ACE Engineering Publications

SINCE 2011

ESE | GATE | PSUs

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.

$\therefore$ 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)

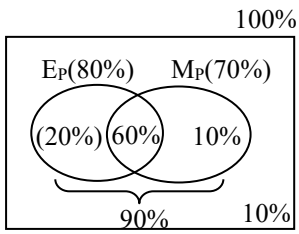
Sol: Please refer ACE General Aptitude PQS booklet

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)

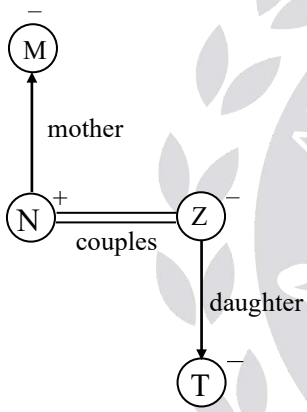
Sol: Please refer ACE General Aptitude PQS booklet

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



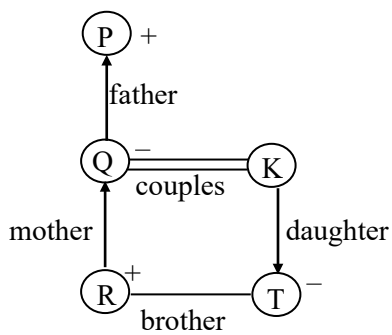
So that Z is daughter-in-law of M.

Hence (c) is the correct answer

07. Ans: (c & d)

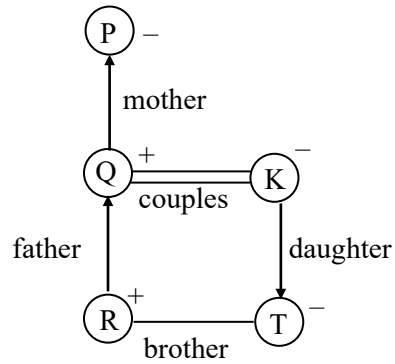
Sol: By decoding he given information symbol of family diagram, we

(a)



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

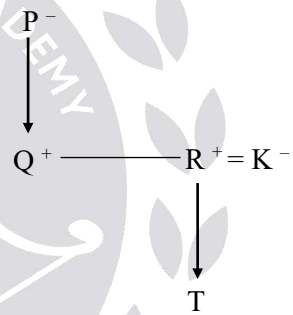
(c)



So that P is the mother-in-law of K.

Hence (c) is correction answer.

(d)



So P is mother in law of k

So option (d) is also correct

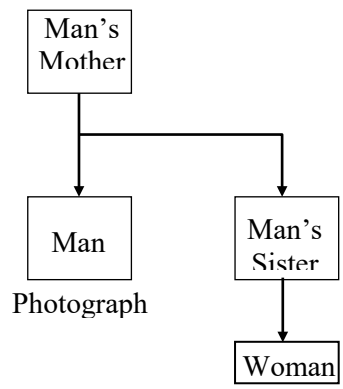
So both options (c & d) are correct.

08. Ans: (d)

Sol: Please refer ACE General Aptitude PQS booklet

09. Ans: (d)

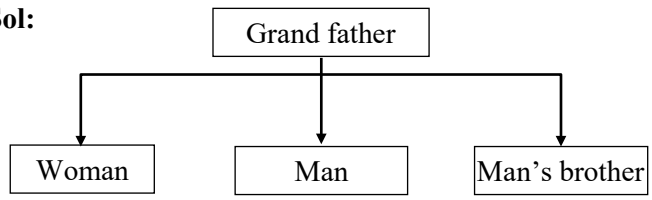
Sol:



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 → apposite → 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)

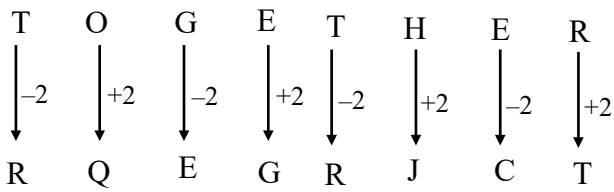
Sol: Please refer ACE General Aptitude PQS booklet

02. Ans: (c)

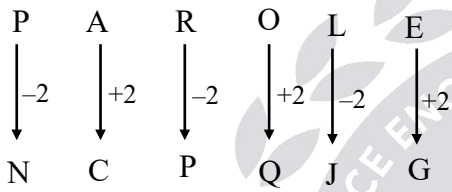
Sol: Please refer ACE General Aptitude PQS booklet

03. Ans: (a)

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



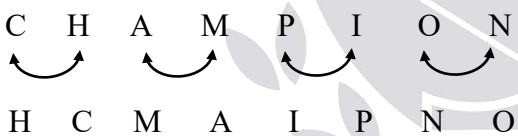
Similarly in the same code PAROLE becomes



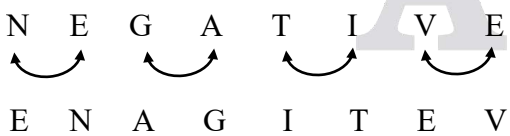
Hence, the answer is (a)

04. Ans: (a)

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



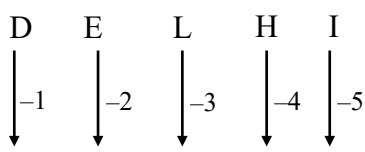
Similarly in the same code. NEGATIVE become



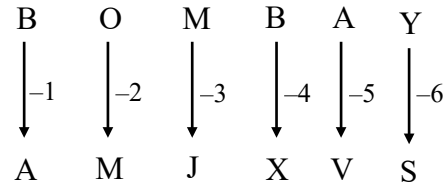
Hence Answer is (a)

05. Ans: (b)

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



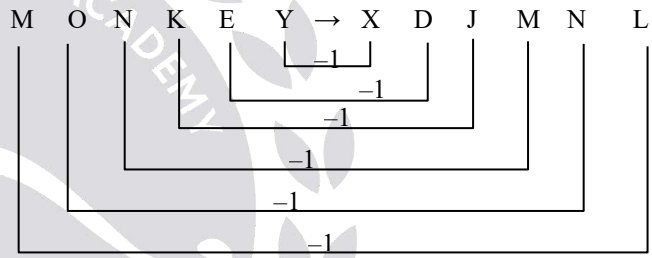
Similarly in the same BOMBAY becomes



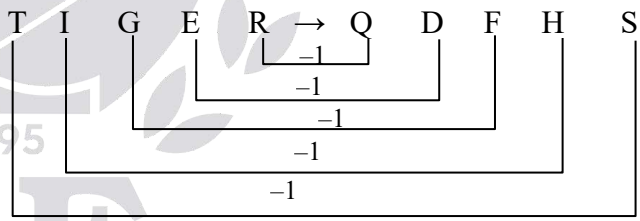
Hence, the Answer is (b)

