a decent living" means - to warn a sufficient money to maintain one's standard of living.
9. (4) meaning of other idioms-
Halcyon days- A very happy or successful period in the past:
She recalled the halcyon days of her youth.
Grass widow - A woman whose husband is often away or stay away for a prolonged period.
Mother wit- Common sense.
11. (1) "accommodative" is incorrectly spelt as " accomodative"
Meaning- willing to fit in with someone's wishes or needs. (समंजनशील)
18. (2) "congratulated him on" is correct here. Meaning- congratulate for some achievements.
20. (4) replace "has" with "have", (plural subject takes plural verb)

1. (4) 2. (1) 3. (1) 4. (2) 5. (1)
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Words	Meaning in English	Meaning in Hindi
Feebleness	weakness	दुर्बलता
Isthmus	A narrow strip of land, bordered on both sides by water, and connecting two larger landmasses.	स्थलडमरूमध्य
Lagoon	A shallow body of water separated from deeper sea by a bar.	खाड़ी
Loaf	(as a noun)- a shaped or molded mass of bread.	पावरोटी
	(as a verb)- to spend time in idleness.	आवारागर्दी करना, समय नष्ट करना