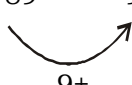


QUANTITATIVE APTITUDE

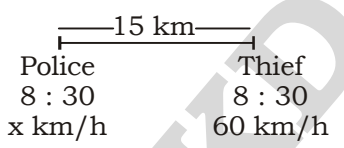
1. (3) $\frac{\sin^2 63^\circ + \sin^2 27^\circ}{\cos^2 17^\circ + \cos^2 73^\circ}$
 $[\cos(90 - \theta) = \sin\theta]$
 $\frac{\sin^2(90^\circ - 27^\circ) + \sin^2 27^\circ}{\cos^2(90 - 23^\circ) + \cos^2 73^\circ}$
 $= \frac{\cos^2 27^\circ + \sin^2 27^\circ}{\sin^2 73^\circ + \cos^2 73^\circ} \Rightarrow \frac{1}{1} = 1$

2. (4) a : b = 4 : 5, b : c = 3 : 10, a : c
 a : b = 4 : 5
 b : c = 3 : 10
 a : c = 12 : 50
 = 6 : 25

3. (4) Right Wrong
 89 98

 9+
 average increase $\rightarrow 0.25$
 Let total students $\rightarrow x$
 $0.25 = \frac{9}{x}$
 $x = 36$

4. (4) ATQ
 15% = 600
 100% = Rs. 4000

5. (2) Average of company =
 $\frac{650 + 730 + 520 + 680 + 740 + 490 + 660 + 810}{8}$
 $= \frac{5280}{8} \Rightarrow 660$
 ATQ = 4 : 3

6. (4) 
 Police 8 : 30, Thief 8 : 30
 x km/h, 60 km/h
 Distance covered by thief in 15 minutes = $60 \times \frac{15}{60} = 15\text{km}$
 The police arrest the thief at = 9 : 00 am
 Let, speed of police = x km/h
 $(x - 60) \times \frac{1}{2} = 15$
 $x - 60 = 30$
 $x = 90\text{km/h}$

7. (4) The ratio of number of officers working in Q to the numbers of officers working in R.

Q : R = 250 : 350
 = 5 : 7

8. (3) We know that $k + \frac{1}{k} = x$,

then, $k^2 + \frac{1}{k^2} = x^2 - 2$

How, $k + \frac{1}{k} = 3$

$k^2 + \frac{1}{k^2} = 9 - 2$

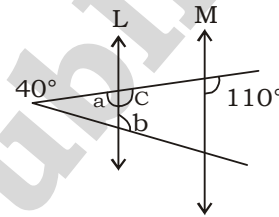
$k^2 + \frac{1}{k^2} = 7$

9. (4) a+b+c = 9 ab+bc+ca = 23
 a+b+c = 9

Squaring both side
 $a^2+b^2+c^2+2(ab+bc+ca) = 81$
 $a^2+b^2+c^2 = 81 - 46$
 $a^2+b^2+c^2 = 35$

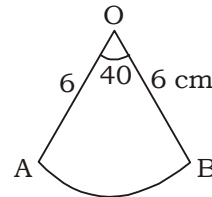
10. (3) $\tan(4\alpha - 50^\circ) = \cot(50^\circ - \alpha)$
 $\tan A = \cot B$
 $A + B = 90^\circ$
 $4\alpha - 50 + 50 - \alpha = 90^\circ$
 $3\alpha = 90$
 $\alpha = 30^\circ$

11. (3)



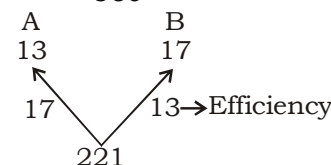
corresponding angle C = 110°
 $a + c = 180$
 $a = 70^\circ$
 $40 + a = b$ (exterior angle)
 $b = 110^\circ$

12. (3)



Area of sector = $\pi r^2 \frac{\theta}{360}$
 $= \pi \times \frac{36 \times 40}{360} \Rightarrow 4\pi \text{ cm}^2$