06. Ans: (a)

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



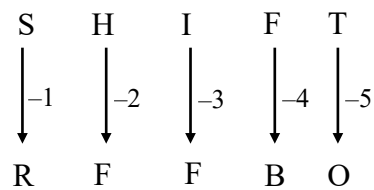
Similarly in the same code TIGER becomes



Hence, the Answer is (a)

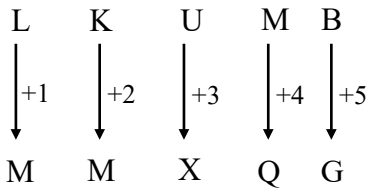
07. Ans: (a)

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



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

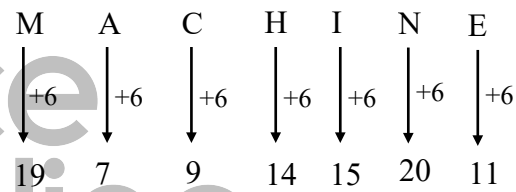
COVER = 3+15+22+5+18= 63

So that

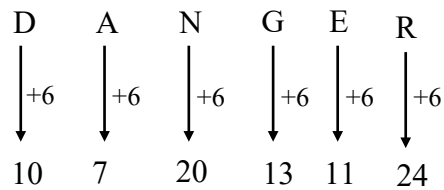
BASIS = 2+1+19+9+19 = 50

14. Ans: (a)

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



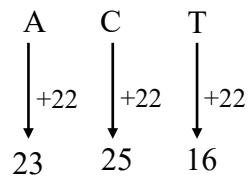
Similarly in the same code DANGER becomes



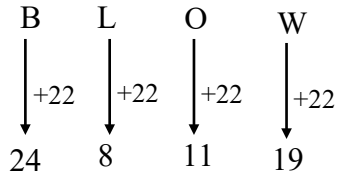
Hence, the Answer is (a)

15. Ans: (d)

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



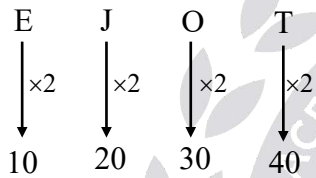
Similarly in the same code BLOW becomes



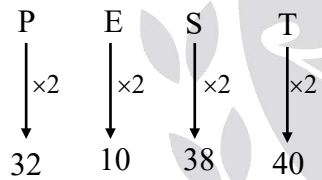
Hence the Answer is (d)

16. Ans: (a)

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



Similarly in the same code



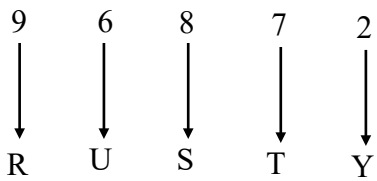
P+ E+S+T = 32+10+38+40 = 120

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)

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

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

Similarly

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

Hence the Answer is (d)

20. Ans: (d)

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

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

Similarly

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

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

Contract = 8(8 –1) = 56

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)

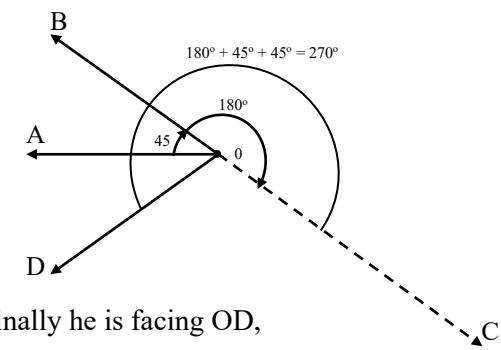
25. Ans: (b)

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°. Hence, west will be south east.

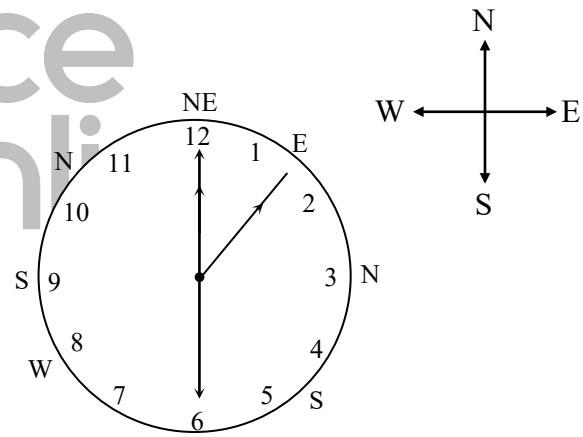
See, Actual figure is rotating 135° anticlockwise, So, when west will be rotated by same degree anticlockwise. It will hold the place of south east.

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	

$\therefore$ 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 → 8

Abpq, bcqr, cdrs → 3

11

02. Ans: (b)

Sol: Number of squares without hole = 15

Total number of 2 × 2 square without hole = 5

Total squares = 15 + 5 = 20

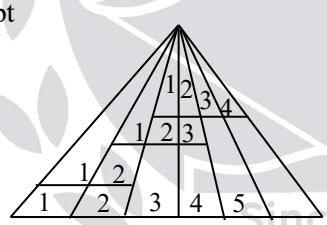
03. Ans: 40

Sol: By using base concept

1+2+3+4 = 10

1+2+3 = 6

1+ 2 = 3



⇒ 1+2=3 +4+5+6 = 21

Total = 21 + 3+6+10 = 40

04. Ans: 16

Sol: Form with single triangles = 8

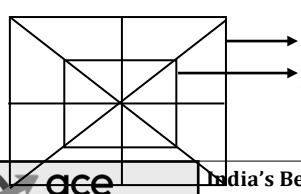
Form with double triangles = 4

Form with 4 triangles = 4

Total = 16

05. Ans: (c)

Sol:



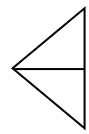
16 triangle

16 triangles

16 squares

06. Ans: (c)

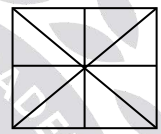
Sol:



⇒3 triangles

Total = 2 + 3 + 12= 17 triangles

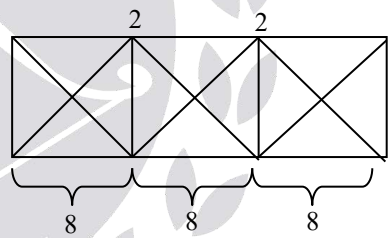
a	b	c	d
p	q	r	s



⇒ 12 triangles

07. Ans: (a)

Sol:

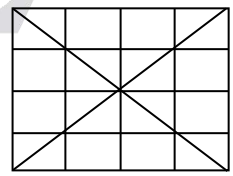


Number of triangles = 8 + 8+8+2+2 = 28

Number of squares = 3 + 2 = 5

08. Ans: (d)

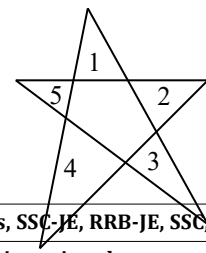
Sol:



Total number of triangle = 16+16+8×2 = 48

09. Ans: (d)

Sol:



5 + 5= 10

10. Ans: 48

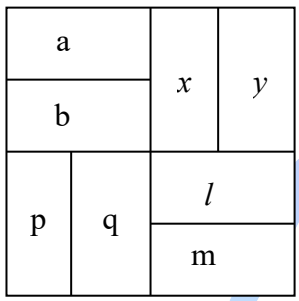
Sol: h = 5 odd

$$= \frac{h(h+2)(2h+1)-1}{8}$$

$$= \frac{5\times7\times11-1}{8} = \frac{384}{8} = 48$$

11. Ans: 21

Sol:



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

ab, xy, pq, *l*n = 4

abx, xy*l*, bpq, q*l*m = 4

abpq, abxy, pq*l*n, xy*l*m – 4

abxypq*l*m = 1

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

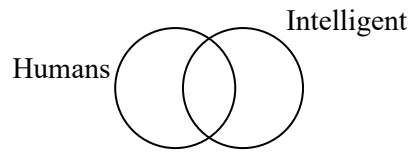
15. Ans: (c)

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)

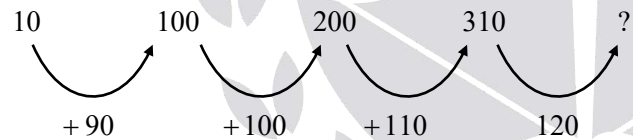
Sol: Please refer ACE General Aptitude PQS booklet

1.10 Series, Classification, Analogy

1.10. (a) Series:

01. Ans: (d)

Sol:

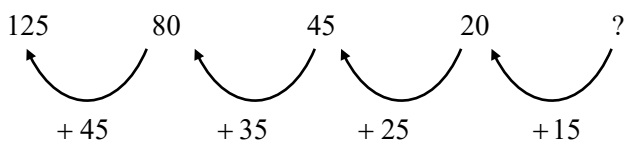


? = 310 + 120 = 430

? = 430

02. Ans: (a)

Sol:

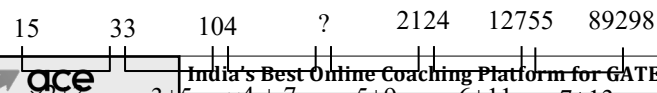


? + 15 = 20

? = 5

03. Ans: (d)

Sol:

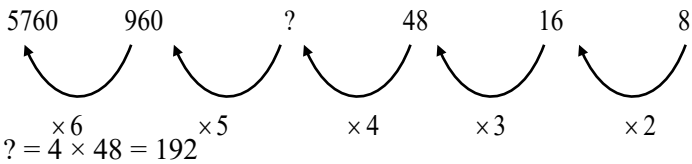


$= 104 \times 4 + 7$

$= 423$

04. Ans: (c)

Sol:



$? = 4 \times 48 = 192$

$? = 192$

05. Ans: (d)

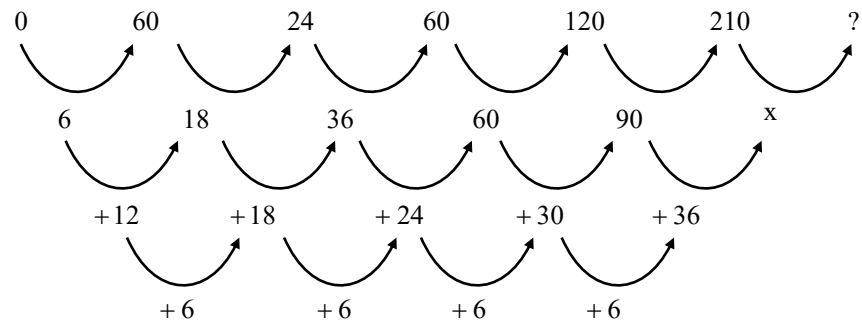
Sol:

1	4	27	16	?	36	343
↓	↓	↓	↓	↓	↓	↓
1^3	2^2	3^3	4^2	5^3	6^2	7^3

$? = 5^3 = 125$

06. Ans: (c)

Sol:



$? = x + 210$

$x = 90 + 36 = 126$

$? = 126 + 210 = 336$

07. Ans: (a)

Sol:

90 180 12 50 100 200 ? 3 50 4 25 2 6 30 3

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

$\underline{30} \times 3$ $\underline{6} \times \underline{30}$ $\underline{6} \times \underline{2}$ $\underline{25} \times \underline{2}$ $\underline{4} \times \underline{25}$ $\underline{50} \times \underline{4}$ $3 \times \underline{50}$ 3×1 1×50

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

$\frac{100}{9}$ $\frac{25}{2}$ $\frac{100}{7}$ $\frac{50}{3}$?

