



**ESE | GATE | PSU<sub>s</sub>**

**NUMERICAL & VERBAL ABILITY**

**PRACTICE QUESTIONS BOOKLET**

# Chapter 1 Analytical Aptitude

## 1.1 Logical Puzzles

01. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet

02. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet

03. Ans: (c)

Sol: Please refer ACE General Aptitude PQS booklet

04. Ans: (c)

Sol: Please refer ACE General Aptitude PQS booklet

05. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet

06. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet

07. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet

08. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet

09. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet

10. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet

11. Ans: (Box 1)

Sol: Box 1 message is Lies.

Box 2 message is true.

Box 3 message is Lies.

∴ Box 1 has the gold.

12. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet

13. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet

14. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet

15. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet

16. Ans: (c)

Sol: Please refer ACE General Aptitude PQS booklet

17. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet

**18. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**19. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**20. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

### 1.2 Venn Diagram

**01. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**02. Ans: (c)**

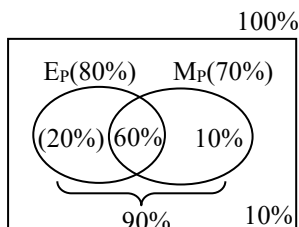
**Sol:** Please refer ACE General Aptitude PQS booklet

**03. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**04. Ans: 240**

**Sol:**



Passed both 60% = 144

Total 100% = 240

**05. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**06. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**07. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**08. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**09. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**10. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

### 1.3 Blood Relation

**01. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**02. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**03. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**04. Ans: (a)**

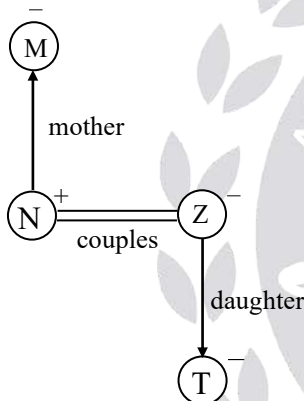
**Sol:** Please refer ACE General Aptitude PQS booklet

**05. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**06. Ans: (c)**

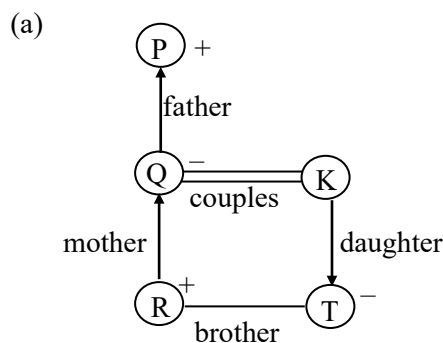
**Sol:** By decoding the given information using symbols of family diagram, we get



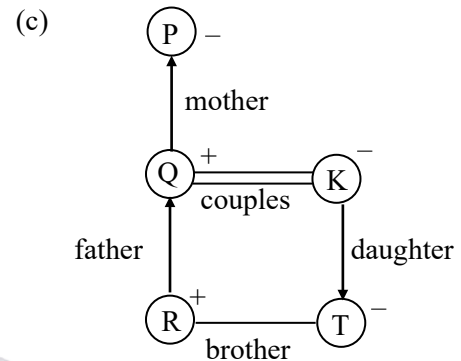
So that Z is daughter-in-law of M.  
Hence (c) is the correct answer

**07. Ans: (c & d)**

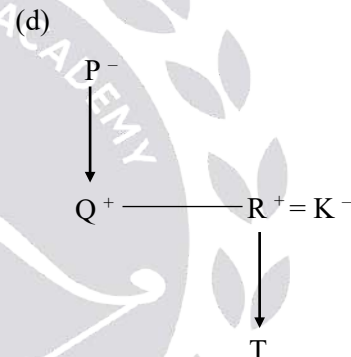
**Sol:** By decoding the given information symbol of family diagram, we



So that P is not mother-in-law of K.



So that P is the mother-in-law of K.  
Hence (c) is correction answer.



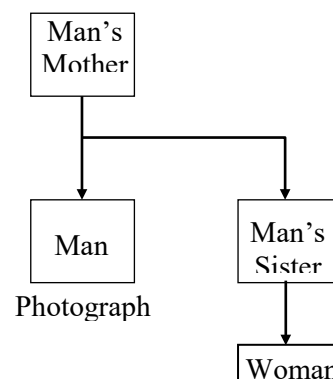
So P is mother in law of k  
So option (d) is also correct  
So both options (c & d) are correct.

**08. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**09. Ans: (d)**

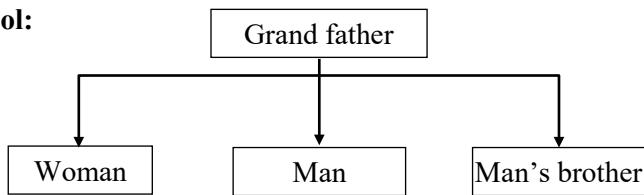
**Sol:**



So the woman is man's niece.

**10. Ans: (c)**

**Sol:**



From above family tree we can say that woman is the sister of man in the photograph.

### 1.4 Cubes & Dice

**01. Ans: (a)**

**Sol:** 6 → adjacent → 2, 3, 4, 5  
6 → opposite → 1  
Option (a) is the correct answer.

**02. Ans: (a)**

**Sol:** 4 → adjacent → 5, 6, 2, 3  
4 → opposite → 1  
Option (a) is the correct answer.

**03. Ans: (c)**

**Sol:** 4 → adjacent → 5, 6, 1, 2  
4 → opposite → 3  
Option (c) is correct answer.

**04. Ans: (c)**

**Sol:** 4 → adjacent → 2, 3, 1, 6  
4 → opposite → 5, 5, 5  
Option (c) is the correct answer.

**05. Ans: (b)**

**Sol:** 2 → adjacent → 1, 4, 3, 6  
2 → opposite → 5  
Option (b) is the correct answer.

**06. Ans: (b)**

**Sol:** 1 → adjacent → 4, 3, 5, 6

1 → opposite → 2

After rotating the view of dice.

Then we have one common number and same surface, then corresponding number are same so 6 opposite is 4.

**07. Ans: (c)**

**Sol:** 2 → adjacent → 4, 6, 1, 3

2 → opposite → 5

6 → adjacent → 3, 5, 2, 4

6 → opposite → 1

Option (c) is correct answer.

**08. Ans: (d)**

**Sol:** From the folded figure.

5 → opposite → 3

2 → opposite → 4

1 → opposite → 6.

Option (d) is the correct answer.

**09. Ans: (c)**

**Sol:** five dots → opposite → three dots  
Option (c) is the correct answer.

**10. Ans: (d)**

**Sol:** three dots → opposite → six dots.

### 1.5 Coding and Decoding Test

**01. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**02. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**03. Ans: (a)**

**Sol:** Clearly, each letter in the word TOGETHER is moved as follows

T	O	G	E	T	H	E	R
↓ -2	↓ +2	↓ -2	↓ +2	↓ -2	↓ +2	↓ -2	↓ +2
R	Q	E	G	R	J	C	T

Similarly in the same code PAROLE becomes

P	A	R	O	L	E
↓ -2	↓ +2	↓ -2	↓ +2	↓ -2	↓ +2
N	C	P	Q	J	G

Hence, the answer is (a)

**04. Ans: (a)**

**Sol:** The letter of the words are written in a reverse order and each two letter

C	H	A	M	P	I	O	N
↖	↖	↖	↖	↖	↖	↖	↖
H	C	M	A	I	P	N	O

Similarly in the same code. NEGATIVE become

N	E	G	A	T	I	V	E
↖	↖	↖	↖	↖	↖	↖	↖
E	N	A	G	I	T	E	V

Hence Answer is (a)

**05. Ans: (b)**

**Sol:** Clearly each letter in the word DELHI is moved as follows

D	E	L	H	I
↓ -1	↓ -2	↓ -3	↓ -4	↓ -5

Similarly in the same BOMBAY becomes

B	O	M	B	A	Y
↓ -1	↓ -2	↓ -3	↓ -4	↓ -5	↓ -6
A	M	J	X	V	S

Hence, the Answer is (b)

**06. Ans: (a)**

**Sol:** Clearly each letter in the word MONKEY is moved as follows

M	O	N	K	E	Y	X	D	J	M	N	L
					↖	↖	↖	↖	↖	↖	↖

Similarly in the same code TIGER becomes

T	I	G	E	R	Q	D	F	H	S
				↖	↖	↖	↖	↖	↖

Hence, the Answer is (a)

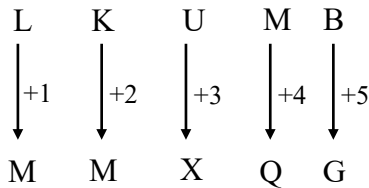
**07. Ans: (a)**

**Sol:** Clearly each letter in the word SHIFT is moved as follows

S	H	I	F	T
↓ -1	↓ -2	↓ -3	↓ -4	↓ -5
R	F	F	B	O

But here which word is coded as

So that



Hence, the Answer is (a)

**08. Ans: (a)**

**Sol:** Clearly each letter in the word represented as

R = 6, I = 1, P = 3, L = 8, E = 2

Then

P I L L E R = 3 1 8 8 2 6

Hence, the answer is (a)

**09. Ans: (a)**

**Sol:** Man sleeps on Bed

So that

Bed is called Window

Hence, the Answer is (a)

**10. Ans: (b)**

**Sol:** A woman shall draw water from a "well"

So that

Well is called "ISLAND"

Hence, the Answer is (b)

**11. Ans: (d)**

**Sol:** From both statements

The common code words are

Nee = are

See = you

So that

In the second statement, the remaining code

'ble' means 'where'

Hence, the Answer is (d)

**12. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**13. Ans: (b)**

**Sol:** D=4

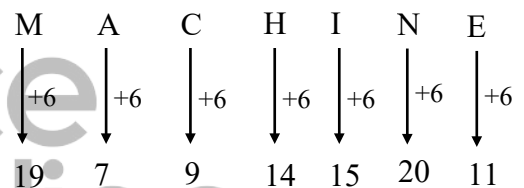
COVER = 3+15+22+5+18= 63

So that

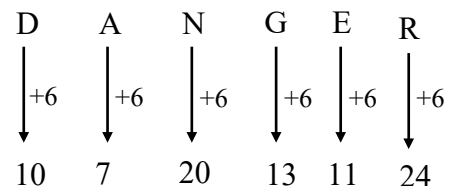
BASIS = 2+1+19+9+19 = 50

**14. Ans: (a)**

**Sol:** Clearly each letter in the word MACHINE is moved as follows



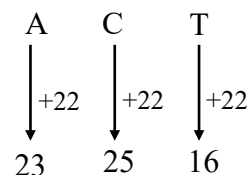
Similarly in the same code DANGER becomes



Hence, the Answer is (a)

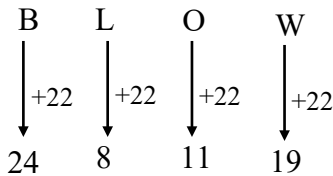
**15. Ans: (d)**

**Sol:** Clearly each letter in the word ACT is moved as follows



Similarly in the same code BLOW becomes

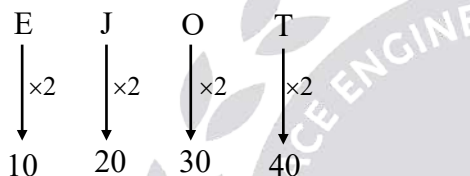




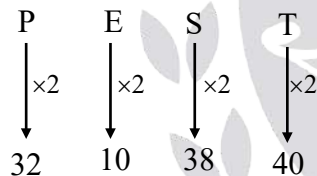
Hence the Answer is (d)

**16. Ans: (a)**

**Sol:** Clearly each letter in the word is moved as follows



Similarly in the same code



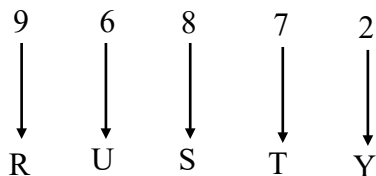
$$P + E + S + T = 32 + 10 + 38 + 40 = 120$$

