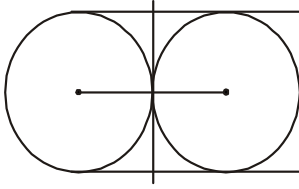


QUANTITATIVE APTITUDE

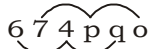
1. (3) ATQ,



$r_1 + r_2 = C_1 C_2$
So, Number of common tangent is 3

2. (4) $\frac{6+7+4+p+q+0}{3}$

Possible value of $p+q = 1, 7, 11$



By divisibility rule of 11
 $(10+q)-(7+p) = 0$ or 11

$\Rightarrow q-p+3 = 0$

$\Rightarrow q-p = -3$

$\Rightarrow q+3 = p$

$\Rightarrow p-q = 3$

and, $p+q = 7$

then, $p=5, q=2$

3. (3) Time taken to catch the thief

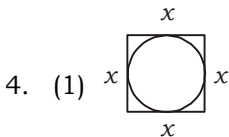
$= \frac{450}{8-7}$

$= 450$ sec

Distance covered by Police-man

$= 450 \times 8 = 3600$ m

$= 3.6$ km



ATQ,
 $2r = x$

$\Rightarrow r = \frac{x}{2}$

Sides of cube = 5.6

Radius of sphere = 2.8

\therefore Volume of sphere

$= \frac{4}{3} \times \frac{22}{7} \times 2.8 \times 2.8 \times 2.8$

$= \frac{275.968}{3} = 91.98 \text{ cm}^3$

5. (2) Surface area of sphere = $4\pi r^2$

ATQ,

$4\pi r^2 = 154$

$\Rightarrow 4 \times \frac{22}{7} \times r^2 = 154$

$\Rightarrow r^2 = \frac{7 \times 7}{4}$

$\Rightarrow r = \frac{7}{2}$

Volume of sphere = $\frac{4}{3} \pi r^3$

$= \frac{4}{3} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times \frac{7}{2}$

$= \frac{49 \times 11}{3} = 179.6 \text{ cm}^3$

6. (1) $x + \frac{1}{x} = -14$

squaring both side

$\Rightarrow x^2 + \frac{1}{x^2} + 2 = 196$

$\Rightarrow x^2 + \frac{1}{x^2} = 194$

$\Rightarrow x^2 + \frac{1}{x^2} - 2 = 192$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 = 192$

$\Rightarrow x - \frac{1}{x} = -\sqrt{64 \times 3} \quad (\because x < -1)$

$\Rightarrow x - \frac{1}{x} = -8\sqrt{3}$

ATQ,

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

$= -14 \times (-8\sqrt{3}) = 112\sqrt{3}$

7. (2) Required ratio =

$(P+R) : (Q+R) = (125+960) : (905+960)$

$= 1085 : 1865$

$= 217 : 373$

8. (3) Let 0.5 is $x\%$ of 20.

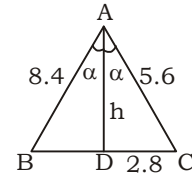
ATQ,

$\frac{x}{100} \times 20 = 0.5$

$x = 2.5\%$

The required percentage is 25%

9. (3)



AD Bisector of angle A, $AB = 8.4$ cm, $AC = 5.6$ DC = 2.8 cm,

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

ATQ,

$\Rightarrow \frac{8.4}{5.6} = \frac{BD}{2.8}$

$\Rightarrow BD = \frac{8.4 \times 2.8}{5.6}$

$\Rightarrow BD = 4.2$

$\Rightarrow BC = 4.2 + 2.8 = 7$ cm

10. (3) ATQ,

$12\% = \frac{3}{25} \quad 5\% = \frac{1}{20}$

Initial : Now

25 : 22

20 : 19

500 : 418

ATQ,

500 units = 3000

418 units = 2508

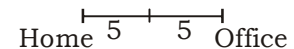
So, B 2508 had to pay him.