$\times\frac{9}{8}$ $\times\frac{8}{7}$ $\times\frac{7}{6}$ x

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

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

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

? = 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)

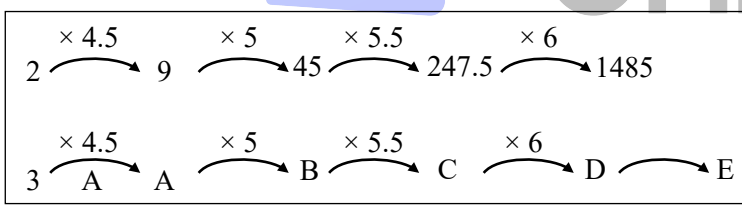
Sol: Please refer ACE General Aptitude PQS booklet

15. Ans: (d)

Sol: Please refer ACE General Aptitude PQS booklet

16. Ans: (d)

Sol:



A = 3 × 4.5 = 13. 5

B = A × 5 = 13. 5 × 5 = 67.5

B = 67.5

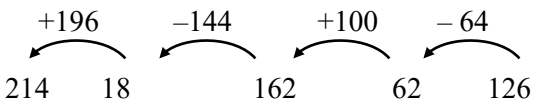
17. Which number will came in place of (E) ?

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

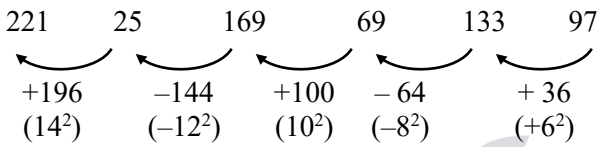
(a) 25 (b) 97 (c) 69 (d) 133

17. Ans: (b)

Sol:



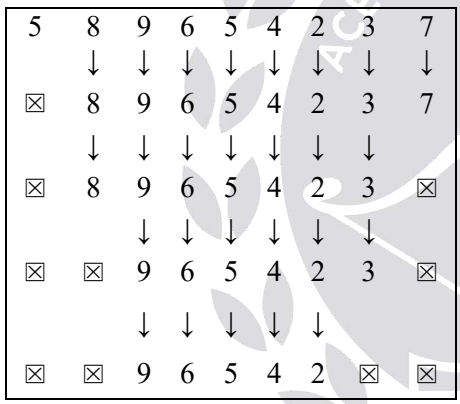
In the same way



E = 133 – 36 = 97

18. Ans: (d)

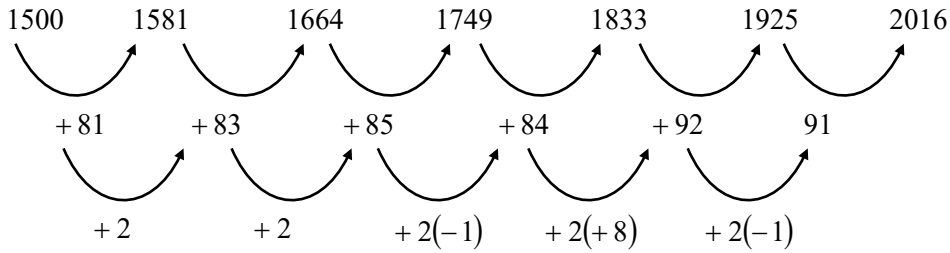
Sol:



? = 96542

19. Ans: (c)

Sol:



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
↓	↓	↓	↓	↓	↓	↓
$2^3 - 3$	$\boxed{3^3 - 3}$	$4^3 - 3$	$5^3 - 3$	$6^3 - 3$	$7^3 - 3$	$8^3 - 3$

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

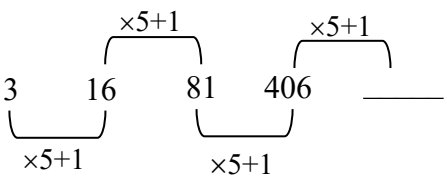
$(15 + 6)^2 = 441$

$(10 + 7)^2 = 289$

$(12 + 13)^2 = 625$

02. Ans: (d)

Sol:



$= 405(5) + 1 = 2031$

Option (d) is the correct option.

03. Ans: (c)

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

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

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

$x = 94$

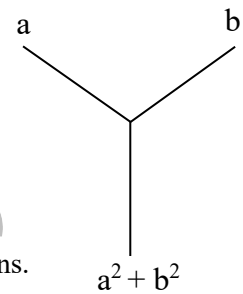
(c) is the correct Ans.

04. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet

05. Ans: (b)

Sol:

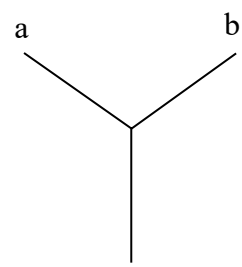


$\therefore 1^2 + 5^2 = 26$

Option (b) is correct Ans.

06. Ans: (b)

Sol:



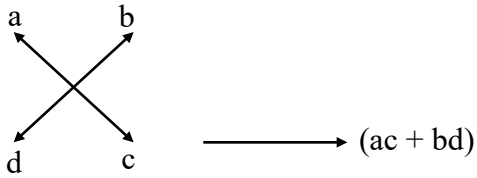
$a^2 - b^2 = (a - b)(a + b)$

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

Option (b) is correct Ans.

07. Ans: (c)

Sol:

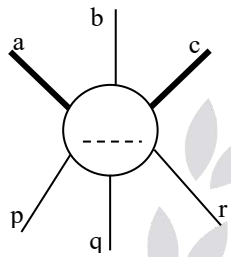


$(3 \times 4 + 5 \times 5) = 37$

Option (c) is the correct Ans.

08. Ans: (b)

Sol:



$\therefore$ |a – p| |b – q| |c – r|

|8 – 2| |6 – 4| |3 – 1|

= 622

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: $(15 – 5) \times (2 + 6) = 80$

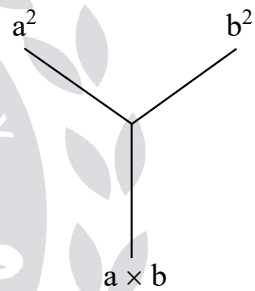
$(9 – 4) \times (7 + 6) = 65$

Missing number = $(13 – 11) \times (16 + 8)$

$= 2 \times 24 = 48$

13. Ans: (c)

Sol:



$2 \times 3 = 6$

$3 \times 4 = 12$

$4 \times b = 20$

$b = 5$

$\therefore b^2 = 25$

Option (c) is the correct Answer.