Hence, the answer is (a)

**17. Ans: (a)**

**Sol:** The letter of the words are written in a reverse order

So that



Hence the Answer is (a)

**18. Ans: (c)**

**Sol:**  $AT = (1)(20) = 20$

$$BAT = (2)(1)(20) = 40$$

So that,

$$CAT = (3)(1)(20) = 60$$

Hence that Answer (c)

**19. Ans: (d)**

$$\text{Sol: AROMA} = \frac{1+18+15+13+1}{2} = \frac{48}{2} = 24$$

$$\text{GRAND} = \frac{7+18+1+14+4}{2} = 22$$

Similarly

$$\text{KWALITY} = \frac{11+23+1+12+9+20+25}{2} = \frac{101}{2} = 50.5$$

Hence the Answer is (d)

**20. Ans: (d)**

$$\text{Sol: BARS} = \frac{2+1+18+19}{4} = \frac{40}{4} = 10$$

$$\text{BEERT} = \frac{2+5+5+18+20}{5} = \frac{50}{5} = 10$$

Similarly

$$\text{DEEZ} = \frac{4+5+5+26}{4} = \frac{40}{4} = 10$$

$$\therefore \text{Logic is } \frac{\text{Sum of letters}}{\text{number of letters}} = \text{output}$$

Hence the Answer is (d)

**21. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**22. Ans: (b)**

**Sol:** Number of letters = x

$$\therefore x(x-1)$$

$$\text{Contract} = 8(8-1) = 56$$

$$\text{Growth} = 6(6-1) = 30$$



Distribution =  $12(12 - 1) = 132$

**23. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**24. Ans: (b)**

**Sol:**

M	E	A	N	D	E	R
↓	↓	↓	↓	↓	↓	↓
13	5	1	14	4	5	18

$(1 + 3) = 4$     $5$     $1$     $(1 + 4) = 5$     $4$     $5$     $(1 + 8 = 9)$

Similarly

M	A	T	H	E	M	A	T	I	C	S
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
13	1	20	8	5	13	1	20	9	3	19

$(1 + 3 = 4)$     $1$     $(2 + 0 = 2)$     $8$     $5$     $(1 + 3 = 4)$     $1$     $(2 + 0 = 2)$   
 $9$     $3$     $(1 + 9)10 = 10$     $= (1 + 0) = 1$

Hence, the Answer is (b)

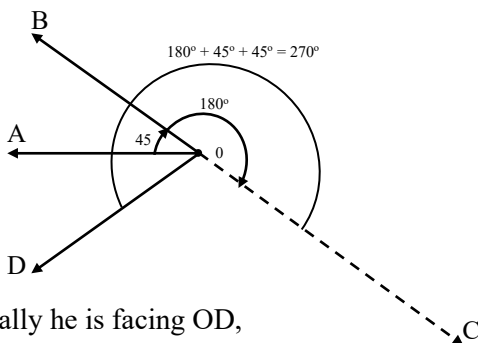
**25. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

## 1.6 Directions

**01. Ans: (a)**

**Sol:**



Finally he is facing OD,  
Which is south west

Hence the Answer is (a)

**02. Ans: (c)**

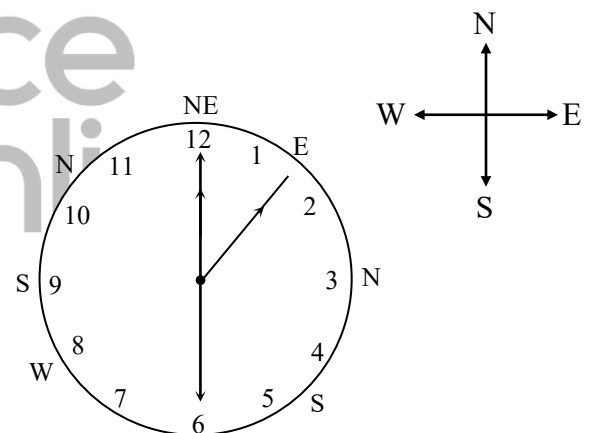
**Sol:** If south-east becomes North and North east becomes west, therefore, the whole figure moves through  $135^\circ$ . Hence, west will be south east.

See, Actual figure is rotating  $135^\circ$  anticlockwise, So, when west will be rotated by same degree anticlockwise. It will hold the place of south east.

**03. Ans: (c)**

**Sol:** Diagram is shown as per the conditions in the question

Clearly at 1:30 P.M hour hand shall point East  
Hence, the Answer is (c)



**04. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**05. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**06. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**07. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**08. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**09. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**10. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**11. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**12. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**13. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**14. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**15. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

## **1.7 Seating arrangements**

**01. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**02. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**03. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**04. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**05. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**06. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**07. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**08. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**09. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**10. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**11. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**12. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**13. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**14. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**15. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**16. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**17. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**18. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**19. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**20. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**21. Ans: (b)**

**Sol:** From the given data, the following table is possible.

Persons		Portfolio's
P		Defence
Q		Telecom
R	Either Home (or) Finance (or) No	Home
S	Either Power (or) Telecom	Power
T		Finance
U	No	

∴ Option (b) is Correct.

**22. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**23. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**24. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**25. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

### 1.8 Analytical Figure/Counting

01. Ans: 11

Sol: A, b, c, d, p, q, r, s  $\rightarrow$  8

Abpq, bcqr, cdrr  $\rightarrow$  3

11

02. Ans: (b)

Sol: Number of squares without hole = 15

Total number of  $2 \times 2$  square without hole  
= 5

Total squares =  $15 + 5 = 20$

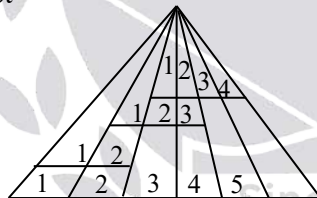
03. Ans: 40

Sol: By using base concept

$$1+2+3+4 = 10$$

$$1+2+3 = 6$$

$$1+2 = 3$$



$$\Rightarrow 1+2+3+4+5+6 = 21$$

$$\text{Total} = 21 + 3+6+10 = 40$$

04. Ans: 16

Sol: Form with single triangles = 8

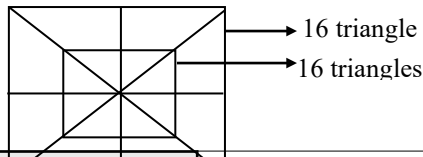
Form with double triangles = 4

Form with 4 triangles = 4

$$\text{Total} = 16$$

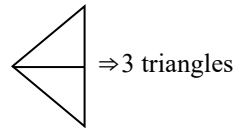
05. Ans: (c)

Sol:



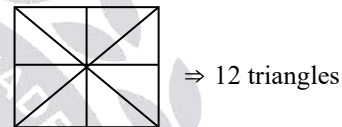
06. Ans: (c)

Sol:



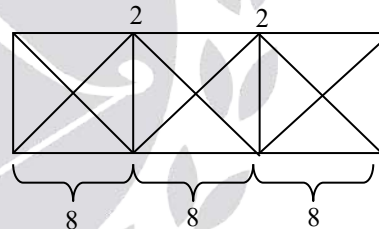
$$\text{Total} = 2 + 3 + 12 = 17 \text{ triangles}$$

a	b	c	d
p	q	r	s



07. Ans: (a)

Sol:

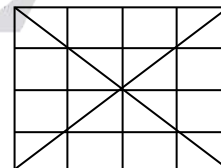


$$\text{Number of triangles} = 8 + 8 + 8 + 2 + 2 = 28$$

$$\text{Number of squares} = 3 + 2 = 5$$

08. Ans: (d)

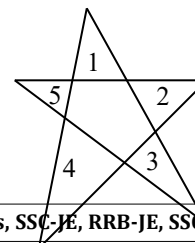
Sol:



$$\text{Total number of triangle} = 16 + 16 + 8 \times 2 = 48$$

09. Ans: (d)

Sol:



$$5 + 5 = 10$$

**10. Ans: 48**

**Sol:**  $h = 5$  odd

$$\begin{aligned} &= \frac{h(h+2)(2h+1)-1}{8} \\ &= \frac{5 \times 7 \times 11 - 1}{8} = \frac{384}{8} = 48 \end{aligned}$$

**11. Ans: 21**

**Sol:**

a		x	y
b			
p	q	l	
		m	

$$a, b, x, y, p, q, r, m = 8$$

$$ab, xy, pq, ln = 4$$

$$abx, xyl, bpq, q/m = 4$$

$$abpq, abxy, pq/n, xy/m - 4$$

$$abxypq/m = 1$$

$$\text{total} = 8 + 4 + 4 + 4 + 1 = 21$$

**12. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**13. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**14. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

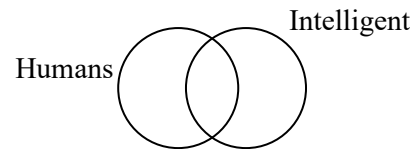
**15. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

### 1.9 Syllogism/Logical Reasoning

**01. Ans: (d)**

**Sol:** From the given statement we can draw venn diagram as:



From above venn diagram we can say that option (d) is exactly correct.

**02. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**03. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**04. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**05. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**06. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**07. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**08. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**09. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**10. Ans: (d)**

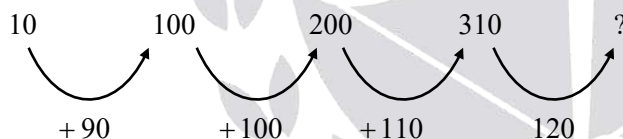
**Sol:** Please refer ACE General Aptitude PQS booklet

### 1.10 Series, Classification, Analogy

#### 1.10. (a) Series:

**01. Ans: (d)**

**Sol:**

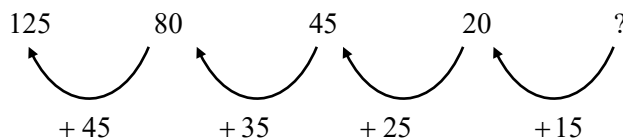


$$? = 310 + 120 = 430$$

$$? = 430$$

**02. Ans: (a)**

**Sol:**



$$? + 15 = 20$$

$$? = 5$$

**03. Ans: (d)**

**Sol:**

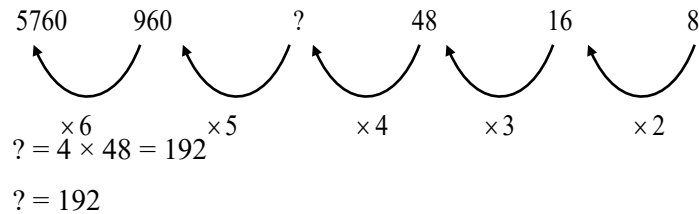
15      33      104      ?      2124      12755      89298

$$= 104 \times 4 + 7$$

$$= 423$$

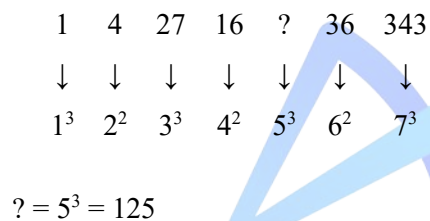
**04. Ans: (c)**

**Sol:**



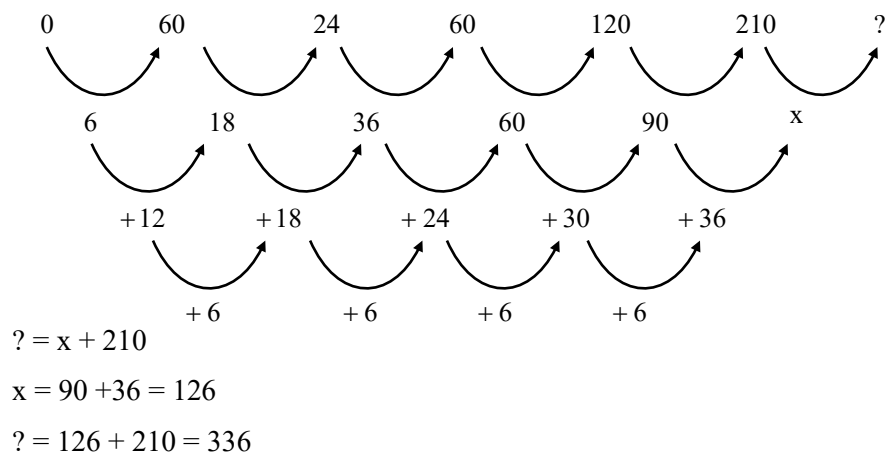
**05. Ans: (d)**

**Sol:**



**06. Ans: (c)**

**Sol:**



**07. Ans: (a)**

**Sol:**



90	180	12	50	100	200	?	3	50	4	25	2	6	30	3
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓					
$\underline{30} \times 3$	$\underline{6} \times \underline{30}$	$\underline{6} \times \underline{2}$	$\underline{25} \times \underline{2}$	$\underline{4} \times \underline{25}$	$\underline{50} \times \underline{4}$	$3 \times \underline{50}$	$3 \times 1$	$1 \times 50$						