13. (3)



Start - A

A B

17 13

2 day = 30

14 day = 210

Remaining work = 221 - 210 = 11

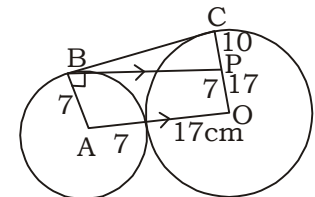
$\frac{11}{17}$ day = 11

$14 \frac{11}{17}$ day = 221

14. (3)

Capital	Nihit Patel	Amit Patel
700	300	
400		
Time	12m	7m
7m		
Profit	8400	2100
2800	84	21
28	12	3
4		
	19 units = 627	
	1 unit = 33	
	Patel, 4 units = 132	

15. (2) $r_1 = 17$
 $r_2 = 7$



BP = AO = 24 cm
 $BP^2 = PC^2 + BC^2$
 $(24)^2 = 10^2 + BC^2$
 $576 - 100 = BC^2$

$BC = \sqrt{476}$

$BC = \sqrt{4 \times 119}$

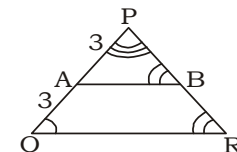
$BC = 2\sqrt{119}$ cm

Alternatively:-

common tangent = $2\sqrt{r_1 r_2}$

$= 2\sqrt{7 \times 17} = 2\sqrt{119}$ cm

16. (1) PQ = 6cm, QR = 8cm, QA = 3cm, AB = 13



In ΔPAB and ΔPQR

$\angle A = \angle Q, \angle B = \angle R$

$\Delta PAB \sim \Delta PQR$

$$\frac{PA}{AB} = \frac{PQ}{QR} \Rightarrow \frac{3}{x} = \frac{6}{8}, x = 4 \text{ cm}$$

17. (1) The ratio of total central angle formed by sector C, D and F to the central angle formed by sector A, C and H.

$$(12+2+6) : (19+14+10) \\ 20 : 43$$

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

$$x - \frac{1}{x} = \sqrt{20-4}$$

$$x - \frac{1}{x} = 4$$

Cubing both side

$$x^3 - \frac{1}{x^3} = 64+12$$

$$x^3 - \frac{1}{x^3} = 76$$

19. (3) 7 digit number 678P37q is divisible by 75.

$$\begin{array}{c} \wedge \\ 25 \times 3 \end{array}$$

$$= \frac{7q}{25} = q = 5$$

divided by 3

$$= \frac{6+7+8+P+3+7+5}{3}$$

$$\Rightarrow \frac{36+P}{3}$$

$$P = 3, (6, 9)$$

$$P = 3$$

20. (3) $\tan A \tan B + \frac{\cos x}{\cos A \cos B} = 1$

$$\frac{\sin A \sin B}{\cos A \cos B} + \frac{\cos x}{\cos A \cos B} = 1$$

$$\cos x = \cos A \cos B - \sin A \sin B$$

$$\cos x = \cos (A+B)$$

$$x = A+B$$

21. (1) ATQ,
20 CP = 18 SP
CP : SP = 9 : 10

$$\text{Profit \%} = \frac{1}{9} \times 100 = 11 \frac{1}{9} \%$$

22. (3) Volume of cuboid = Volume of cube $l \times b \times h = a^3$
 $12 \times 18 \times 27 = a^3$

$$a = \sqrt[3]{3 \times 4 \times 9 \times 2 \times 27}$$

$$a = 3 \times 2 \times 3$$

$$a = 18 \text{ cm}$$

Total surface area of a cube = $6a^2$

$$= 6 \times 18 \times 18$$

Surface area of cuboid

$$= 2(lb + bh + hl)$$

$$= 2(12 \times 18 + 18 \times 27 + 27 \times 12)$$

$$= 2(216 + 486 + 324)$$

$$= 2 \times 1026 = 2052$$

ATQ,

$$2052 : 324$$

$$171 : 27 \times 6$$

$$19 : 18$$

23. (3) Cash payment

$$= 2800 \times \frac{55}{100} \times \frac{75}{100}$$

$$= 28 \times 55 \times \frac{3}{4} = 21 \times 55$$

$$= ₹1155$$

24. (1) $xy^3, x^2y^2 \times x^3y^4$ HCF

$xy - \dots$ Factorization.