14. Ans: (b)

Sol:

2 + 3 = 5	P + 3 = S
5 + 3 = 8	S + 3 = V
8 + 3 = 11	V +3 = Y

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 → 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 (7×2) : 49 (7^2)

(b) 16 (8×2) : 64 (8^2)

(c) 20 (10×2) : 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: 6×7 :: 78 :: 10×11 : 11×12

05. Ans: (b)

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

06. Ans: (b)

Sol: M → 13

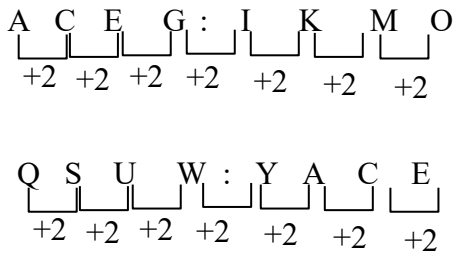
O → opposite is 12

H → 8

J → opposite is 17

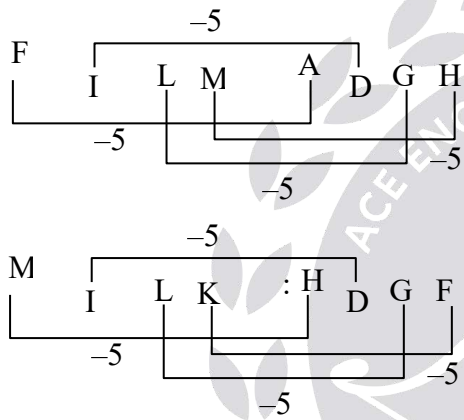
07. Ans: (c)

Sol:



08. Ans: (c)

Sol:



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 → 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).

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

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

$\therefore$ 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)

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'share=4x + 10 = 4 × 200 + 10 = 810 Rs

A'share=3x + 5 = 3 × 200 + 5 = 605 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,

Salary of first person = 9×2000 = Rs. 18000

Salary of second person = 7×2000 = Rs. 14000

Annual Salary of first person = 12×18000 = Rs. 216000

Annual Salary of second person = 12×14000 = Rs. 168000

12. Ans: (b)

Sol: 10P, 20 P 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

$= 17\ k$

$= 17\times 5$

= 85 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)

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-grace 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 yrs less

203–35 = 168

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.

Then

Original average =

$$\frac{\text{Mn} - (\text{wrong} - \text{correct})}{\text{M}}$$

$$= \frac{14(71) - [(42+74) - (56+32)]}{14} = 69$$

10. Ans: (d)

Sol: Concept Adding and removing

$$= \frac{\text{MP - removing} + \text{adding}}{\text{M}} = \text{Avg}$$

$$= \frac{45[52] - 5[48] + 5[54]}{45}$$

$= 52.66$ or $52\frac{2}{3}$

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: $\frac{sum_{11}}{11} = 50 \Rightarrow sum_{11} = 550$

$\frac{sum[First\,6\,results]}{6} = 49 \Rightarrow sum_6 = 6[49] = 294$

$\frac{sum[Last\,6\,results]}{6} = 52 \Rightarrow sum_6 \Rightarrow 6(52) = 312$

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

$= 294 + 312 - 550$

$= 56$

14. Ans: (a)

Sol: $\frac{sum_{11}}{11} = x$

$\frac{sum_9 + 26 + 29}{11} = x$

Average of 9 persons

$\frac{sum_9}{9} = x - 1$

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

$Sum_9 = 9x - 9$

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

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% ⇒ 400

[$\because$ 22% →52 (failed)

45% → 40 (passed)

23%→ 52 +40

23% = 62 marks

So 100% =?

$\frac{92 \times 100}{23} = 400$]

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)

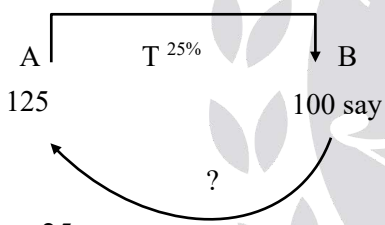
1.23 + 0.9T = 90 $\rightarrow$ (2)

By solving (1) and (2)

T = 80

11. Ans: (d)

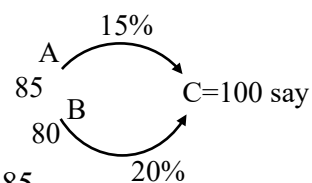
Sol:



$= \frac{25}{125} \times 100 = 20\%$

12. Ans: (b)

Sol:



$\frac{85}{80} \times 100 \Rightarrow 106.25$

13. Ans: (c)

Sol: Let D = 100x

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

$= 100x \xrightarrow{-10\%} \underbrace{90x}_{A}$ 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 kg

100% $\rightarrow$ 30 kg

30kg = 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/-

$125\% = 450$

$100\% = ? \Rightarrow \frac{450\times100}{125} \Rightarrow 360$

03. Ans: (b)

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

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

Loss % $=\frac{10}{50}\times100=20\%$

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

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

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

Gain % $=\frac{SP-CP}{CP}\times100$

$=\frac{\frac{k}{8}-\frac{k}{12}}{\frac{k}{12}}\times100$

$=\frac{4}{8}\times100=50\%$

05. Ans: (c)

Sol: $\frac{\text{Diff}}{\text{Least}}\times100$

$\frac{200}{800}\times100=25\%$

06. Ans: (d)

Sol: CP of Laptop = 24000 + 6000 = 30000

SP of laptop = 45000

Profit % $\frac{SP-CP}{CP}\times100$

$=\frac{45000-30000}{30000}\times100=50\,\%$

07. Ans: (c)

Sol: $SP_1 = 720$

$SP_1 = 0.8$ CP

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

$SP_2 = 1.3$ 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% loss → 0.9 CP = 450

CP = 500

If $SP_2 = 540$

Gain % $=\frac{SP_2-CP}{CP}\times100$

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

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

09. Ans: (c)

Sol: % SP

$$111\% = x /-$$

$$\frac{118\% = x + 175 /-}{7\% = 175}$$

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

10. Ans: (c)

Sol: Please refer ACE General Aptitude PQS booklet.