? = 150

In the given number series multiplies have one common number like

90, 180 → 30

180, 12 → 6

12, 50 → 2

50, 100 → 25

100, 200 → 4

200, ? → 50

**08. Ans: (c)**

**Sol:**  $11\frac{1}{9}, 12\frac{1}{2}, 14\frac{2}{7}, 16\frac{2}{3}$

$\frac{100}{9}$	$\frac{25}{2}$	$\frac{100}{7}$	$\frac{50}{3}$	?
$\times \frac{9}{8} \quad \times \frac{8}{7} \quad \times \frac{7}{6} \quad \times$				

$\frac{9}{8}, \frac{8}{7}, \frac{7}{6}, \frac{6}{5}, \frac{5}{4}, \frac{4}{3} \dots$

$x = \frac{6}{5}$

$? = \frac{50}{3} \times \frac{6}{5} = 20$

? = 20

**09. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

10. **Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

11. **Ans: 16**

**Sol:** Please refer ACE General Aptitude PQS booklet

12. **Ans: 725**

**Sol:** Please refer ACE General Aptitude PQS booklet

13. **Ans: 45**

**Sol:** Please refer ACE General Aptitude PQS booklet

14. **Ans: (c)**

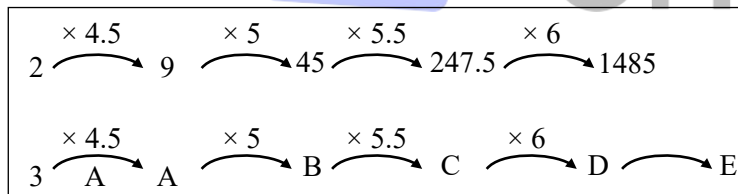
**Sol:** Please refer ACE General Aptitude PQS booklet

15. **Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

16. **Ans: (d)**

**Sol:**



$$A = 3 \times 4.5 = 13.5$$

$$B = A \times 5 = 13.5 \times 5 = 67.5$$

$$B = 67.5$$

17. Which number will come in place of (E) ?

214	18	162	62	126	
221	(A)	(B)	(C)	(D)	(E)

(a) 25 (b) 97 (c) 69 (d) 133

17. Ans: (b)

Sol:

$$\begin{array}{ccccccc} & +196 & & -144 & & +100 & & -64 \\ & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright \\ 214 & & 18 & & 162 & & 62 & & 126 \end{array}$$

In the same way

$$\begin{array}{ccccccc} 221 & & 25 & & 169 & & 69 & & 133 & & 97 \\ & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright & \\ +196 & & -144 & & +100 & & -64 & & +36 & & \\ (14^2) & & (-12^2) & & (10^2) & & (-8^2) & & (+6^2) & & \end{array}$$

$$E = 133 - 36 = 97$$

18. Ans: (d)

Sol:

5	8	9	6	5	4	2	3	7
	↓	↓	↓	↓	↓	↓	↓	↓
⊗	8	9	6	5	4	2	3	7
	↓	↓	↓	↓	↓	↓	↓	↓
⊗	8	9	6	5	4	2	3	⊗
		↓	↓	↓	↓	↓	↓	
⊗	⊗	9	6	5	4	2	3	⊗
		↓	↓	↓	↓	↓	↓	
⊗	⊗	9	6	5	4	2	⊗	⊗

$$? = 96542$$

19. Ans: (c)

Sol:

$$\begin{array}{cccccccc} 1500 & & 1581 & & 1664 & & 1749 & & 1833 & & 1925 & & 2016 \\ & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright & \\ +81 & & +83 & & +85 & & +84 & & +92 & & 91 & & \\ & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright & & \curvearrowright & \\ +2 & & +2 & & +2(-1) & & +2(+8) & & +2(-1) & & & & \end{array}$$

From above number logic we can say that 1833 number is the wrong number.

20. Ans: (a)

Sol:

5	27	61	122	213	340	509
↓	↓	↓	↓	↓	↓	↓
$2^3 - 3$	$3^3 - 3$	$4^3 - 3$	$5^3 - 3$	$6^3 - 3$	$7^3 - 3$	$8^3 - 3$

$27 (24 = 3^3 - 3)$

So from series we can say that number 27 in the given series is wrong

### 1.10. (b)

#### Inserting the Missing Character

01. Ans: (a)

Sol:  $(2 + 3)^2 = 25$

$(15 + 6)^2 = 441$

$(10 + 7)^2 = 289$

$(12 + 13)^2 = 625$

02. Ans: (d)

Sol:

	$\times 5 + 1$		$\times 5 + 1$	
3	16	81	406	_____
$\times 5 + 1$		$\times 5 + 1$		

$= 405(5) + 1 = 2031$

Option (d) is the correct option.

03. Ans: (c)

Sol:  $21 = 4^2 + 2^2 + 1^2$

$98 = 5^2 + 3^2 + 8^2$

$x = 6^2 + 7^2 + 3^2$

$x = 94$

(c) is the correct Ans.

04. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet

05. Ans: (b)

Sol:

$\therefore 1^2 + 5^2 = 26$

Option (b) is correct Ans.

06. Ans: (b)

Sol:

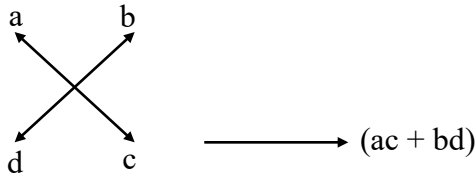
$a^2 - b^2 = (a - b)(a + b)$

$(10 - 7)(10 + 7) = 51$

Option (b) is correct Ans.

07. Ans: (c)

Sol:

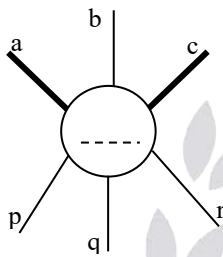


$$(3 \times 4 + 5 \times 5) = 37$$

Option (c) is the correct Ans.

08. Ans: (b)

Sol:



$$\begin{aligned} \therefore |a - p| & \quad |b - q| \quad |c - r| \\ |8 - 2| & \quad |6 - 4| \quad |3 - 1| \\ & = 622 \end{aligned}$$

Option (b) is the correct Ans.

09. Ans: (c)

Sol:  $2 \times 7 = 14$

$$15 \times 2 = 30$$

$$7 \times 9 = 63$$

$$9 \times 15 = 135$$

Option (c) is the correct answer.

10. Ans: (d)

Sol:  $93 = 27 + 63 + 3$

$$79 = 38 + 37 + 4$$

$$67 = 16 + 42 + x$$

$$x = 9$$

option (d) is the correct Ans

11. Ans: (c)

Sol: Please refer ACE General Aptitude PQS booklet

12. Ans: (a)

Sol:  $(15 - 5) \times (2 + 6) = 80$

$$(9 - 4) \times (7 + 6) = 65$$

$$\begin{aligned} \text{Missing number} &= (13 - 11) \times (16 + 8) \\ &= 2 \times 24 = 48 \end{aligned}$$

13. Ans: (c)

Sol:

$$\begin{aligned} 2 \times 3 &= 6 \\ 3 \times 4 &= 12 \\ 4 \times b &= 20 \\ b &= 5 \\ \therefore b^2 &= 25 \end{aligned}$$

Option (c) is the correct Answer.

14. Ans: (b)

Sol:

$$\begin{array}{l|l} 2 + 3 = 5 & P + 3 = S \\ 5 + 3 = 8 & S + 3 = V \\ 8 + 3 = 11 & V + 3 = Y \end{array}$$

15. Ans: (3)

Sol: Please refer ACE General Aptitude PQS booklet

### 1.10. (c) Classification/Odd one out

**01. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**02. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**03. Ans: (d)**

**Sol:**  $125 \rightarrow 5^3$   
 $216 \rightarrow 6^3$   
 $729 \rightarrow 9^3$   
 $525 \rightarrow$  odd one out

**04. Ans: (d)**

**Sol:** difference numbers are  

113	112	114	113
-1	+2	-1	

  
 So we can say that 13564 is an odd one out

**05. Ans: (d)**

**Sol:** (a)  $14 (7 \times 2) : 49 (7^2)$   
 (b)  $16 (8 \times 2) : 64 (8^2)$   
 (c)  $20 (10 \times 2) : 100 (10^2)$   
 (d) odd option

**06. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**07. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**08. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet

**09. Ans: (d)**

**Sol:** In the given option nephew represents the male character while all other options niece, mother, sister represents female character.

**10. Ans: (b)**

**Sol:** May (31 days), June (30 days)  
 July (31 days), August (31 days)  
 So obviously June (30 days) is the odd option (b) in given question.

### 1.10. (d) Analogy

**01. Ans: (b)**

**Sol:**  $3^2 : 5^3 :: 4^3 : 6^3$

**02. Ans: (b)**

**Sol:**  $12^2 :: 12-2 :: 13^2 : 13-2$

**03. Ans: (c)**

**Sol:**  $68 = 4^3 + 4$   
 $130 = 5^3 + 5$   
 $222 = 6^3 + 6$   
 $350 = 7^3 + 7$

**04. Ans: (c)**

**Sol:**  $6 \times 7 :: 78 :: 10 \times 11 : 11 \times 12$

**05. Ans: (b)**

**Sol:**  $\frac{20}{10} : 2 :: \frac{24}{8} : 3$

**06. Ans: (b)**

**Sol:**  $M \rightarrow 13$   
 $O \rightarrow$  opposite is 12  
 $H \rightarrow 8$   
 $J \rightarrow$  opposite is 17

07. Ans: (c)

Sol:

A C E G : I K M O  
+2 +2 +2 +2 +2 +2 +2

Q S U W : Y A C E  
+2 +2 +2 +2 +2 +2 +2

08. Ans: (c)

Sol:

F I L M A D G H  
-5 -5 -5 -5  
M I L K : H D G F  
-5 -5 -5 -5

09. Ans: (b)

Sol:

Son : Nephew : : Daughter : Niece  
Brother's son Brother's Daughter

10. Ans: (c)

Sol: Knife: Cut



# Chapter **2** Quantitative Aptitude

## 2.1 Number System

**01. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**02. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**03. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (7)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**05. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**06. Ans: (8)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (36)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (d)**

**Sol:**  $63 \times 55 = 3^2 \times 7^1 \times 5^1 \times 11^1$   
63 (1,3,7,9,21,63)  
55 (1,5,11,55)  
Factors =  $6 \times 4 = 24$

**09. Ans: (b)**

**Sol:**  $6^{10} \times 7^{17} \times 11^{27}$   
 $= (2 \times 3)^{10} \times 7^{17} \times 11^{27}$   
 $= 2^{10} \times 3^{10} \times 7^{17} \times 11^{27}$

Total prime number  $\rightarrow 2, 3, 7, 11$

Total number =  $10 + 10 + 17 + 27 = 64$

**10. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**11. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**12. Ans: (b)**