11. (4) ATQ,

Ratio of speed of R

Walking : Jogging : Running

$= 1 : 2 : 4$



Total time taken = $\frac{5}{5} + \frac{5}{10} + \frac{5}{10} + \frac{5}{20}$

$= \frac{20+10+10+5}{20} = \frac{45}{20}$ hr

Average speed = $\frac{20}{\frac{45}{20}} = \frac{400}{45}$

$= \frac{80}{9}$ km/hr

12. (3) Ram : Ramesh = 3 : 5

Let present ages of Ram and Ramesh = $3x$ and $5x$

ATQ,

$\frac{3x+7}{5x+7} = \frac{4}{5}$

$\Rightarrow 20x + 28 = 15x + 35$

\therefore The age of Ramesh = $5x = 7$

$$13. (3) k^4 + \frac{1}{k^4} = 47$$

$$\left(k^2 + \frac{1}{k^2}\right)^2 = 47 + 2 = 49$$

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

$$\text{Now, } \left(k + \frac{1}{k}\right)^2 = 7 + 2 = 9$$

$$\Rightarrow k + \frac{1}{k} = 3$$

Cubing both sides,

$$k^3 + \frac{1}{k^3} + 9 = 27$$

$$\Rightarrow k^3 + \frac{1}{k^3} = 18$$

14. (1) ATQ,

$$80 \text{ units} = 400,000$$

$$1 \text{ unit} = 5000$$

$$105 \text{ units} = 525,000$$

$$\text{Selling price of Ram} = \text{₹}525,000$$

$$15. (2) \begin{array}{r|l} 10 & 110, 1980 \\ 11 & 11, 198 \\ \hline & 1, 18 \end{array}$$

$$\therefore \text{HCF} = 10 \times 11 = 110$$

$$16. (2) (x + 2y)^3 + (x - 2y)^3 \\ = x^3 + 8y^3 + 6xy(x + 2y) + x^3 - 8y^3 - 6xy(x - 2y) \\ = 2x^3 + 6x^2y + 12xy^2 - 6x^2y + 12xy^2 \\ = 2x^3 + 24xy^2$$

17. (1) ATQ,

$$(9870 - 5250)$$

$$= \frac{5250 \times 11 \times T}{100}$$

$$\Rightarrow 4620 = \frac{5250 \times 11 \times T}{100}$$

$$\Rightarrow 4200 = 525 \times T$$

$$\therefore \text{Time} = 8 \text{ years}$$

18. (4) ATQ,

$$(H + I) : (J + K)$$

$$400 + 300 : 350 + 400$$

$$700 : 750$$

$$14 : 15$$

$$19. (1) \sin \theta + \cos \theta = \frac{\sqrt{3} - 1}{2\sqrt{2}}$$

Squaring both side

$$\sin^2 \theta + \cos^2 \theta + 2 \sin \theta \cos \theta$$

$$= \frac{3 + 1 - 2\sqrt{3}}{8}$$

$$\Rightarrow 2 \sin \theta \cos \theta = \frac{4 - 2\sqrt{3} - 8}{8}$$

$$\Rightarrow \sin \theta \cos \theta = \frac{-(4 + 2\sqrt{3})}{16}$$

ATQ,

$$\tan \theta + \cot \theta = \frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta}$$

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

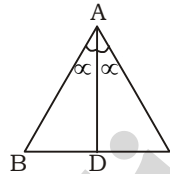
$$\frac{1}{\frac{(4 + 2\sqrt{3})}{16}}$$

$$= \frac{-16}{(4 + 2\sqrt{3})} \times \frac{(4 - 2\sqrt{3})}{(4 - 2\sqrt{3})} \Rightarrow$$

$$\frac{-16(4 - 2\sqrt{3})}{16 - 12}$$

$$= -4(4 - 2\sqrt{3}) = 8(\sqrt{3} - 2)$$

20. (4)



Angle bisector theorem

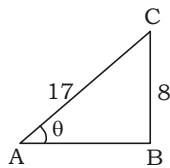
$$\frac{AB}{AC} = \frac{BD}{DC}$$

$$\frac{10}{14} = \frac{BD}{DC}$$

$$BD : DC = 5 : 7$$

Wrong answer is given by SSC.