11. Ans: (b)

Sol: SP_1 of manufacturer = 1.1 CP

SP_2 of wholesale dealer = 1.3 SP_1 = 1.3 × 1.1 × CP

SP_3 of retailer = 1.5 SP_2 = 1.5 × 1.3 × SP_1

4290 = 1.5 × 1.3 × 1.1 CP

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

CP = 2000

12. Ans: (b)

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

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

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

↓ ÷5 ↓÷5

2% → 73 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

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

03. Ans: (b)

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

First 2 years 4% pa $= \frac{P(2\times4)}{100} = \frac{8P}{100}$

Next 4 years 6% pa $= \frac{P(6\times4)}{100} = \frac{24P}{100}$

Next (9-6) years 8% pa $= \frac{P(3\times8)}{100} = \frac{24P}{100}$

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

P = 2000

04. Ans: (d)

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

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

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

= 1052

05. Ans: (a)

Sol: P + 2I = 1260

P + 5I = 1350

3I = 90

I = 30

$I = \frac{PTR}{100} \Rightarrow 30 = \frac{1200\times1\times R}{100}$

R = 2.5% Pa

06. Ans: (b)

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

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

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

$T = \frac{26\times100}{R} = \frac{26\times100}{200}\times7 = 91$ years

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

07. Ans: (b)

Sol: P → 10% → 10% → 10% → 10% → 10% → 10 lakhs

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

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

P = 6,21,000

08. Ans: (a)

Sol: P×105% × 110%×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)

Sol: R = 10% → 1 year

÷4↓ ↓÷4

2.5% → 3 months

T = 2 years 3 months

CI = 4000 $(110\%)^2$ (102.5%) –4000

CI = 961

10. Ans: (a)

Sol:

P —— 0 yrs

×2) 3 yrs

2200 —— 3 yrs

×2) 3 yrs

4400 —— 6 yrs

P = 1100

11. Ans: (d)

Sol: $12500 \xrightarrow[20\%]{\text{1st year}}$ 12500 +2500 = 15000 –2000 = 13000

$13000 \xrightarrow[20\%]{2^{nd}\text{ year}}$ 13000 +2600 –2000 = 13600

$13600 \xrightarrow[20\%]{3^{rd}\text{ year}}$ 13600 2720 –2000 = 14320

12. Ans: (a)

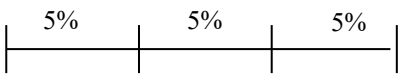
Sol: Please refer ACE General Aptitude PQS booklet.

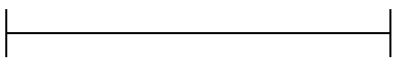
13. Ans: (c)

Sol: R = 2% → 1 year (12 months)

÷4↓ ↓÷4

5% → 3 months





9 months

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

$CI = 2522$

14. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet.

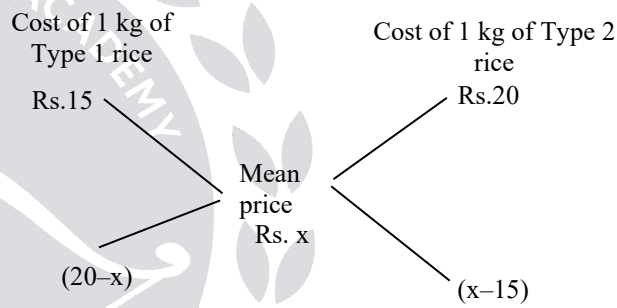
15. Ans: (b)

Sol: Please refer ACE General Aptitude PQS booklet.

2.7 Mixture and Allegation

01. Ans: (a)

Sol:



y 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 $\Rightarrow SP_1 = 0.85$ CP1

Selling price (SP_2) of 2nd 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 of both cars = $CP_1 + CP_2 = 100 + 200 = 300$

SP 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

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

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

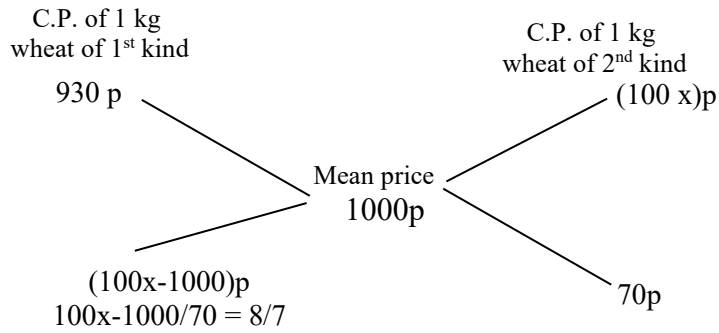
05. Ans: (d)

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:



So

$700x - 7000 = 560$

$700x = 7560$

$x = Rs.\ 10.80$

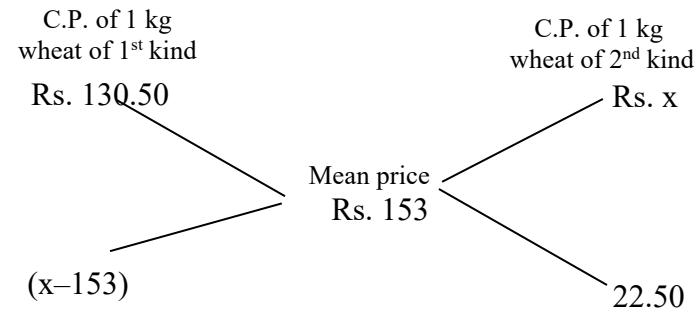
07. Ans: (c)

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

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



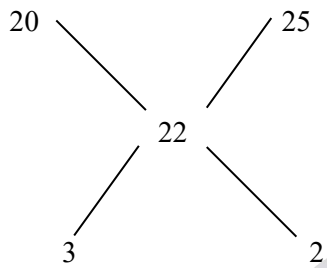
$$\therefore \frac{x - 153}{22.50} = 1$$

$\Rightarrow x - 153 = 22.50$

$\Rightarrow x = 175.50$

08. Ans: (d)

Sol:



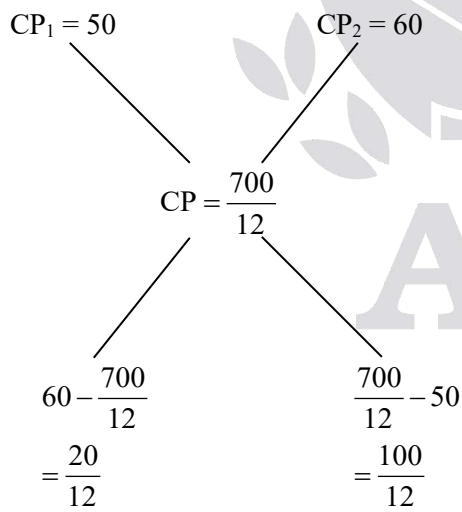
The required ratio is 3:2

09. Ans: 1:5

Sol: Mixture = 70

SP = 1.2 CP

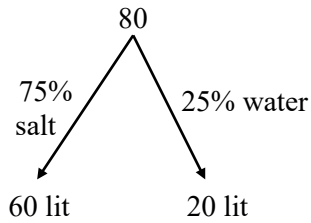
$$CP = \frac{70}{1.2} = \frac{700}{12}$$