**Sol:**  $P = 2^3 \times 3^{10} \times 5$   
 $Q = 2^3 \times 3 \times 7$   
HCF of (P & Q) =  $2^3 \times 3$

**13. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**14. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**16. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**17. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**18. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**19. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**20. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

## 2.2 Ratio, Proportion & Variation

**01. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**02. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**03. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (a)**

**Sol:** Let the number of seats for Mathematics, Physics and Biology be  $5x$ ,  $7x$  and  $8x$  respectively.  
 Number of increased seats are (140% of  $5x$ ), (150% of  $7x$ ) and (175% of  $8x$ ).

$$\Rightarrow \left( \frac{140}{100} \times 5x \right), \left( \frac{150}{100} \times 7x \right) \text{ and } \left( \frac{175}{100} \times 8x \right)$$

$$\Rightarrow 7x, \frac{21x}{2} \text{ and } 14x$$

$$\therefore \text{The required ratio} = 7x : \frac{21x}{2} : 14x$$

$$\Rightarrow 14x : 21x : 28x$$

$$\Rightarrow 2 : 3 : 4$$

**05. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**06. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (180)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**09. Ans: (d)**

**Sol:** Let share of A, B and C be Rs.  $(3x+5)$ ,  $(4x+10)$  and  $(5x+15)$

$$\text{Then Total amount} = 3x + 5 + 4x + 10 + 5x + 15 = 12x + 30$$

According to the question

$$\Rightarrow 12x + 30 = 2430$$

$$\Rightarrow 12x = 2400$$

$$\Rightarrow x = 200$$

$$B's \text{ share} = 4x + 10 = 4 \times 200 + 10 = 810 \text{ Rs}$$

$$A's \text{ share} = 3x + 5 = 3 \times 200 + 5 = 605 \text{ Rs}$$

**10. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**11. Ans: 216000, 168000**

**Sol:** Let their salaries be  $9x$  and  $7x$

Let their expenditure be  $4y$  and  $3y$

According to the question,

$$9x - 4y = 2000 \rightarrow (1)$$

$$7x - 3y = 2000 \rightarrow (2)$$

By solving above (1), (2) we get

$$x = 2000, y = 4000$$

So,

$$\text{Salary of first person} = 9 \times 2000 = \text{Rs. } 18000$$

$$\text{Salary of second person} = 7 \times 2000 = \text{Rs. } 14000$$

$$\text{Annual Salary of first person} = 12 \times 18000 = \text{Rs. } 216000$$

$$\text{Annual Salary of second person} = 12 \times 14000 = \text{Rs. } 168000$$

**12. Ans: (b)**

**Sol:**  $10P$ ,  $20P$  and  $100P$  in the ratio of  $10 : 17 : 7$

$$K \left( \frac{10 \times 10 + 20 \times 17 + 100 \times 7}{100} \right) = 57$$

$$K = \frac{57 \times 100}{100 + 340 + 700} = 5$$

So total number of 20 coins he has

$$= 17k$$

$$= 17 \times 5$$

$$= 85 \text{ number}$$

**13. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**14. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (a)**

$$\text{Sol: } P + 3 = \frac{K}{\sqrt{q}}$$

$$-2 + 3 = \frac{k}{\sqrt{4}}$$

$$\therefore k = 2$$

$$p + 3 = \frac{2}{\sqrt{q}}$$

$$p + 3 = \frac{2}{\sqrt{9}}$$

$$p + 3 = \frac{2}{3}$$

$$p = \frac{2}{3} - 3 = -\frac{7}{3}$$

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

**16. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**17. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**18. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**19. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**20. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

### 2.3 Averages

**01. Ans: (a)**

**Sol:** Now each student awarded 4-grade marks.  
 So average also increased by 4  
 New average =  $69 + 4 = 73$

**02. Ans: (b)**

**Sol:** If each number is tripled  
 Then average in also tripled  
 Old average = 32  
 New average =  $3(32) = 96$

**03. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (b)**

**Sol:** In a family = 7 members

$$\frac{\text{sum}_7}{7} = 29$$

$$\text{Sum}_7 = 7(29) = 203$$

5 years ago, every person in family also back.

$$7(5) = 35 \text{ yrs less}$$

$$203 - 35 = 168$$

$$\text{So average of 6 members} = \frac{168}{6} = 28$$

( $\because$  5 years ago, boy was not there, so remaining 6 members)

**05. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**06. Ans: 495**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: 163**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**09. Ans: (c)**

**Sol:** 'M' observations average is 'n'  
 But there wrong observations, instead of correct observations.

$$\begin{aligned} \text{Then} \\ \text{Original average} &= \frac{Mn - (\text{wrong} - \text{correct})}{M} \\ &= \frac{14(71) - [(42 + 74) - (56 + 32)]}{14} = 69 \end{aligned}$$

**10. Ans: (d)**

$$\begin{aligned} \text{Sol: Concept Adding and removing} \\ &= \frac{\text{MP} - \text{removing} + \text{adding}}{M} = \text{Avg} \\ &= \frac{45[52] - 5[48] + 5[54]}{45} \\ &= 52.66 \quad \text{or} \quad 52\frac{2}{3} \end{aligned}$$

**11. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**12. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**13. Ans: (c)**

**Sol:**  $\frac{\text{sum}_{11}}{11} = 50 \Rightarrow \text{sum}_{11} = 550$

$$\frac{\text{sum}[\text{First 6 results}]}{6} = 49 \Rightarrow \text{sum}_6 = 6[49] = 294$$

$$\frac{\text{sum}[\text{Last 6 results}]}{6} = 52 \Rightarrow \text{sum}_6 \Rightarrow 6(52) = 312$$

Sixth result is =  $[\text{sum}_{(\text{first}-6)} + \text{sum}_{(\text{least } 6)}] - \text{sum}_{11}$

$$= 294 + 312 - 550$$

$$= 56$$

**14. Ans: (a)**

**Sol:**  $\frac{\text{sum}_{11}}{11} = x$

$$\frac{\text{sum}_9 + 26 + 29}{11} = x$$

Average of 9 persons

$$\frac{\text{sum}_9}{9} = x - 1$$

( $\because$  1 year less than average of whole team So  $\Rightarrow x - 1$ )

$$\text{Sum}_9 = 9x - 9$$

$$\frac{9x - 9 + 26 + 29}{11} = x$$

After simplify  $x = 23$

i.e. whole team average = 23 years

**15. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

## 2.4 Percentages

**01. Ans: (c)**

**Sol:** 23% = 92 marks

$$100\% \Rightarrow 400$$

$$[\because 22\% \rightarrow 52 \text{ (failed)}]$$

$$45\% \rightarrow 40 \text{ (passed)}$$

$$23\% \rightarrow 52 + 40$$

$$23\% = 62 \text{ marks}$$

$$\text{So } 100\% = ?$$

$$\frac{92 \times 100}{62} = 400]$$

**02. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**03. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**05. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**06. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (c)**

**Sol:**  $10,000 (1.1) (0.8) (1.3) = 11,440$

**09. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**10. Ans: (d)**

**Sol:**  $S + T = 95 \rightarrow (1)$

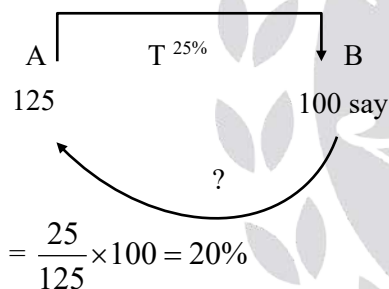
$1.23 + 0.9T = 90 \rightarrow (2)$

By solving (1) and (2)

$T = 80$

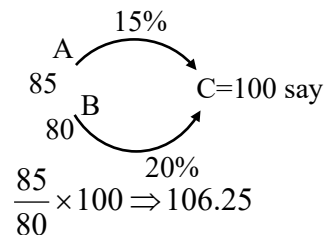
**11. Ans: (d)**

**Sol:**



**12. Ans: (b)**

**Sol:**



**13. Ans: (c)**

**Sol:** Let  $D = 100x$

$P = 100x \xrightarrow{-20\% \text{ less}} C = 80\% \xrightarrow{+25\% \text{ more}} B$

$= 100x \xrightarrow{-10\%} \underbrace{90x}_A \quad 90x = 360$

$x = 4$

Then  $D = 400$

% of D, in 300  $= \frac{400}{500} \times 100 = 80\%$

**14. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**16. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**17. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**18. Ans: (c)**

**Sol:**  $10\% \rightarrow 3 \text{ kg}$

$100\% \rightarrow 30 \text{ kg}$

$30 \text{ kg} = 225$

$\text{kg} = \frac{225}{30} \Rightarrow 7.5$

**19. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**20. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

## 2.5 Profit, Loss and Discount

**01. Ans: (d)**

**Sol:**  $30 - 10 - \frac{30(10)}{100} = 17\%$

**02. Ans: (a)**

**Sol:** In 500, 10% discount 450/-

$$125\% = 450$$

$$100\% = ? \Rightarrow \frac{450 \times 100}{125} \Rightarrow 360$$

**03. Ans: (b)**

**Sol:** CP (40 oranges) = SP(50)

$$\frac{CP}{8P} = \frac{50}{40} \quad (\because CP = 50, SP = 40)$$

$$\text{Loss \%} = \frac{10}{50} \times 100 = 20\%$$

**04. Ans: (a)**

**Sol:** SP of 12 note books – CP of 12 note books =  
SP of 4 note book

CP of 12 note books = SP of 8 notebooks = K

$$\text{CP of one note book} = \frac{k}{12}$$

$$\text{SP of one note book} = \frac{k}{8}$$

$$\text{Gain \%} = \frac{SP - CP}{CP} \times 100$$

$$= \frac{\frac{k}{8} - \frac{k}{12}}{\frac{k}{12}} \times 100$$

$$= \frac{4}{8} \times 100 = 50\%$$

**05. Ans: (c)**

**Sol:**  $\frac{\text{Diff}}{\text{Least}} \times 100$

$$\frac{200}{800} \times 100 = 25\%$$

**06. Ans: (d)**

**Sol:** CP of Laptop = 24000 + 6000 = 30000

SP of laptop = 45000

$$\text{Profit \%} = \frac{SP - CP}{CP} \times 100$$

$$= \frac{45000 - 30000}{30000} \times 100 = 50\%$$

**07. Ans: (c)**

**Sol:**  $SP_1 = 720$

$$SP_1 = 0.8 \text{ CP}$$

$$CP = \frac{SP_1}{0.8} = \frac{720}{0.8} = 900$$

$$SP_2 = 1.3 \text{ CP}$$

$$SP_2 = 1.3 \times 900 = 1170$$

So article must be sold at

Rs. 1170 to gain 30%

**08. Ans: (a)**

**Sol:**  $SP_1$  of article = 450

$$10\% \text{ loss} \rightarrow 0.9 \text{ CP} = 450$$

$$CP = 500$$

$$\text{If } SP_2 = 540$$

$$\text{Gain \%} = \frac{SP_2 - CP}{CP} \times 100$$



$$= \frac{540 - 500}{500} \times 100$$

$$= \frac{40}{500} \times 100 = 8\%$$

**09. Ans: (c)**

**Sol:** % SP

$$111\% = x / -$$

$$118\% = x + 175 / -$$

$$7\% = 175$$

$$100\% = ? \Rightarrow \frac{175 \times 100}{7} \Rightarrow 2500$$

**10. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**11. Ans: (b)**

**Sol:** SP<sub>1</sub> of manufacturer = 1.1 CP

SP<sub>2</sub> of wholesale dealer = 1.3 SP<sub>1</sub> = 1.3 × 1.1 × CP

SP<sub>3</sub> of retailer = 1.5 SP<sub>2</sub> = 1.5 × 1.3 × SP<sub>1</sub>

$$4290 = 1.5 \times 1.3 \times 1.1 \text{ CP}$$

$$\text{CP} = \frac{4290}{1.5 \times 1.3 \times 1.1}$$

$$\text{CP} = 2000$$

**12. Ans: (b)**

$$\text{Sol: } 252 = \text{CP} \times \frac{100 - 30}{100} \times \frac{100 - 20}{100} \times \frac{100 - 10}{100}$$