$$21. (2) \sin \theta = \frac{8}{17}$$



8, 15, 17 are triplets in

ΔABC

$$\Rightarrow 17^2 - 8^2 = AB^2$$

$$\Rightarrow AB = \sqrt{225}$$

$$\Rightarrow AB = 15$$

$$\therefore \tan \theta = \frac{BC}{AB} = \frac{8}{15}$$

$$22. (4) \sec 2\theta = \text{cosec}(\theta - 36^\circ)$$

$$2\theta + \theta - 36^\circ = 90^\circ$$

$$(\therefore \sec \theta = \text{cosec}(90^\circ - \theta))$$

$$3\theta - 36^\circ = 90^\circ$$

$$\theta - 12 = 30$$

$$\theta = 42^\circ$$

$$\sin A = \cos B$$

or

$$\sec A = \text{cosec} B$$

$$\text{then } A + B = 90^\circ$$

23. (3) Yoga + Painting

$$= 18\% + 12\% = 30\%$$

$$\text{Dance + Music}$$

$$= 16 + 24 = 40\%$$

$$\text{Students at Yoga and Painting}$$

$$= 30\% \text{ of } 300$$

$$= \frac{300 \times 30}{100} = 90$$

Students of music and dance

$$= 40\% \text{ of } 400 = 120$$

$$= 120 - 90 = 30$$

24. (2) T, A, M, K and R states have witnessed an increase in the amount of annual rainfall continuously for two times in immediate years.

25. (4) ATQ, Gagan : Naman

$$\text{Wrok} = 2 : 1$$

$$\text{Time} = 5 : 4$$

$$\text{Eff.} = \frac{2}{5} : \frac{1}{4} = 8 : 5$$

$$\text{Total work} = 16 \times 13 = 208$$

$$\therefore \text{Time taken by Gagan} = \frac{208}{8} = 26 \text{ days}$$

$$1. (3) \quad 2. (4) \quad 3. (3) \quad 4. (1) \quad 5. (2)$$

$$6. (1) \quad 7. (2) \quad 8. (3) \quad 9. (3) \quad 10. (3)$$

$$11. (4) \quad 12. (3) \quad 13. (3) \quad 14. (1) \quad 15. (2)$$

$$16. (2) \quad 17. (1) \quad 18. (4) \quad 19. (1) \quad 20. (4)$$

$$21. (2) \quad 22. (4) \quad 23. (3) \quad 24. (2) \quad 25. (4)$$

GENERAL AWARENESS

1. (3) Earth's Core is the part of

Earth in the middle core.

The outer core about 2400

km thick, is a liquid layer,

above the Earth's solid

inner layer and below the

mantle. The temperature of

the outer core ranges from

4400°C in the outer region

to 6100°C near the inner

core. Convection in the

outer core, combined with

the Carioles effect, give rise

to Earth's magnetic field

(25 gauss), which is 50

times stronger than the

magnetic field of the

surface.

The radius of inner core is

1216 km, and was detected

by Inge Lehman.