$$\text{HCF} = xy$$

$$xy^3 = x \times y \times y \times y$$

$$x^2y = x \times x \times y$$

$$x^3y^4 = x \times x \times x \times y \times y \times y \times y$$

$$\text{LCM} = x^3 y^4$$

25. (2) ATQ,

\rightarrow 1991 - 1992 Diff. between passed and fail students

$$= 150 - 100 = 50$$

\rightarrow 1992 - 1993 Diff. between passed and fail students

$$= 200 - 100 = 100$$

\rightarrow 1993 - 1994 Diff. between passed and fail students

$$= 300 - 50 = 250$$

\rightarrow 1994 - 1995 Diff. between passed and fail students

$$= 250 - 100 = 150$$

maximum passing year 1993- 1994.

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

GENERAL AWARENESS

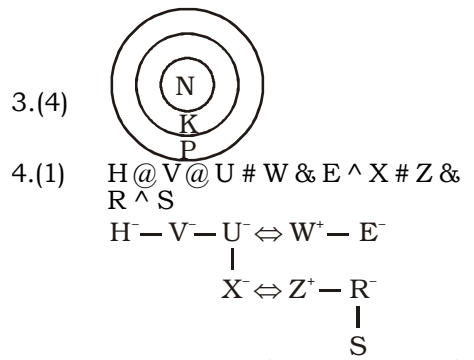
- (3) In Harappan Civilization Gold was obtained from the Himalayan river bends and Silver from Mesopotamia. Copper was brought from Khetri (Rajasthan)
- (4) Capital expenditure of government of India is estimated at 10.68 lakh crore in 2022-23, which will be about 4.1% of GDP.
- (3) L-Route server has been installed by Rajasthan government in association with the Internet Corporation for Assigned Names and Numbers (ICANN). If there is a problem in internet connectivity due to any technical glitch or natural calamity in India or whole Asia, it will run without any interruption in Rajasthan.
- (1) Article 30 - Rights of minorities to establish and administer educational institutions.
- (4) Humid subtropical climate - A zone characterized by hot and humid summers and cool winters. Highland climate is the weather for elevation above the tree line where trees fail to grow due to cold Humid continental climate exhibits large seasonal temperature contrasts with hot summers and cold winters.
- (4)
- (1) Atomic number of Potassium is 19. Electronic configuration - $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
- (1) Ravi Sankar, Bismillah Khan and Lata Mangeshkar were awarded Bharat Ratan in 1909, 2001 and 2001 respectively. Zakir Hussain got Padma Shri in 1988 and Padma Bhushan in 2002.

9. (4)
 10. (4) Quwwat-al-Islam Mosque was constructed by Qutb-ud-din Aibak. It is situated north-west to the Qutab Minar.
 11. (1) The Judiciary in India has a pyramidal structure with Supreme Court at top, High Courts below them and District Courts and Subordinate Courts at the lowest level. The lower courts function under the direct superintendence of the higher courts.
 12. (1) Ajay Bhushan Pandey - CEO of UIAI
 Sandeep Sanyal - Member of P.M Economic Advisory Council.
 Ashwin Yardi - CEO of Capgemini Technology Services India.
 13. (1) Agra is situated on the bank of Yamuna.
 Kanpur is situated on the bank of Ganga.
 Lucknow is situated on the bank of Gomti.
 14. (3) Women's Indoor Hockey World Cup was first held in 2003.
 2018 - Berlin, Germany
 2023 = Pretoria, South Africa
 15. (3) Pepsin is a stomach enzyme that serves to digest proteins found in ingested food.
 Protease modifies the properties of food proteins.
 Amylase helps in digesting carbohydrates.
 16. (3) Prerana Deshpande - Kathak
 Geeta Kapoor - Choreographer
 R MuthuKannammal - Sadir Dancer
 Dr. Sohini Ray - Manipuri dancer
 17. (2)

