



Aakash

Medical | IIT-JEE | Foundations

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Answers & Solutions *for* NTSE (Stage-I) 2018-19

INSTRUCTIONS TO CANDIDATES

1. Use blue/black ball point pen only. There is no negative marking.
2. All the questions are compulsory. This test booklet contains 200 questions (Paper-I : 100 & Paper-II : 100) of one mark each.
3. Paper-I : MAT : 1 - 100 questions
Paper-II : SAT : 1 - 100 questions
4. Answer each question by darkening the one correct alternative among the four choices on the OMR Sheet with blue/black ball point pen.
5. Students are not allowed to scratch/alter/change out an answer once marked on OMR Sheet, by using white fluid/eraser/blade/tearing/wearing or in any other form.
6. Separate sheet has been provided for rough work in this test booklet.
7. Please handover the OMR sheet to the invigilator before leaving the Examination Hall.
8. Darken completely the ovals of your answers on OMR Sheet in the time limit allotted for that particular paper.
9. Your OMR Sheet will be evaluated through electronic scanning process. Incomplete and incorrect entries may render your OMR sheet invalid.
10. Use of electronic gadgets, calculator, mobile etc., is strictly prohibited.

PAPER-I : MENTAL ABILITY TEST (MAT)

1. 7, 8, 11, 16, 23, ?

- (A) 31 (B) 32
(C) 37 (D) 40

Answer (B)

Sol. 7, 8, 11, 16, 23, ?

Differences between 7, 8 → 1

$$8, 11 \rightarrow 3$$

$$11, 16 \rightarrow 5$$

$$16, 23 \rightarrow 7$$

Next term will be $23 + 9 = 32$

2. 6, 9, 12, 15, 18, ?

- (A) 21 (B) 20
(C) 19 (D) 22

Answer (A)

Sol. 6, 9, 12, 15, 18, ?

all are in the difference of 3 therefore 21

3. 2, 5, 10, 50, 500, ?

- (A) 5 (B) 10
(C) 50 (D) 25000

Answer (D)

Sol. 2, 5, 10, 50, 500 ?

Number = multiplication of previous two numbers

$$50 \times 500 = 25000$$

4. 3, 6, 18, 72, ?

- (A) 144 (B) 216
(C) 288 (D) 360

Answer (D)

Sol. 3, 6, 18, 72, ?

$$6 = 3 \times 2$$

$$18 = 6 \times 3$$

$$72 = 18 \times 4$$

$$360 = 72 \times 5$$

5. 2, 6, 12, 20, ?

- (A) 28 (B) 30
(C) 42 (D) 48

Answer (B)

Sol. 2, 6, 12, 20, ?

$$6 - 2 = 4$$

$$12 - 6 = 6$$

$$20 - 12 = 8$$

$$x - 20 = 10$$

$$x = 30$$

6. 2, 5, 9, ?, 20, 27

- (A) 14 (B) 16
(C) 18 (D) 24

Answer (A)

Sol. 2, 5, 9, ?, 20, 27

$$2 + 3 = 5$$

$$5 + 4 = 9$$

$$9 + 5 = 14$$

$$14 + 6 = 20$$

$$20 + 7 = 27$$

$$\text{Ans: } ? = 14$$

7. 1, 4, 9, 16, 25, 36, ?

- (A) 48 (B) 49
(C) 52 (D) 59

Answer (B)

Sol. 1, 4, 9, 16, 25, 36, ?

$$n^{\text{th}} \text{ number} = n^2$$

$$\text{Ans. } 7^2 = 49$$

8. 5, 15, 45, 135, ?

- (A) 406 (B) 405
(C) 407 (D) 408

Answer (B)

Sol. 5, 15, 45, 135, ?

$$5 \times 3 = 15$$

$$15 \times 3 = 45$$

$$45 \times 3 = 135$$

$$135 \times 3 = 405 = ?$$

9. 3, 4, 9, 16, 27, ?

- (A) 64 (B) 46
(C) 48 (D) 70

Answer (A)

Sol. 3, 4, 9, 16, 27, ?

$$3^1, 4^1, 3^2, 4^2, 3^3, 4^3$$

$$? = 64$$

10. 2, 5, 11, 23, ?

- (A) 47 (B) 48
(C) 49 (D) 50

Answer (A)

Sol. 2, 5, 11, 23, ?