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

10. Ans: (a)

Sol:



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

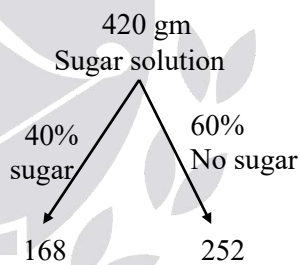
$$\frac{60}{60 + 20 + k} = \frac{40}{100}$$

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

$k = 70$ lit

11. Ans: (A)

Sol:



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

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

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

$K = 300$ gm

12. Ans: (a)

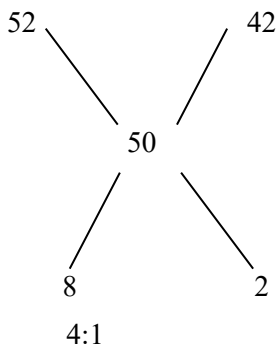
Sol: Please refer ACE General Aptitude PQS booklet.

13. Ans: (20)

Sol: Average make 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 × 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%

1.1 x + (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: $P_1 = 12000, R_1 = 10\%, T$

$P_2, R_2 = 20\%, T$

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

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

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

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

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

$6P_2 = 48000$

$P_2 = 8000$

Total amount invested = $P_1 + P_2$ = 12000 + 9000

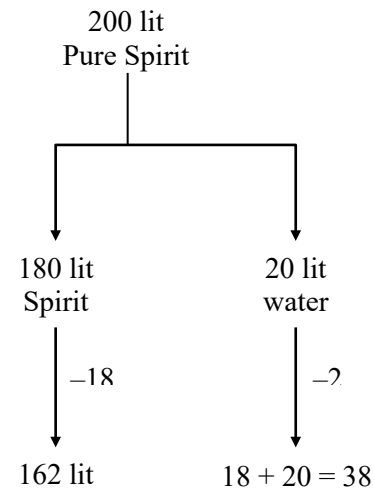
= 20000

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 operations= $\left[x\left(1-\frac{8}{x}\right)^4\right]$ 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 $=\frac{1}{80}$

B's one day work $=\frac{1}{16}-\frac{1}{80}$

$=\frac{4}{80}=\frac{1}{20}$

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 x days

So B alone can do same work which is done by A in 60 days $= 60 \times \frac{10x}{8x} = 75$ 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.

40 k – 10 k = 60 (gives)

k = 2

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

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 days [for complete work]

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

A 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 hrs

Q $\Rightarrow$ 8 (6) = 48 hrs

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

But they work 8 hrs per day

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

10. Ans: (d)

Sol: Please refer ACE General Aptitude PQS booklet.

11. Ans: (a)

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)

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

B's 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)

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

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

$22x = 120–74 = 46$

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

9 am + 2 hr + 2 hr = 1 pm

15. Ans: (a)

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

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

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

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 competed 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)

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

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

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

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

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

11^{th} day start with A

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

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

So 10 days + $\frac{1}{4}$ = 10 ¼ days

18. Ans: (a)

Sol: $\frac{m_1D_1H_1}{W_1}=\frac{m_2D_2H_2}{W_2}$

$24\times30=(24+k)\times18$

$24+k=\frac{24\times30}{18}$

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: $\frac{m_1D_1H_1}{W_1}=\frac{m_2D_2H_2}{W_2}$

$m_1, D_1 = 18$ (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: $\frac{M_1D_1H_1}{W_1}=\frac{M_2D_2H_2}{W_2}$

$60 \times 250 = (60\times200) + (60 + k) \times 40$

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

$\frac{2\times12\times8}{9000}\times0.9=\frac{3\times H_2\times6}{12000}\times0.8$

$H_2=\frac{2\times12\times8\times0.9}{9000}\times\frac{12000}{3\times6\times0.8}$

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: $A \xrightarrow[D = \frac{5}{4}(S)(T-6)]{D = ST} B$

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

$4T = 5(T-6)$

$T = 30$

03. Ans: (c)

Sol: Please refer ACE General Aptitude PQS booklet.

04. Ans: (c)

Sol: $D = 20(T)$[$\because$ D = speed × Time]

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

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

$2T = 3T - 12$

$T = 12$

So distance = 20(12) = 240 km

05. Ans: (b)

Sol: Average speed $= \frac{\text{Total dis tan ce}}{\text{Total Time}}$

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

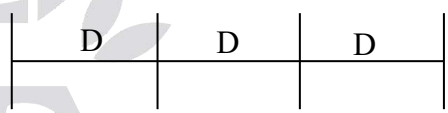
= 100 km/h

06. Ans: (c)

Sol: Please refer ACE General Aptitude PQS booklet.

07. Ans: (c)

Sol:



Average speed

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

$\Rightarrow \frac{3}{\frac{3+4+8}{240}} = \frac{3(240)}{15} = 48$ kN/m

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

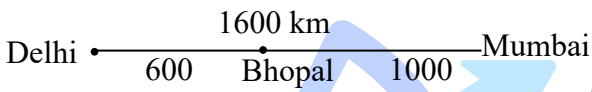
48 km → 60 min

12 km → ?

$$\frac{60\times12}{60}=12\,\text{min}$$

11. Ans: (a)

Sol:



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

$$\frac{S_1}{S_2}=\frac{600}{1000}\Rightarrow\frac{3}{5}$$ 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

$$\frac{120\times1}{10}=12\,\text{hrs}$$

First car ⇒ 12 × 50 = 600

2nd 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

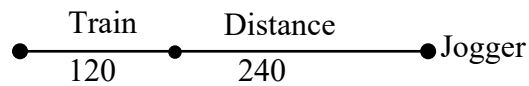
Sol: Please refer ACE General Aptitude PQS booklet.

18. Ans: (d)

Sol: Please refer ACE General Aptitude PQS booklet.