2. (1) Consumer principle is the branch of micro economics that studies how people decide what to spend their money on based on their preferences and budget constraints.
Investment- In macro economies investment consist of the conditions to the nation's capital stock of buildings, equipment/s, software and inventories during a year.
3. (3) **Niting Chugh** - Deputy Managing Director and Head of Digital Banking- SBI
Rajiv Kumar-Chief Election Commissioner.
TS Ramakrishan - MD & CEO of LIC Mutual Fund
4. (4) The Durga temple is a 8th century Hindu temple, dedicated to Surya. It has the most embellished and largest relief panels in a hole depicting artwork of Shaivism, Yaishnavism, Shakhism and Vedic deities.
5. (2) The Author of Brihat Samhita is Varahmihira. It was printed in 1946 and digitized by Hari Prasad Das on 18 April, 2013.
6. (1) Carboxylic acid -
- $$\begin{array}{c} \text{O} \\ \parallel \\ \text{R} - \text{C} - \text{OH} \end{array}$$
- $$\begin{array}{c} \text{O} \\ \parallel \\ \text{R} - \text{C} - \text{OR} \end{array}$$
- Esters
- Ketone - $\text{R} - \text{C} - \text{R}^1$
The simplest Ketone is Acetone (CH_3CCH_3).
Aldehyde $\text{R} - \text{CH} = \text{O}$
7. (4) **Article 142** - empowers the Supreme court's verdicts and rulings to be enforced.
Article 144- Advises civil and judicial authorities to act in aid of the Supreme Court.
Article 145 - Rules of Court
8. (4) The unfurling of national flag by President of India on 26th January Republic Day celebration at Rajpath.
9. (2) Govt. of India Act 1858, the British Parliament passed an Act that put an end to the rule of the company. The control was transformed to the British Crown. It was happened due to the Revolt of 1857.
- The Governor General was made the Viceroy of India. First Viceroy of India - Lord Canning (1858-62)
10. (3) Census of 2011 - (943) 15th census of India.
Highest Sex Ratio - Kerala (1084), Puducherry (1037), Tamilnadu (996) & Andhra Pradesh (993).
Lowest Sex Ratio - Daman & Diu (618), Dadar and Nagar Haveli (774), Chandigarh (818), Delhi (868), Haryana (877).
11. (1) Central Universities Bill, 2022 aims to convert the 'National Rail and Transportation Institute (NRTI)' into 'Gati Shakti' Vishvavidhyalaya (GSV). NRTI is the first transport institute of India located in Vadodara, Gujarat.
12. (4) Ahmedabad is very close to cotton-growing area, has an ideal climate for spinning and weaving, has flat terrain and easy availability of land. It provides skilled labour, and well-developed road and all these made Ahmedabad 'Manchester of India'.
It is located on the bank of Sabarmati river. The first mill established in 1859. Visakhapatnam (Vizag) - The city of destiny.
Hyderabad - The city of Pearls.
13. (2) Sodium bicarbonate (NaHCO_3) is known as Baking Soda.
Sodium Hydroxide (NaOH) is known as caustic soda or lyre. It is common ingredient in cleaners and shops.
Sodium Sulphate (Na_2SO_4) is used for standardizing dyes, in freezing mixtures, etc.
14. (2)
Delhi Sultanate (1206 - 1526) Dynasty Founder
Mamluk (1206-90) Qutud-Din Aibak
Khilji (1290-1320)Firoz Khilji
Tughlaq (1320-1414)Ghiyas-ud-din Tughlaq Sayyid (1414-1451)Khizr Khan Lodi (1451-1526)
Bahlul Khan Lodi
15. (4)
Sports Related Terms
Hockey Icing, Forecheck, Snap Shot, Bully, Flick, Scoop, etc.
Volley ball Block, Foul, Bump, Bump Pass, Dink
Badminton Birdic, Carry, Flick, Smash etc.
16. (1) First CDS was General Bipin Rawat. Sam Manekshaw and M. Cariappa were the first and second Field Marshals of India, equivalent post, an Admiral of the fleet in the Indian Navy (never been awarded) and a Marshal of the Indian Air Force (Arjan Singh).
Manoj Kumar Pandey- Current Chief of Army
R Dinesh- New President of confederation of Indian Industry's.
Sanjay Agarwa- MD of AU Small Finance Bank.
17. (1) The 2021 AIBA Boxing Championships were held in Belgrade, Serbia (Second time).
18. (1) Fundamental Duties - Article 51A -(Part IVA)
42nd Amendment Act of 1976 added 10 fundamental duties to Indian Constitution. 86th Amendment Act 2002 later added 11th fundamental duty to the list. Swaran Singh Committee in 1976 recommended Fundamental Duties. Fundamental Rights (12 to 35) (Part III)
Right to property was removed through 44th constitutional Amendment, 1978.
In 2009, Right to Education Act was added. Directive Principles of State Policy - Articles (39-43).
19. (3) Amjad Ali Khan Sakhawat Hussain, Rani Balkliwal and Allauddin Khan were Indian Sarod players.