18. (4) The Taekwondo uniform is called 'Daedo'.
 The Judokas wrestle on a mat called 'tatami'.
 19. (4) Overall literacy rate according to 2011 census is 74.04%, (82.14% for males and 65.46% for females.)
 Kerla (94%) and Tamil Nadu (80.09%) how the highest literacy rate.
 Dadra and Nagar Haveli (77.24%) the lowest in UTS.
 Lakshadweep (91.85%) highest rate in UTS.
 20. (2)
 21. (1) Sanjiv Kapoor - CEO of to be revived Jet Airways
 Ashwani Bhatia - Whole time member of SEBI.
 Mahesh Verma - Chairperson of NABH
 22. (4)
 23. (2) Milad un-nabi is an annual celebration to commemorate the birth anniversary of Prophet Muhammad.
 Shab-e-Barat is celebrated on the 1st night of the month of Shalban (8th month of Islamic calendar.)
 24. (4)
 25. (2)
 1. (3) 2. (4) 3. (3) 4. (1) 5. (4)
 6. (4) 7. (1) 8. (1) 9. (4) 10.(4)
 11.(1) 12.(1) 13.(1) 14.(3) 15.(3)
 16.(3) 17.(2) 18.(4) 19.(4) 20.(2)
 21.(1) 22.(4) 23.(2) 24.(4) 25.(2)

GENERAL INTELLIGENCE & REASONING

- 1.(2) $\frac{40}{4} \times 40 = 400$
 $\frac{30}{7} \times 30 = \frac{900}{7}$
 $\frac{100}{10} \times 100 = 1000$
 $\frac{50}{5} \times 50 = 500$
 2.(1) $108 \div 2 \times 10 + 70 - 10 = 480$
 interchanging + and -
 $\Rightarrow 108 \div 2 * 10 - 70 + 10 = 480$
 $\Rightarrow 54 * 10 - 60 = 480$
 $\Rightarrow 540 - 60 = 480$
 $\Rightarrow 480 = 480$



(I) Z is the maternal grandfather of S is not correct.
 5.(3) $P - Q \div R$
 $P^+ - Q^+$
 R

Shows that P is the paternal uncle of R.
 6.(2) $189 \div 2 \times 30 + 18 - 5 = 159$
 interchanging 18, 30 and $\div, -$
 $189 - 2 \times 18 + 30 \div 5 = 159$
 $\Rightarrow 189 - 36 + 6 = 159$
 $\Rightarrow 189 - 30 = 159$
 $\Rightarrow 159 = 159$

7.(2)
 8.(3)
 9.(3)

L	A	F	I
↓+1	↓+2	↓+1	↓+3
M	C	G	L
↓+1	↓+2	↓+1	↓+3
N	E	H	O
↓+1	↓+2	↓+1	↓+3
O	G	I	R
↓+1	↓+2	↓+1	↓+3
P	I	J	U

- 10.(3)
 11.(2) Birds live in a nest.
 Similarly, Rabbits live in a burrow.
 12.(1) $(2)^2 = 4, (3)^2 = 9, (4)^2 = 16$
 $(5)^2 = 25, (6)^2 = 36, (7)^2 = 49$
 $(7)^2 = 49, (8)^2 = 64, (9)^2 = 81$
 13.(2) From fig (II) and (IV)
 $5 \swarrow 4 - 2$
 $\searrow 1 - 3$
 So, $2 \leftrightarrow 3$