$$252 = \text{CP} \times \frac{70}{100} \times \frac{80}{100} \times \frac{90}{100}$$

$$\text{CP} = 500$$

**13. Ans: (d)**

**Sol:**  $\frac{x^2}{100}\%$  always loss

$$\frac{10^2}{100} = 1\% \text{ loss}$$

**14. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

## 2.6 Simple & Compound Interest

**01. Ans: (a)**

**Sol:** 10% → 1 year = 365 days

$$\downarrow \div 5$$

$$\downarrow \div 5$$

$$2\% \rightarrow 73 \text{ days}$$

Time = 2 years 73 days

$$I = (22\% + 2\%) P$$

$$I = 22\% P$$

$$I = 2200$$

**02. Ans: (a)**

**Sol:** 5% per annum for 3 years = 15% p

4% per annum for 4 years = 16% p

$$\text{Difference} = 1\% p = \frac{500}{100} = 5$$

**03. Ans: (b)**

$$\text{Sol: } S.I = \frac{PTR}{100}$$

$$\text{First 2 years 4\% pa} = \frac{P(2 \times 4)}{100} = \frac{8P}{100}$$

$$\text{Next 4 years 6\% pa} = \frac{P(6 \times 4)}{100} = \frac{24P}{100}$$

$$\text{Next (9-6) years 8\% pa} = \frac{P(3 \times 8)}{100} = \frac{24P}{100}$$

$$\frac{8P}{100} + \frac{24P}{100} + \frac{24P}{100} = 1120$$

$$P = 2000$$

**04. Ans: (d)**

$$\text{Sol: } 800 \frac{R\%Pa}{3\text{years}} 956$$

$$800 \frac{(R+4)\%pa}{3\text{years}} 956 + 12\%p$$

$$= 956 + \frac{12}{100}(800)$$

$$= 1052$$

**05. Ans: (a)**

$$\text{Sol: } P + 2I = 1260$$

$$P + 5I = 1350$$

$$3I = 90$$

$$I = 30$$

$$I = \frac{PTR}{100} \Rightarrow 30 = \frac{1200 \times 1 \times R}{100}$$

$$R = 2.5\% Pa$$

**06. Ans: (b)**

$$\text{Sol: } SI = \frac{PRT}{100}$$

$$2P = \frac{P \times R \times T}{100} \rightarrow R = \frac{200}{7}\%$$

$$26P = \frac{P \times R \times T}{100}$$

$$T = \frac{26 \times 100}{R} = \frac{26 \times 100}{200} \times 7 = 91 \text{ years}$$

So in 91 years the given sum becomes 27 times itself at given rate of interest.

**07. Ans: (b)**

$$\text{Sol: } P \rightarrow 10\% \rightarrow 10\% \rightarrow 10\% \rightarrow 10\% \rightarrow 10\% \rightarrow 10 \text{ lakhs}$$

$$P(110\%)^5 = 10,00,000$$

$$P = \frac{1000000}{(1.1)^5} = 620920.9$$

$$P = 6,21,000$$

**08. Ans: (a)**

$$\text{Sol: } P \times 105\% \times 110\% \times 120\% = 1386$$

$$P \left( \frac{105}{100} \right) \left( \frac{110}{100} \right) \times \left( \frac{120}{100} \right) = 1386$$

$$P = 1000$$

**09. Ans: (b)**

$$\text{Sol: } R = 10\% \rightarrow 1 \text{ year} \rightarrow \downarrow \div 4$$

$$2.5\% \rightarrow 3 \text{ months}$$

$$T = 2 \text{ years } 3 \text{ months}$$

$$CI = 4000 (110\%)^2 (102.5\%) - 4000$$

$$CI = 961$$

**10. Ans: (a)**

**Sol:**

$$\begin{array}{lcl} P & \text{---} & 0 \text{ yrs} \\ \times 2 & & \updownarrow 3 \text{ yrs} \end{array}$$

$$\begin{array}{lcl} 2200 & \text{---} & 3 \text{ yrs} \\ \times 2 & & \updownarrow 3 \text{ yrs} \end{array}$$

$$\begin{array}{lcl} 4400 & \text{---} & 6 \text{ yrs} \\ & & P = 1100 \end{array}$$

11. Ans: (d)

Sol:  $12500 \frac{1^{\text{st}} \text{ year}}{20\%}$

12500
+2500
15000
-2000
13000

$13000 \frac{2^{\text{nd}} \text{ year}}{20\%}$

13000
+2600
-2000
13600

$13600 \frac{3^{\text{rd}} \text{ year}}{20\%}$

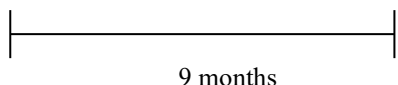
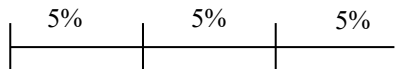
13600
+2720
-2000
14320

12. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet.

13. Ans: (c)

Sol:  $R = 2\% \rightarrow 1 \text{ year (12 months)}$   
 $\div 4 \downarrow \quad \quad \downarrow \div 4$   
 $5\% \rightarrow 3 \text{ months}$



$CI = 16000 (105\%)^3 - 16000 = 2522$   
 $CI = 2522$

14. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet.

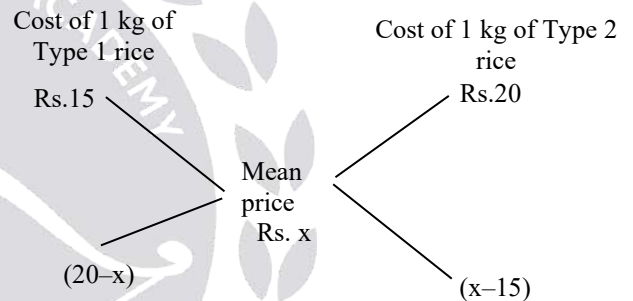
15. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet.

## 2.7 Mixture and Allegation

01. Ans: (a)

Sol:



by rule of allegation,

$$\frac{20 - x}{x - 15} = \frac{2}{3}$$

$$x = 18$$

02. Ans: (d)

Sol: Please refer ACE General Aptitude PQS booklet.

03. Ans: (a)

Sol: Selling price ( $SP_1$ ) of first car  $\Rightarrow SP_1 = 0.85$   
 $CP_1$

Selling price ( $SP_2$ ) of 2<sup>nd</sup> car  $\Rightarrow SP_2 = 1.12$   
 $CP_2$

$$\frac{CP_1}{CP_2} = \frac{1}{2} \text{ (given)}$$

Let  $CP_1 = 100$  &  $CP_2 = 200$

$$SP_1 = 0.85 CP_1 = 0.85 \times 100 = 85$$

$$SP_2 = 1.12 \times 200 = 224$$

$$CP \text{ of both cars} = CP_1 + CP_2 = 100 + 200 = 300$$

$$SP \text{ of both cars} = SP_1 + SP_2 = 85 + 224 = 309$$

% Profit in overall transaction

$$= \frac{SP - CP}{CP} \times 100$$

$$= \frac{309 - 300}{300} \times 100 = 3\%$$

**04. Ans: (d)**

**Sol:** Sunday visitors = 510

Other day visitors = 240

30 day start with Sunday consists of 5 Sunday  
+ 25 other days

The average numbers of visitors per day

$$= \frac{510 \times 5 + 240 \times 25}{5 + 25}$$

$$= \frac{2550 + 6000}{30} = \frac{8550}{30} = 285$$

**05. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**06. Ans: (c)**

**Sol:** Let the rate of the second quantity be Rs. X per kg

By the rule of allegation we have:

C.P. of 1 kg  
wheat of 1<sup>st</sup> kind

930 p

C.P. of 1 kg  
wheat of 2<sup>nd</sup> kind  
(100 x)p

Mean price  
1000p

$$\frac{(100x - 1000)p}{100x - 1000/70} = 8/7$$

So

$$700x - 7000 = 560$$

$$700x = 7560$$

$$x = \text{Rs. } 10.80$$

**07. Ans: (c)**

**Sol:** Since first and second varieties are mixed in equal proportions.

$$\text{So, their average price} = \text{Rs. } \left( \frac{126 + 135}{2} \right) = \text{Rs. } 130.50$$

So, the mixture is formed by mixing two varieties, one at Rs. 130.50 per kg and the other at say, Rs x per kg in the ratio 2 : 2, i.e., 1 : 1. We have to find x.

By the rule of allegation, we have:

C.P. of 1 kg  
wheat of 1<sup>st</sup> kind

Rs. 130.50

C.P. of 1 kg  
wheat of 2<sup>nd</sup> kind

Rs. x

Mean price  
Rs. 153

$$(x - 153)$$

$$22.50$$

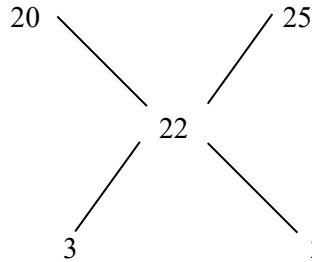
$$\therefore \frac{x - 153}{22.50} = 1$$

$$\Rightarrow x - 153 = 22.50$$

$$\Rightarrow x = 175.50$$

**08. Ans: (d)**

**Sol:**



The required ratio is 3:2

**09. Ans: 1:5**

**Sol:** Mixture = 70

$$SP = 1.2 CP$$

$$CP = \frac{70}{1.2} = \frac{700}{12}$$

$$CP_1 = 50$$

$$CP_2 = 60$$

$$CP = \frac{700}{12}$$

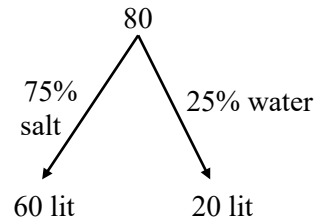
$$60 - \frac{700}{12} = \frac{20}{12}$$

$$\frac{700}{12} - 50 = \frac{100}{12}$$

$$\text{The ratio of mixture} = \frac{20}{12} \times \frac{12}{100} = \frac{1}{5} = 1:5$$

**10. Ans: (a)**

**Sol:**



Let we add k amount of water to the given solution to decrease the % of salt to 40%

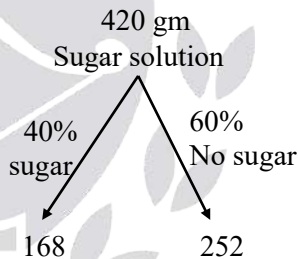
$$\frac{60}{60 + 20 + k} = \frac{40}{100}$$

$$60 = 24 + 8 + 0.4k$$

$$k = 70 \text{ lit}$$

**11. Ans: (A)**

**Sol:**



Let 'k' amount of sugar we add in the given sugar solution so that sugar concentration becomes 65%

$$\frac{65}{100} = \frac{168 + k}{420 + k}$$

$$0.65 (420 + k) = 168 + k$$

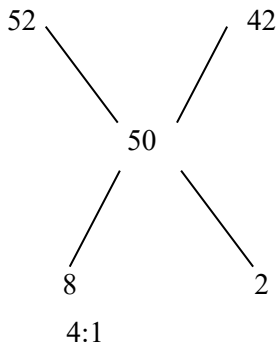
$$K = 300 \text{ gm}$$

**12. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**13. Ans: (20)**

**Sol:** Average male salary = 52 k  
Average female salary = 42 k  
Mean salary of all employees = 50 k



$$\% \text{ of female employee} = \frac{1}{4+1} \times 100 = 20\%$$

**14. Ans: (a)**

**Sol:** Let 50 kg of pulse worth is Rs. 50.  
Overall gain = 7% than overall selling price  
=  $1.07 \times 50 = 53.5$   
Let x kg rice (x Rs) sold at 10%  
Profit & (50 - x) kg rice ((50-x) Rs) sold at  
loss of 5%  
 $1.1x + (50 - x) 0.95 = 53.5$   
 $x = 40$   
So we can say that 40 kg rice sold at 10%  
profit & 10 kg rice sold at loss of 5%.