20. (1) **Bharatanatyam** - Rukmini Devi, Alarmal Valli, Padma Subarmanyam Yamini Krishnamurthy, Mallika Sarabhai, etc.

Manipuri - Gambhini Devi, Bipin Sinha, Darshana Jhaveri, Nirmala Mehta

Sattriya - Moniram Dutta Mukhtiyar, Saikia Barbayan Maheswar Neag, Bhupen Hazarika, Mahan Bhagwati.

Odishi- Sonal Man Singh, Mayadhar Raut, Kumkum Mohanty, Aruma Mohanty Anita Babu and Aadya Kartikar.

21. (3)
 22. (2) Gross National Income (GNI) is the total amount of money earned by a nation's people and businesses. Net national income (NNI) is defined as gross national income minus the depreciation of fixed capital assets (dwellings, buildings, machinery, transport equipment and physical infrastructure) through wear and tear and obsolescence. Net National Product at factor cost is equal to sum total of value added at factor cost or net domestic product at factor cost and net factor income from abroad.

23. (3)
 24. (3)

Year (Place)	President
1895 (Pune)	Surendranath Banerjee
1899 (Lucknow)	Ramesh Chander Dutt
1907 (Surat)	Rash Bihari Ghosh
1906 (Calcutta)	Dada Bhai Noroji
1908 (Madras)	Rash Bihari Ghosh

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

GENERAL INTELLIGENCE & REASONING

1. (4) By hit and trial method
 I. $7 - 4 \times 3 \div 6 + 2 = 8$
 interchanging \times and \div and 6
 $7 - 4 \div 3 \times 2 + 6 = 8$

$$7 - \frac{8}{3} + 6 = 8$$

$$13 - \frac{8}{3} = 8$$

$$\frac{31}{3} = 8 \text{ (incorrect equation I)}$$

II. $6 - 8 \times 2 + 9 \div 3 = 5$
 $2 - 8 \div 6 + 9 \times 3 = 5$

$$2 - \frac{4}{3} + 27 = 5$$

$$29 - \frac{4}{3} = 5 \text{ (incorrect equation II)}$$

2. (4) The right answer is 4.
 3. (3) $14 + 56 = 70$
 $30 + 58 = 88$

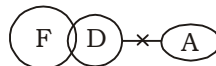
Similarly,
 $33 + 19 = 52$

4. (2) $8 : 128 \rightarrow$ divided by 8
 $6 : 72 \rightarrow 72$ divided by 6
 $11 : 242 \rightarrow 242$ divided by 11

5. (1) By hit and trial method
 I $7 \times 6 + 8 \div 2 - 4$
 interchanging $-$ and \times , 6 and 4
 $7 - 4 + 8 \div 2 \times 6$
 $3 + 24 = 27$

II $4 - 7 \times 6 + 8 \div 2$
 $6 \times 7 - 4 + 8 \div 2$
 $42 - 4 + 4 = 42$

6. (2) The possible venn diagram is



So the conclusions II and III follows

7. (3) The pattern followed here
 $7 : 25 \rightarrow \sqrt{25} + 2 = 7$

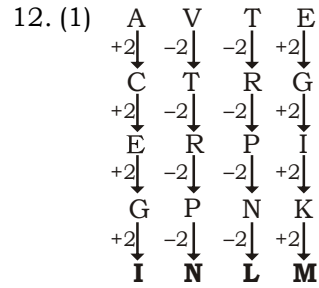
$$4 : 4 \rightarrow \sqrt{4} + 2 = 4$$

$$3 : 1 \rightarrow \sqrt{1} + 2 = 3$$

8. (1) The order in a dictionary is
 4. Seniority
 5. Senna
 1. Sennet
 2. Sennight
 3. Sennit
 order- 4,5,1,2,3

9. (2) Movie is directed by a director. Similarly, orchestra is conducted by a conductor

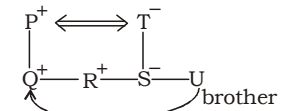
10. (1) 11. (2)



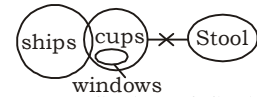
13. (*) No option given by SSC is correct.