All are prime numbers therefore ? = 47

11. In certain language GOLD is coded as IQNF, how is WIND is coded in that language?

- (A) YKPF (B) XJOE
(C) VHMC (D) DNIW

Answer (A)

Sol.

$$G + 2 = I$$

$$O + 2 = Q$$

$$L + 2 = N$$

$$D + 2 = F$$

WIND

YKPF

12. If D = 4, BAD = 07, then what will be the value of ANT?

- (A) 8 (B) 17
(C) 35 (D) 37

Answer (C)

Sol. If D = 4

$$BAD = 07$$

Addition of alphanumerical letters

$$B = 02$$

$$A = 01$$

$$A = 01$$

$$N = 14$$

$$D = 04$$

$$T = 20$$

$$BAD = 07$$

$$ANT = 35$$

13. In a certain language 'KITE' is written as 'JHSD', how is 'STRONG' is coded.

- (A) RSQNMF (B) SRQNMF
(C) SRNQMF (D) RSQRSQ

Answer (A)

Sol. KITE = JHSD

$$S - 1 = R$$

$$K - 1 = J \quad T - 1 = S$$

$$I - 1 = H \quad R - 1 = Q$$

$$T - 1 = S \quad O - 1 = N$$

$$E - 1 = D \quad N - 1 = M$$

$$G - 1 = F$$

∴ RSQNMF

14. If code of 'HEMA' is 27, then code of 'VELU' will be?

- (A) 56 (B) 42
(C) 54 (D) 60

Answer (D)

Sol.

$$HEMA = 27$$

$$H = 08$$

$$E = 05$$

$$M = 13$$

$$A = 01$$

15. If, RARE is written as SBSF then 'AREA' will be written as-

- (A) FSBS (B) BSBF
(C) SBFB (D) BSFB

Answer (D)

Sol. RARE = SBSF

$$A + 1 = B$$

$$R + 1 = S \quad R + 1 = S$$

$$A + 1 = B \quad E + 1 = F$$

$$R + 1 = S \quad R + 1 = S$$

$$E + 1 = F \quad \underline{A + 1 = B}$$

$$BSFB$$

16. Find the odd man out -

- (A) Pen (B) Pencil
(C) Student (D) Sharpner

Answer (C)

Sol. Student

17. Find the odd man out -

- (A) Car (B) Bus
(C) Scooter (D) Jeep

Answer (C)

Sol. Scooter

18. Find the different term -

- (A) Petrol-Car (B) Electricity - Television
(C) Ink - Pen (D) Dust - Vacuum Cleaner

Answer (D)

Sol. Dust - Vacuum Cleaner

19. Find the odd term -

- (A) March (B) December
(C) July (D) September

Answer (D)

Sol. September (Number of days are 30 other have 31)

20. Find the odd term -

- (A) 24 (B) 60
(C) 124 (D) 210

Answer (C)

Sol. 124 (Other 3 are multiplication of 3 consecutive numbers)

$$24 = 2 \times 3 \times 4$$

$$60 = 3 \times 4 \times 5$$

$$210 = 5 \times 6 \times 7$$

21. If 'Police' is called 'Teacher', 'Teacher' is 'Politician', 'politician' is 'Doctor', 'Doctor' is 'Advocate', 'Advocate' is 'Surgeon', then who will catch the criminals?

- (A) Police (B) Advocate
(C) Teacher (D) Doctor

Answer (C)

Sol. Teacher

22. In certain language, 'Red' is written as 'Green', 'Green' is 'Blue', 'Blue' is 'Yellow' then what will be the colour of Blood?

- (A) Red (B) Yellow
(C) Blue (D) Green

Answer (D)

Sol. Green

Direction : Q. No. 23-25 In a certain language if

- i) **tik jik pik means she is good,**
ii) **pik ne pea means good and bad,**
iii) **se ne pik means ram and good then -**

23. What is the code of 'good'?

- (A) pik (B) ne
(C) pea (D) jik

Answer (A) (good → pik)

Sol. tik jik pik means she is good

pin ne pea means good and bad

se ne pik means ram and good then

pik → good

ne → and

se → ram

pea → bad

24. What is the code of 'and'?

- (A) pik (B) ne
(C) se (D) tik

Answer (B)

Sol. and → ne

25. What is the code of 'Ram'?

- (A) ne (B) se
(C) pik (D) pea

Answer (B)

Sol. Ram → se

26. 10 years ago age of Sulochana's mother was 4 times the age of Sulochana. After 10 years her age will be twice of Sulochana's age. What is the age of Sulochana today.