**15. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS  
booklet.

**16. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS  
booklet.

**17. Ans: (a)**

**Sol:**  $P_1 = 12000, R_1 = 10\%, T$

$P_2, R_2 = 20\%, T$

$P_1 + P_2, R = 14\%, T$

$$\frac{P_1 \times R_1 \times T}{100} + \frac{P_2 \times R_2 \times T}{100}$$

$$= \frac{(P_1 + P_2) \times 14 \times T}{100}$$

$$12000 \times 10 + P_2 \times 20 = (12000 + P_2) 14$$

$$120000 + 20 P_2 = 168000 + 14 P_2$$

$$6P_2 = 48000$$

$$P_2 = 8000$$

$$\text{Total amount invested} = P_1 + P_2 = 12000 + 9000$$

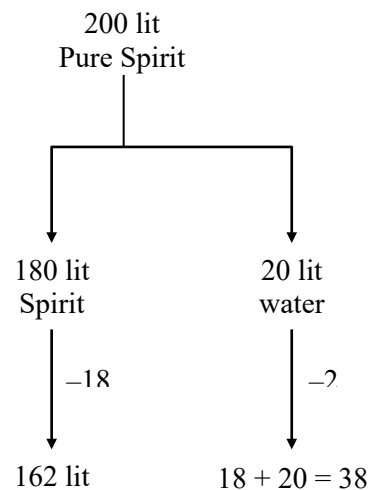
$$= 20000$$

**18. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS  
booklet.

**19. Ans: (a)**

**Sol:**



Concentration of spirit in the resultant solution

$$= \frac{162}{162 + 38} \times 100 = 81\%$$

20. Ans: (a)

**Sol:** Let the quantity of the wine in the cask originally be  $x$  litres

The, quantity of wine left in cask after 4

$$\text{operations} = \left[ x \left( 1 - \frac{8}{x} \right)^4 \right] \text{ litres}$$

$$\therefore \left[ \frac{x \left( 1 - \frac{8}{x} \right)^4}{x} \right] = \frac{16}{81}$$

$$\Rightarrow \left[ 1 - \frac{8}{x} \right]^4 = \left( \frac{2}{3} \right)^4$$

$$\Rightarrow x = 24$$

### 2.8 Time and Work, Pipes and Cisterns

01. Ans: (a)

**Sol:** A's one day work =  $\frac{1}{36}$

B's one day work =  $\frac{1}{12}$

(A+B)'s one day work =  $\frac{1}{36} + \frac{1}{12} = \frac{4}{36} = \frac{1}{9}$

So A & B together can do given work in 9 days.

02. Ans: (c)

**Sol:** (A + B)'s one day work =  $\frac{1}{16}$

A's one day work =  $\frac{1}{80}$

$$\begin{aligned} \text{B's one day work} &= \frac{1}{16} - \frac{1}{80} \\ &= \frac{4}{80} = \frac{1}{20} \end{aligned}$$

So B alone complete the given work in 20 days.

03. Ans: (c)

**Sol:** Please refer ACE General Aptitude PQS booklet.

04. Ans: (b)

**Sol:** A man's one day work =  $\frac{1}{2}$

A woman's one day work =  $\frac{1}{15}$

A boy's one day work =  $\frac{1}{60}$

Let  $x$  boys assist to 2 men & 3 women to compete the work in 2 days.

$$\frac{x}{60} + \frac{2}{12} + \frac{3}{15} = \frac{1}{2}$$

$$\frac{x}{60} + \frac{1}{6} + \frac{1}{5} = \frac{1}{2}$$

$$\frac{x}{60} + \frac{11}{30} = \frac{1}{2}$$

$$\frac{x}{60} = \frac{4}{30} \rightarrow x = 8 \text{ days}$$

05. Ans: (d)

**Sol:** A can complete work in 60 days (given)

B is 80% efficient as efficient as A so if A takes six days to complete work then for same work B takes  $10 \times$  days



So B alone can do same work which is done

$$\text{by A in 60 days} = 60 \times \frac{10x}{8x} = 75 \text{ days}$$

**06. Ans: (a)**

**Sol:** B is 4 time as efficient as A (given) Let A takes 40 k days to complete the work then for same work B takes 10 k day.

$$40k - 10k = 60 \text{ (gives)}$$

$$k = 2$$

So A takes 40 k = 80 days to complete the work B takes 10 = 20 type to complete the work

$$\text{So } A + B = \frac{1}{80} + \frac{1}{20} = \frac{5}{80} = \frac{1}{16}$$

So both A & B together can complete the given work in 16 days.

**07. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (b)**

**Sol:**  $A \rightarrow \frac{1}{3}(w) = 5 \Rightarrow 15 \text{ days [for complete work]}$

$B \rightarrow \frac{2x}{5}(w) = 10 \Rightarrow 25 \text{ days for complete work}$

$$A \text{ and } B = \frac{\text{product}}{\text{sum}} = \frac{15[25]}{40} = \frac{75}{8} \Rightarrow 9\frac{3}{8}$$

**09. Ans: (d)**

**Sol:**  $P \Rightarrow 12(8) = 96 \text{ hrs}$

$$Q \Rightarrow 8(6) = 48 \text{ hrs}$$

$$P \text{ \& } Q \text{ Together} = \frac{96(48)}{144} \Rightarrow 32 \text{ hrs}$$

But they work 8 hrs per day

$$\frac{32}{8} = 4 \text{ days}$$

**10. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**11. Ans: (a)**

$$\text{Sol: } 2 \left[ \frac{\text{L.C.M of (given)}}{\frac{\text{L.C.M}}{x} + \frac{\text{L.C.M}}{y} + \frac{\text{L.C.M}}{z}} \right]$$

$$2 \left[ \frac{60}{\frac{60}{12} + \frac{60}{15} + \frac{60}{20}} \right] \Rightarrow 2 \left[ \frac{60}{5+4+3} \right] = 2[5] = 10$$

days

**12. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**13. Ans: (a)**

$$\text{Sol: } A's \text{ one day work} = \frac{1}{30}$$

$$B's \text{ one day work} = \frac{1}{40}$$

$$12 \times (A + B) + kA = 1$$

$$12 \left( \frac{1}{30} + \frac{1}{40} \right) + \frac{k}{30} = 1$$

$$\frac{k}{30} = 1 - 12 \left( \frac{70}{1200} \right)$$

$$= 1 - \frac{7}{10}$$

$$\frac{k}{30} = \frac{3}{10}$$

$$k = 9$$

So in 9 more days can complete the work after B leaved.

**14. Ans: (d)**

$$\text{Sol: } 2 \left[ \frac{1}{8} + \frac{1}{10} + \frac{1}{12} \right] + x \left[ \frac{1}{10} + \frac{1}{12} \right] = 1$$

$$\Rightarrow \frac{2[15 + 12 + 10] + x[12 + 10]}{120} = 1$$

$$22x = 120 - 74 = 46$$

$$x = \frac{46}{22} = 2 \text{ hrs (approximate)}$$

$$9 \text{ am} + 2 \text{ hr} + 2 \text{ hr} = 1 \text{ pm}$$

**15. Ans: (a)**

$$\text{Sol: A's one day work} = \frac{1}{10}$$

$$\text{B's one day work} = \frac{1}{12}$$

$$\text{C's one day work} = \frac{1}{15}$$

$$\text{Let (A + B + C)'s one day work} = \frac{1}{x}$$

$$\frac{x-5}{10} + \frac{x-3}{12} + \frac{x}{15} = 1$$

$$x \left( \frac{1}{10} + \frac{1}{12} + \frac{1}{15} \right) = 1 + \frac{1}{2} + \frac{1}{4}$$

$$\frac{x}{4} = \frac{7}{4} \rightarrow x = 7$$

So the total work will completed in 7 days.

**16. Ans: (b)**

**Sol:** Equation Method:

$$3 \left[ \frac{1}{12} \right] + x \left[ \frac{1}{12} + \frac{1}{15} \right] + 3 \left[ \frac{1}{15} + \frac{1}{30} \right] = 1$$

$$\frac{15 + x[5 + 4] + 3[4 + 2]}{60} = 1$$

$$\Rightarrow 9x = 60 - 33$$

$$x = \frac{27}{9} = 3$$

So total days

$$\Rightarrow 3 + 3 + 3 = 9$$

**17. Ans: (b)**

$$\text{Sol: } \frac{1}{9} + \frac{1}{12} = [A + B] = 2 \text{ days}$$

$$2 \text{ days} = \frac{4 + 3}{36}$$

$$2 \text{ days} = \frac{7}{36}$$

$$10 \text{ days} = \frac{35}{36}$$

$$\text{Remaining Work} = \frac{1}{36}$$

11<sup>th</sup> day start with A

$$\frac{9}{1} = \frac{?}{36} \quad \left[ \because \frac{D_1}{W_1} = \frac{D_2}{W_2} \right]$$

$$9 \times \frac{1}{36} = \frac{1}{4}$$

So 10 days +  $\frac{1}{4} = 10 \frac{1}{4}$  days

**18. Ans: (a)**

**Sol:**  $\frac{m_1 D_1 H_1}{W_1} = \frac{m_2 D_2 H_2}{W_2}$

$$24 \times 30 = (24 + k) \times 18$$

$$24 + k = \frac{24 \times 30}{18}$$

$$k = 40$$

So 40 more men needed to finish work in 18 days.

**19. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**20. Ans: (a)**

**Sol:**  $\frac{m_1 D_1 H_1}{W_1} = \frac{m_2 D_2 H_2}{W_2}$

$$m_1, D_1 = 18 \text{ (given)}$$

$$m_2 = m_1 + 17, D_2 = 18 - 6 = 12$$

$$m_1 \times 18 = (m_1 + 17) \times 12$$

$$6 m_1 = 17 \times 12$$

$$m_1 = 34$$

The initially total 34 number of men present.

**21. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**22. Ans: (b)**

**Sol:**  $\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$

$$60 \times 250 = (60 \times 200) + (60 + k) \times 40$$

$$k = 15$$

So 15 additional men must be employed to finish the work on time.

**23. Ans: (a)**

**Sol:** Two machine, 12 hr, 8 days, 9000 tones, 90% effi

Three machine,  $H_2$ , 6days, 12000 tones, 80% effi

$$\frac{2 \times 12 \times 8}{9000} \times 0.9 = \frac{3 \times H_2 \times 6}{12000} \times 0.8$$

$$H_2 = \frac{2 \times 12 \times 8 \times 0.9}{9000} \times \frac{12000}{3 \times 6 \times 0.8}$$

$H_2 = 16$  hrs per day to complete the work.