14. (1) By hit and trial method
 $6^2 - 20 + (28 \div 7) - [(\sqrt{4}) \times 8] + 2^2 = 40$
 interchanging 6 and 8
 $8^2 - 20 + (28 \div 7) - [(\sqrt{4}) \times 6] + 2^2 = 40$
 $64 - 20 + 4 - 12 + 4 = 40$
 $44 - 4 = 40$
 $40 = 40$

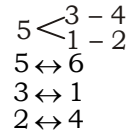
15. (1) The right answer is the 1
 16. (1) $P + Q \% R \% S \# T - U$
 Q related to U



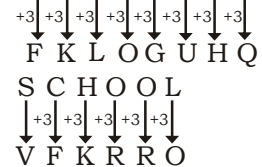
17. (3) The possible venn diagram is



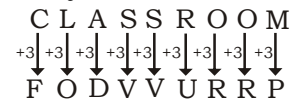
18. (3) Form fig i and fig ii



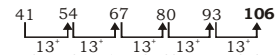
19. (4) C H I L D R E N and



Similarly,



20. (1) Given



21. (2) The logic followed here
 $17 - 31 \rightarrow 17 \times 2 - 3 = 31$
 $13 - 25 \rightarrow 13 \times 2 - 3 = 23 - \text{odd}$
 $15 - 27 \rightarrow 15 \times 2 - 3 = 27$
 $9 - 15 \rightarrow 9 \times 2 - 3 = 15$

22. (3)

I N B O X
 | | | | |
 X X X X X
 (opposite) M R Y C L

E M A I L
 | | | | |
 X X X X X
 N V Z O R (opposite)

Similarly,

D R A F T
 | | | | |
 X X X X X
 I W Z G U (opposite)

Opposite alphabete.

23. (4) TQR → T -3 Q +1 R
 MJK → M -3 J +1 K
 IFG → I -3 F +1 G
 NKI → N -3 K -2 I - odd

24. (4)

L E
 +3 ↓ +5 ↓
 O J
 +6 ↓ +5 ↓
 U O
 +9 ↓ +5 ↓
 D T
 +12 ↓ +5 ↓
 P Y

25. (4)

G A I N A C H E
 +1 ↓ +1 ↓ +2 ↓ +2 ↓ +1 ↓ +1 ↓ +2 ↓ +2 ↓
 H B K P B D J G

C A K E
 +1 ↓ +1 ↓ +2 ↓ +2 ↓
 Similarly, D B M G

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

ENGLISH LANGUAGE AND COMPREHENSION

3. (2) "stripe" is incorrectly spelt.
 Meaning- a line or narrow section differing in colour or (धारी अलंकरण पट्टी) texture from parts adjoining.

6. (2) Replace "prepares" with "is preparing". (Present Continuous Tense should be used as the action is going on)

10. (1) "Innocence" is wrongly spelt.

Meaning- the fact of not being guilty of crime (निर्दोष) / untouched by shrewdness (भोलापन)

14. (3) 'got on the train for Mumbai' makes the sentence meaningful.

15. (4) replace "have" with "do". (As the sentence is in Present).

18. (3) Replace 'in heart' with 'to heart'. 'Take to heart' means 'to be greatly grieved by (बुरा मान जाना)

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

Words

Meaning in English

Agnostic a person who is not sure if God exists or not.
 Fastidious difficult to please
 Perseverance continuing in an course of an action without regard to discouragement.
Syn. persistence, tenacity, steadfastness.
 Native belonging to one by birth
 Novice a beginner, without any experience.
Syn. greenhorn, tyro, callow
 Vicinity state of being near, proximity.

Meaning in Hindi

संशयवादी
 तुनुक मिजाज
 दृढ़ता, निरंतर प्रयत्न
 मूल
 नौसिखिया
 अड़ोस-पड़ोस