19. Ans: (c)

Sol:



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

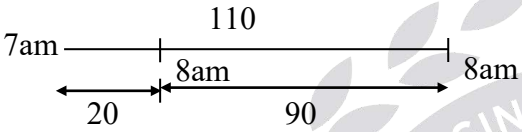
$$\Rightarrow \frac{120+240}{(45-9)\times\frac{5}{18}}$$

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

$\Rightarrow$ 36 sec

20. Ans: (b)

Sol:



Compare with 8 am

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

8 am + 2 hrs = 10 am

21. Ans: (c)

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

Distance = 75 km/hr × 2hr = 150 km

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

$$\Rightarrow T_2 \frac{\begin{pmatrix}\text{Travelled}\\ 1/2\,\text{hr}\end{pmatrix}}{30} T_1$$

22. Ans: (a)

Sol: $T_1 \rightarrow$ hr

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1.5 hrs←

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

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

Total distance (D) = $S_1 T + S_2 T$

$$D = S_1 T + \frac{D}{1.5}T$$ (they travel same 'T' hrs than they are meet each other)

$$D = DT\left[1+\frac{1}{\frac{3}{2}}\right]$$

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

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

= 4hr and 36 min

23. Ans: (c)

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

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 = $9C_2 + (7\times9) + 1$

$= 36 + 63 + 1 = 100$

Number of triangles

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

$$\frac{7!}{5!\times2!}\times9 + 7\times\frac{9!}{7!\times2!} + \frac{9!}{6!\times3!}$$

$$= \frac{7\times6\times9}{2} + \frac{7\times9\times8}{2} + \frac{9\times8\times7}{6}$$

$= 525$

05. Ans: (35)

Sol: If a polygon has n sides the number of diagonal's $= \frac{n(n-1)}{2} - n$

No. of diagonals $= \frac{10(10-1)}{2} - 10$

$= 45 - 10 = 35$

06. Ans: (d)

Sol: Please refer ACE General Aptitude PQS booklet.

07. Ans: (c)

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

$$= \frac{13!}{10!\times3!}$$

$$= \frac{13\times12\times11}{3\times2} = 286$$

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

$= C_1^{10} \times C_1^8 = 10\times8 = 80$ ways

iii. Two boys & one girl selected

$= C_2^{10} \times C_1^8 = \frac{10!}{8!\times2!}\times8 = 360$ ways =

iv. Two student selected

$= C_2^{18} = \frac{18!}{16!\times2!} = 153$

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 × 9) + 280 + 56

= 696 ways

09. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet.

10. Ans: (b)

Sol: _ _ _ _ _ _ _ _ _ _ _ _ _

Starting → Boys
Starting →Girls

So that ⇒ 5! × 5! × 2 ways

11. Ans: (a)

Sol:

↓ B ↓ B ↓ B ↓ B ↓ B ↓ B ↓
G_1 G_2 G_3 G_4 G_5 G_6 G_7

$6! \, {}^{7}C_4 \, . \, 4!$

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

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

= 60480

14. Ans: (c)

Sol: The work 'LAUNCHER' has 8 different Letters

8 ways 8 ways 8 ways $= 8 \times 8 \times 8 = 8^3$

∴ (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)

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

21. Ans: (d)

Sol:

$^5P_4 \times 2 \times 3$ (— — — —) (2 × 3)

(2 × 3: 2 ↑ even, 3 ↑ 2/4/6 even)

$= 120 \times 6 = 720$

22. Ans: (c)

Sol:

— — — — —

$^4P_3$ ÷ 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: 1st digit chosen = 4 ways

2nd 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)

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

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

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

(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.

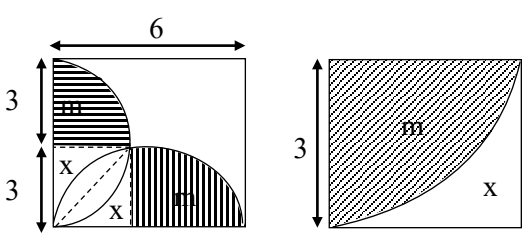
11. Ans: (8)

Sol: Please refer ACE General Aptitude PQS booklet.

12. Ans: (18)

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

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

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

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

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

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

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)

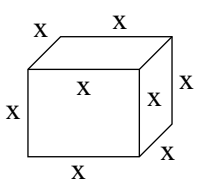
Sol: Please refer ACE General Aptitude PQS booklet.

24. Ans: (a)

Sol: Please refer ACE General Aptitude PQS booklet.

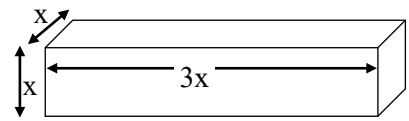
25. Ans: (a)

Sol: Let cube of side is x



area = $2(x^2 + x^2 + x^2) = 6x^2$

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



Total surface area of new cuboid

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

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

$$\frac{\text{Total SA of new cuboid}}{\text{Sum of SA of 3 cubes}}$$

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

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: 25π/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: $\therefore \dfrac{1}{\log_x{}^y} = \log_y{}^x$

$$\frac{1}{\log_{c+a}{}^b} + \frac{1}{\log_{c-a}{}^b} = \log_b{}^{c+a} + \log_b{}^{c-a}$$

$$= \log_b(c^2 - a^2)$$

$$= \log_b{}^{b^2} = 2.$$

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 = $S_{23} = \frac{n}{2}(a+\ell)$

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

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

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

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

$= 506$

05. Ans: (a)

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

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

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

$a + 26d = 0$

Then 27^{th} 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: $3(24 + 12 + 6+3+\ldots\ldots)$

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

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

10. Ans: (d)

Sol: $B = 2^{54} + 2^{53} + \ldots\ldots\ldots\ldots 2^\circ$

$a = 1$

$r = 2$

$n = 55$

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

But $A \Rightarrow 2^{55}$

A is larger than 'B' by 1

11. Ans: 3960

Sol: $= 360 + 2(300 + 250+\ldots..+\ldots..2$

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

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

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

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

$= 3960$

12. Ans: (2.22)

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

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

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

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

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

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

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

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

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 C2 & C5 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 × 105

Overall cost without profit of single unit

$$\frac{30\times10^5}{200}=15000$$

Profit on single unit = $\frac{10\times10^5}{200}=5000$

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 over come 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.

$\therefore$ 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