**24. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**25. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**26. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**27. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**28. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**29. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**30. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

## 2.9 Time, Speed and Distance

**01. Ans: (c)**

**Sol:**  $5 + 2 = 7$  hrs

**02. Ans: (a)**

**Sol:** A  $\frac{D = ST}{D = \frac{5}{4}(S)(T - 6)}$  B

$$ST = \frac{5}{4}(S)(T - 6)$$

$$4T = 5(T - 6)$$

$$T = 30$$

**03. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (c)**

**Sol:**  $D = 20(T)$  [  $\because D = \text{speed} \times \text{Time}$  ]

$$D = 30 \left( T - 1\frac{1}{2} - 2\frac{1}{2} \right)$$

$$20T = 30(T - 4)$$

$$2T = 3T - 12$$

$$T = 12$$

$$\text{So distance} = 20(12) = 240 \text{ km}$$

**05. Ans: (b)**

**Sol:** Average speed =  $\frac{\text{Total distance}}{\text{Total Time}}$

$$= \frac{200 + 300 + 500}{3 + 4 + 3}$$

$$= 100 \text{ km/h}$$

**06. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (c)**

**Sol:**

D	D	D
---	---	---

Average speed

$$= \frac{\text{Total Distance}}{\text{Total Time}} = \frac{3D}{\frac{D}{80} + \frac{D}{60} + \frac{D}{30}}$$

$$\Rightarrow \frac{3}{\frac{3}{80} + \frac{3}{60} + \frac{3}{30}} = \frac{3(240)}{15} = 48 \text{ km/h}$$

**08. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**09. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**10. Ans: (b)**

**Sol:** 60 km → 60 min

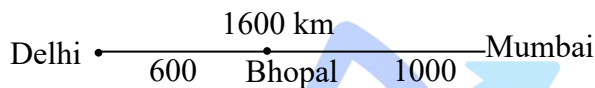
48 km → 60 min

12 km → ?

$$\frac{60 \times 12}{60} = 12 \text{ min}$$

**11. Ans: (a)**

**Sol:**



$$\frac{S_1}{S_2} = \frac{\frac{600}{T}}{\frac{1000}{T}}$$

$$\frac{S_1}{S_2} = \frac{600}{1000} \Rightarrow \frac{3}{5} \text{ Travelling time equal}$$

$$\therefore S_1 : S_2 = 3:5$$

**12. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**13. Ans: (b)**

**Sol:** In 1 hr, one car cover 10 km more than other.  
So at the time of meeting one car cover 120 km more than other car.

1hr → 10 km

? → - 120 km

$$\frac{120 \times 1}{10} = 12 \text{ hrs}$$

First car ⇒ 12 × 50 = 600

2<sup>nd</sup> car ⇒ 12 × 60 = 720

Total covered distance = 1320

**14. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**16. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**17. Ans: 560**

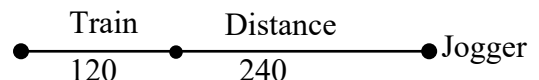
**Sol:** Please refer ACE General Aptitude PQS booklet.

**18. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**19. Ans: (c)**

**Sol:**



$$= \frac{T.D}{R.S} = \frac{\text{total distance}}{\text{relative speed}}$$

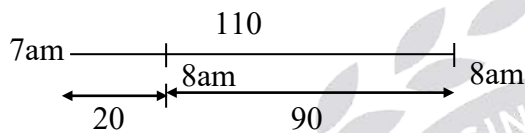
$$\Rightarrow \frac{120 + 240}{(45 - 9) \times \frac{5}{18}}$$

$$= \frac{360(18)}{36 \times 5}$$

$$\Rightarrow 36 \text{ sec}$$

20. Ans: (b)

Sol:



Compare with 8 am

$$= \frac{T.D}{R.S} = \frac{90}{20 + 25} = 2 \text{ hrs}$$

$$8 \text{ am} + 2 \text{ hrs} = 10 \text{ am}$$

21. Ans: (c)

$$\text{Sol: Time} = \frac{T.D}{R.S} \Rightarrow \frac{30 \text{ km}}{75 - 60} = 2 \text{ hrs}$$

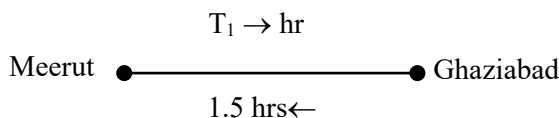
$$\text{Distance} = 75 \text{ km/hr} \times 2 \text{ hr} = 150 \text{ km}$$

(after started the first train 2<sup>nd</sup> train start 75 km/h. and also gap between at the time of 2<sup>nd</sup> train start 30 kms.

$$\Rightarrow T_2 \frac{\left( \text{Travelled} \right)}{30} T_1$$

22. Ans: (a)

Sol:



$$\text{Train (speed}_1) = \frac{D}{1}$$

$$\text{Train (speed}_2) = \frac{D}{1.5}$$

$$\text{Total distance (D)} = S_1 T + S_2 T$$

$$D = S_1 T + \frac{D}{1.5} T \text{ (they travel same 'T' hrs}$$

than they are meet each other)

$$D = DT \left[ 1 + \frac{1}{3} \right]$$

$$1 = T \left[ \frac{5}{3} \right]$$

$$T = \frac{3}{5} \text{ hr} = \frac{3}{5} \times 60 = 36 \text{ min}$$

$$= 4 \text{ hr and } 36 \text{ min}$$

23. Ans: (c)

$$\text{Sol: Down Stream Speed} = \frac{32}{6} \left( \text{i.e., } x + y = \frac{32}{6} \right)$$

$$\text{Up Stream Speed} = \frac{14}{6} \left( \text{i.e., } x - y = \frac{14}{6} \right)$$

$$\text{Stream speed (y)} = \frac{1}{2} \left[ \frac{32}{6} - \frac{14}{6} \right] = \frac{1}{2} \left[ \frac{18}{6} \right]$$

$$= 1 \frac{1}{2}$$

24. Ans: (a)

Sol: Distance

$$= \frac{T(x^2 - y^2)}{2x} = \frac{10(20^2 - 10^2)}{2(20)} = 75 \text{ km}$$

25. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet.

## 2.10 Permutation & Combinations

01. Ans: (b)

Sol:  $nC_r = nC_{n-r}$

Here  $r = 7$

$$n - r = 5$$

$$\Rightarrow n = 12$$

02. Ans: (c)

Sol:  $nC_2 = 66$

$$\Rightarrow \frac{n(n-1)}{2} = 66 \Rightarrow n(n-1) = 132$$

$$n^2 - n - 132 = 0$$

$$(n-12)(n+11) = 0$$

$$n = 12$$

03. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet.

04. Ans: (d)

Sol: Number of straight lines =  $9C_2 + (7 \times 9) + 1$

$$= 36 + 63 + 1 = 100$$

Number of triangles

$$= C_2^7 \times C_1^9 + C_1^7 \times C_2^9 + C_3^9$$

$$= \frac{7!}{5!2!} \times 9 + 7 \times \frac{9!}{7!2!} + \frac{9!}{6!3!}$$

$$= \frac{7 \times 6 \times 9}{2} + \frac{7 \times 9 \times 8}{2} + \frac{9 \times 8 \times 7}{6}$$

$$= 525$$

05. Ans: (35)

Sol: If a polygon has  $n$  sides the number of

$$\text{diagonal's} = \frac{n(n-1)}{2} - n$$

$$\begin{aligned} \text{No. of diagonals} &= \frac{10(10-1)}{2} - 10 \\ &= 45 - 10 = 35 \end{aligned}$$

06. Ans: (d)

Sol: Please refer ACE General Aptitude PQS booklet.

07. Ans: (c)

$$\text{Sol: } C_{10}^{13} = \frac{13!}{10! \times (13-10)!}$$

$$= \frac{13!}{10! \times 3!}$$

$$= \frac{13 \times 12 \times 11}{3 \times 2} = 286$$

08. Ans: (i) 18, (ii) 80, (iii) 360, (iv) 153, (v) 696

Sol: Boys = 10, Girls = 8

i. One student selected =  $C_1^{18} = 18$  ways

ii. One boy & one girl student selected

$$= C_1^{10} \times C_1^8 = 10 \times 8 = 80 \text{ ways}$$

iii. Two boys & one girl selected

$$= C_2^{10} \times C_1^8 = \frac{10!}{8!2!} \times 8 = 360 \text{ ways} =$$

iv. Two student selected

$$= C_2^{18} = \frac{18!}{16!2!} = 153$$

v. At least one girl while selecting 3 students

$$= C_1^8 \times C_2^{10} + C_2^8 \times C_1^{10} + C_3^8 \times C_0^{10}$$

$$= 8 \times \frac{10!}{8! \times 2!} + \frac{8!}{6! \times 2!} \times 10 + \frac{8!}{5! \times 3!} \times 1$$

$$= (40 \times 9) + 280 + 56$$

$$= 696 \text{ ways}$$

**09. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**10. Ans: (b)**

**Sol:** -----

Starting → Boys

Starting → Girls

So that  $\Rightarrow 5! \times 5! \times 2 \text{ ways}$

**11. Ans: (a)**

**Sol:**

↓ B ↓ B ↓ B ↓ B ↓ B ↓ B ↓  
G<sub>1</sub> G<sub>2</sub> G<sub>3</sub> G<sub>4</sub> G<sub>5</sub> G<sub>6</sub> G<sub>7</sub>

$$6! {}^7C_4 \cdot 4!$$

$$= 6! {}^7P_4$$

**12. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**13. Ans: 60480**

**Sol:**

H E L I C O P T E R

H L C P T R

Consonant

E I O E

Vowels

The number of words can be made using all the letters of the word and by taking vowels

$$\text{come together} = \frac{7! \times 4!}{2}$$

$$= 60480$$

**14. Ans: (c)**

**Sol:** The word 'LAUNCHER' has 8 different Letters

$$\begin{array}{ccc} \text{---} & \text{---} & \text{---} \\ \downarrow & \downarrow & \downarrow \\ 8 \text{ ways} & 8 \text{ ways} & 8 \text{ ways} \end{array} = 8 \times 8 \times 8 = 8^3$$

$\therefore$  (Repetition of Letters is allowed)

**15. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**16. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**17. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**18. Ans: (a)**

**Sol:** by using circular permutation  $= \frac{(n-1)!}{2}$

$$= \frac{(11-1)!}{2} = \frac{10!}{2}$$



19. Ans: (i) 48 (ii) 100

Sol: (i) Hundred's place can be filled in 4 ways.

Ten's place can be filled in 4 ways.

Unit's place can be filled in 3 ways.

Required number =  $4 \times 4 \times 3 = 48$

(ii) Similarly, the required number

=  $4 \times 5 \times 5 = 100$

20. Ans: (i) 240 (ii) 120 (iii) 60 (iv) 180

Sol: (a) 3, 4, 5, 6, 7, 8

Digits available	Position	Arrangements
5	3	3 - - - ${}^5P_3$
5	3	- 3 - - ${}^5P_3$
5	3	- - 3 - ${}^5P_3$
5	3	- - - 3 ${}^5P_3$

Number of 4 digit numbers with 3 =  $4 \times {}^5P_3$   
= 240

(b) Digits available – 5(4, 5, 6, 7, 8)

Number of 4 digit number without  
3 =  ${}^5P_4 = 120$  ways

(c) 3 \_ \_ \_

Number of digits available = 5

Number of position available = 3

Number of 4 digit number start with  
'3' =  ${}^5P_3 = 60$  ways

(d) 4 digit numbers contain '3' but not at  
first

= 4 digit number with '3' – 4 digit  
number with '3' at

= solution (a) – solution (c)

=  $4 \times {}^5P_3 = 180$

21. Ans: (d)

Sol:

$${}^5P_4 \times 2 \times 3 \quad \begin{array}{c} \overbrace{\quad \quad \quad} \\ \uparrow \quad \uparrow \\ \text{even} \quad 2/4/6 \\ \text{even} \end{array}$$

$$= 120 \times 6 = 720$$

22. Ans: (c)

Sol:

$$\underbrace{\quad \quad \quad}_{{}^4P_3} \quad \underbrace{\quad \quad \quad}_{\div 4}$$

8 ways (12, 16, 24, 32, 36, 52, 56, 64)

$$= 24 \times 8 = 192$$

23. Ans: (c)

Sol: Total number of three digit numbers possible  
are  $9 \times 10 \times 10 = 900$

Number of possibilities for digit '1' to be  
immediate right of digit '2' are

2	1	x
---	---	---

$$1 \times 1 \times 10 = 10$$

x	2	1
---	---	---

$$9 \times 1 \times 1 = 9$$


---


$$= 19$$

So, number of possibilities such that the digit  
'1' is never to the immediate right of '2' are  
 $900 - 19 = 881$

24. Ans: (34)

Sol: 1<sup>st</sup> digit chosen = 4 ways

2<sup>nd</sup> digit number =  $C_1^4 \times C_1^3 = 12$

Digit 3 chosen (without 5) =  $C_1^3 \times C_1^3 \times C_1^2 = 18$

Total ways =  $18 + 12 + 4 = 34$

**25. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**26. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**27. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**28. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**29. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**30. Ans: (c)**

$$\text{Sol: } P(\text{dice roll} = \text{Green}) = \frac{4}{6} = \frac{2}{3} = P_g$$

$$P(\text{dice roll} = \text{Red}) = \frac{2}{6} = \frac{1}{3} = P_r$$

$$\therefore P_g = \frac{2}{3} \quad P_r = \frac{1}{3}$$

$$(a) P(G = 3, R = 4) = {}^7C_4 \left(\frac{2}{3}\right)^3 \left(\frac{1}{3}\right)^4 = \frac{280}{3^7}$$

$$(b) P(G = 4, R = 3) = {}^7C_3 \left(\frac{2}{3}\right)^4 \left(\frac{1}{3}\right)^3 = \frac{560}{3^7}$$

$$(c) P(G = 5, R = 2) = {}^7C_5 \left(\frac{2}{3}\right)^5 \left(\frac{1}{3}\right)^2 = \frac{672}{3^7}$$

$$(d) P(G = 6, R = 1) = {}^7C_6 \left(\frac{2}{3}\right)^6 \left(\frac{1}{3}\right)^1 = \frac{448}{3^7}$$

From the above analysis the most likely outcome is the one with highest probability which in this case is option (c) i.e. **Five green and Two red balls.**

## 2.11 Mensuration & Geometry

**01. Ans: 8**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**02. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**03. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**05. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**06. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**09. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**10. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

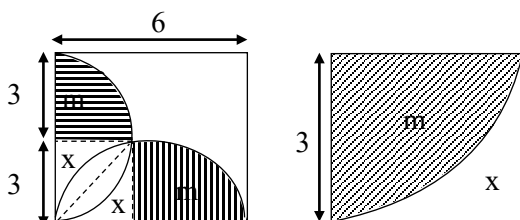
**11. Ans: (8)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**12. Ans: (18)**

$$\text{Sol: } m = \frac{1}{4} \pi r^2 = \frac{1}{4} \pi \times (3)^2 = \frac{9\pi}{4} = 2.25\pi$$

$$m + x = 3 \times 3 = 9$$



The shaded area show in question figure

$$= (m + x) \times 2$$

$$= 9 \times 2 = 18$$

**13. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**14. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**16. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**17. Ans: (d)**

**Sol:** Let side of square is x area of circle

$$d = x^2 \rightarrow x = \sqrt{d}$$

So diameter of circle

$$= \sqrt{(\sqrt{d})^2 + (\sqrt{d})^2} = \sqrt{2d}$$

$$\text{Area of circle} = \frac{\pi(\text{diameter})^2}{4}$$

$$= \frac{\pi}{4} \times (\sqrt{2d})^2$$

$$= \frac{\pi}{4} \times 2d$$

$$= \frac{\pi d}{2}$$

**18. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**19. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**20. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**21. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**22. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**23. Ans: (d)**

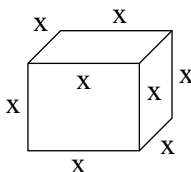
**Sol:** Please refer ACE General Aptitude PQS booklet.

**24. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

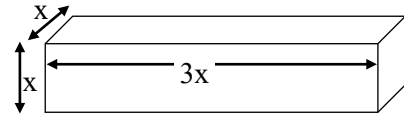
**25. Ans: (a)**

**Sol:** Let cube of side is  $x$



$$\text{area} = 2(x^2 + x^2 + x^2) = 6x^2$$

$$\text{Sum of surface of 3 cubes} = 3 \times 6x^2 = 18x^2$$



Total surface area of new cuboid

$$= 2 \times (x \times 3x + x^2 + x \times 3x)$$

$$= 2(3x^2 + x^2 + 3x^2) = 14x^2$$

Total SA of new cuboid

Sum of SA of 3 cubes

$$= \frac{14x^2}{18x^2} = \frac{7}{9} = 7:9$$

**26. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**27. Ans: (58)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**28. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**29. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**30. Ans:  $25\pi/3$**

**Sol:** Please refer ACE General Aptitude PQS booklet.

### 2.12 Logarithm

**01. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**02. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**03. Ans: (d)**

**Sol:**  $\log_2 [\log_3 (\log_2 x)] = 1$

$$\log_3 (\log_2 x) = 2^1 = 2$$

$$\log_2 x = 3^2 = 9$$

$$x = 2^9 = 512$$

Option (d) is the correct answer

**04. Ans: (b)**

**Sol:**  $\therefore \frac{1}{\log_x y} = \log_y x$

$$\begin{aligned} \frac{1}{\log_{c+a} b} + \frac{1}{\log_{c-a} b} &= \log_b^{c+a} + \log_b^{c-a} \\ &= \log_b (c^2 - a^2) \\ &= \log_b^{b^2} = 2. \end{aligned}$$

**05. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**06. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**09. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**10. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

### 2.13 Progressions

**01. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**02. Ans: (c)**

**Sol:**  $a_n = a + (n - 1)d$   
 $-54 = 11 + (n - 1)(-5)$   
 $n = 14$

**03. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (c)**

**Sol:**  $t_{12} = a + 11d = 22 \rightarrow (1)$

Let sum of 23 terms =  $S_{23} = \frac{n}{2}(a + \ell)$

$$= \frac{23}{2}(a + a + (n-1)d)$$

$$= \frac{23}{2}(a + a + 22d)$$

$$= \frac{23}{2}(2(a + 11d))$$

$$= \frac{23}{2}(2)(22) \text{ from (1)}$$

$$= 506$$

**05. Ans: (a)**

**Sol:**  $11(a + 10d) = 16(a + 15d)$

$$5a + 130d = 0 \quad \therefore (a + 26d = 0)$$

$$27^{\text{th}} \text{ term} = a + 26d$$

$$a + 26d = 0$$

$$\text{Then } 27^{\text{th}} \text{ term} = 0$$

**06. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**09. Ans: 144**

**Sol:**  $3(24 + 12 + 6 + 3 + \dots)$

$$3 \left( \frac{24}{1 - \frac{1}{2}} \right) = 3(24)2 = 144$$

$$\therefore S_{\infty} = \frac{a}{1-r}$$

**10. Ans: (d)**

**Sol:**  $B = 2^{54} + 2^{53} + \dots + 2^0$

$$a = 1$$

$$r = 2$$

$$n = 55$$

$$S_n = \frac{1(2^{55} - 1)}{1} = 2^{55} - 1$$

$$\text{But } A \Rightarrow 2^{55}$$

A is larger than 'B' by 1

**11. Ans: 3960**

**Sol:**  $= 360 + 2(300 + 250 + \dots + \dots + 2)$

$$= 360 + 2 \left( \frac{300}{1 - \frac{5}{6}} \right)$$

$$[\because 36 \times \frac{5}{6} = 300, 300 \times \frac{5}{6} = 250]$$

$$= 360 + 2 \left( \frac{300}{\frac{1}{6}} \right)$$

$$= 360 + 2(300)6 \Rightarrow 360 + 3600$$

$$= 3960$$

**12. Ans: (2.22)**

**Sol:**  $S = 1 + \frac{3}{4} + \frac{5}{4^2} + \frac{7}{4^3} + \dots$

$$\frac{5}{4} = \frac{1}{4} + \frac{3}{4^2} + \frac{3}{4^2} + \frac{5}{4^3} + \dots$$

$$S - \frac{S}{4} = \frac{3}{2} + \frac{2}{4^2} + \frac{3}{4^3} + \dots$$

$$\frac{3s}{4} = \frac{3}{2} + \frac{2}{4^2} \left( 1 + \frac{1}{4} + \frac{1}{4^2} + \dots \right)$$

$$\frac{3s}{4} = \frac{3}{2} + \frac{2}{16} \times \frac{1}{1 - \frac{1}{4}}$$

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

$$= \frac{3}{2} + \frac{1}{6} = \frac{10}{6}$$

$$S = \frac{10}{6} \times \frac{4}{3} = \frac{20}{9} = 2.22$$

**13. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**14. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

## 2.14 Data Interpretation

**01. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**02. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**03. Ans: (48)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**05. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**06. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (d)**

**Sol:** Out of 65 students appeared in year-2, 10 are from year-1

Therefore 55 students appeared for the 1st time in year-2.

Out of 53 students appeared in year-3, 5 are from year-2 (who failed in year-2)

Therefore 48 students appeared for the first time in year-3.

**09. Ans: (d)**

**Sol:** Sunday  $65 > 110\%$  (55) ( $Y > X$ )

Saturday  $60 > 110\%$  (50) ( $X > Y$ )

Friday  $35 > 110\%$  (20) ( $Y > X$ )

Wednesday  $60 > 110\%$  (50) ( $X > Y$ )

Tuesday  $65 > 110\%$  (55) ( $Y > X$ )

Monday  $70 > 110\%$  (45) ( $Y > X$ )

Total 6 days, one student is 10% more than another student.

**10. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**11. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**12. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**13. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**14. Ans: (2006)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**16. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**17. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**18. Ans: (c)**

**Sol:** Total number of executives given = 10000

$C_2$	5%	500
$C_5$	20%	2000

Management degree holders in

$$C_2 = \frac{1}{5} \times 500 = 100$$

Management degree holders in

$$C_5 = \frac{9}{10} \times 2000 = 1800$$

So total number of management degree holders among the executive in companies  $C_2$  &  $C_5$  together =  $100 + 1800 = 1900$

**19. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.



**20. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**21. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**22. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**23. Ans: (20000)**

**Sol:** 15% labour cost = 450000

Overall cost without profit of 200 unit =  $30 \times 105$

Overall cost without profit of single unit

$$\frac{30 \times 10^5}{200} = 15000$$

$$\text{Profit on single unit} = \frac{10 \times 10^5}{200} = 5000$$

So each purifier must be sold at price  
 = 15000 + 5000 = 20000

**24. Ans: 22**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**25. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**26. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**27. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**28. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**29. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**30. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**31. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**32. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**33. Ans: (c)**

**Sol:**

Region	Air pressure difference
P	$0.95 - 0.90 = 0.05$
Q	$0.80 - 0.75 = 0.05$
R	$0.8 - 0.65 = 0.15$
S	$0.95 - 0.90 = 0.05$

In general thunderstorms are occurred in a region where suddenly air pressure changes (i.e.,) sudden rise (or) sudden fall of air pressure. From the given contour map in 'R' Region only more changes in air pressure so, the possibility of thunderstorms in this region.

**34. Ans: (d)**

**Sol:** P, Q, R and S are four types of dangerous microbes recently found in a human habitat

In the graph

- on X-axis represents probability that microbe will overcome human immunity system and
- on Y-axis represents Toxicity (in milligrams of microbe required to destroy half of the body mass in kilograms)

Microbe 'S' will have 80% of probability that microbe will overcome human immunity system and less weight of milligrams of microbe required to destroy half of the body mass in kgs.

∴ Microbe 'S' is danger to human beings.

**35. Ans: (d)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**36. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**37. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**38. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**39. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**40. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**41. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

# Chapter **3** Spatial Aptitude

**01. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**02. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**03. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**04. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**05. Ans: (c)**

**Sol:** As per Mirror Image concept, left & right are interchanged, top & bottom remains same. Mirror image of the figure is based on options (c).

**06. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**07. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**08. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**09. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**10. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**11. Ans: (c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**12. Ans: (b,c)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**13. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**14. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**15. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**16. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**17. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**18. Ans: (a)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**19. Ans: (b)**

**Sol:** Please refer ACE General Aptitude PQS booklet.

**20. Ans: (d)****Sol:** Please refer ACE General Aptitude PQS booklet.**21. Ans: (d)****Sol:** Please refer ACE General Aptitude PQS booklet.**22. Ans: (b)****Sol:** Please refer ACE General Aptitude PQS booklet.**23. Ans: (c)****Sol:** Please refer ACE General Aptitude PQS booklet.**24. Ans: (c)****Sol:** Please refer ACE General Aptitude PQS booklet.**25. Ans: (a)****Sol:** Please refer ACE Maths Previous booklet