- (A) 20 years (B) 10 years
(C) 30 years (D) 15 years

Answer (A)

Sol. Let the age of Sulochana's age be x and the age of her mother be y

According to question

10 year ago

$$4(x - 10) = y - 10$$

$$4x - y = 30 \dots\dots(i)$$

After 10 year

$$2(x + 10) = y + 10$$

$$2x - y = -10 \dots\dots(ii)$$

Subtract eq. (ii) from eq.(i)

$$2x = 40$$

$$x = 20$$

∴ present age of Sulochana is 20 years

27. The difference between the age of Rahim and his uncle is 30 years. 7 years ago the sum of both's age was 66 years, what is the age of uncle?

- (A) 51 (B) 49
(C) 39 (D) 41

Answer (*) No Option is correct

Answer is 55 years.

Sol. Let Rahim age be x

Uncle age be y

According to the question

$$y - x = 30 \dots\dots (i)$$

7 year before

$$(x - 7) + (y - 7) = 66$$

$$x + y = 80 \dots\dots (ii)$$

adding eq.(i) and (ii)

$$y = 55 \text{ years}$$

28. The price of an orange is ₹ 7 and the price of a watermelon is ₹ 5. Shyam has purchased both fruits in ₹ 38. What is the number of orange Purchased by him?

- (A) 2 (B) 3
(C) 4 (D) 6

Answer (C)

29. In what time a monkey will reach at the top of 60 feet pole, if he jumps 3 feet in a second and drops 2 feet at the same time.

- (A) 60 sec. (B) 50 sec.
(C) 58 sec. (D) 57 sec.

Answer (C)

30. Ramesh got some mangoes, in which no. of ripe mango was thrice the number of raw mangoes, if he got in total 68 mangoes, then how many out of them were raw?

- (A) 17 (B) 16
(C) 34 (D) 18

Answer (A)

Sol. Let the no. of ripe mango be x and no. of raw mango be y

$$x = 3y$$

$$x + y = 68$$

$$4y = 68$$

$$y = 17$$

31. The present time in the watch is 6:20. The minute hand is in North East direction, then what will be the position of hour hand?

- (A) West (B) South-East
(C) East (D) North- West

Answer (B)

32. A tortoise travel 1 k.m. in 4 hours. After every k.m. he rests for 20 min. Identify the time taken by him to travel 3.5 k.m. distance (In hours)?

- (A) 14 (B) 13
(C) 15 (D) 12

Answer (C)

33. At 5 : 15 Hrs. what will be the angle between the both hands of the clock?

- (A) 72.5° (B) 67.5°
(C) 64° (D) 58.5°

Answer (B)

Sol. Angle made by minute hand in 1 minute is 6°

Angle made by hour hand in 1 minute is $\frac{1}{2}^\circ$

at 5 : 00

angle between the hands is 150° after 15 minute hour hand

$$150^\circ + 15 \times \left(\frac{1}{2}\right)^\circ$$

$$\text{minute hand } 0 + 15 \times 6^\circ = 90^\circ$$

$$\text{angle difference} = 157\left(\frac{1}{2}\right)^\circ - 90^\circ = 67\left(\frac{1}{2}\right)^\circ$$

34. What Would be the angle between the needles of clock at 8 : 30 PM in the evening?

- (A) 90° (B) 75°
(C) 60° (D) 85°

Answer (B)

Sol. at 8 'O' clock angle between hands = 240°

after 30 minute

$$\text{hour hand covers } 30 \times 6^\circ = 180^\circ$$

$$\text{angle } 8:30 \text{ is } 240 + 15 - 180 = 75^\circ$$

35. If the day for day after tomorrow is saturday, then what will be the day three days before the tomorrow?

- (A) Thursday (B) Monday
(C) Saturday (D) Sunday

Answer (B)

36. If $7 - 4 - 1 = 714$, $9 - 2 - 3 = 932$, then $8 - 0 - 4 = ?$

- (A) 804 (B) 840
(C) 408 (D) 480

Answer (B)

Sol. $7 - 4 - 1 = 714$

$$9 - 2 - 3 = 932$$

$$8 - 0 - 4 = 840$$

37. $44 \times 75 = 7454$

$34 \times 65 = 6453$

$24 \times 55 = 5452$

$14 \times 45 = ?$

(A) 4432

(B) 4462

(C) 4342

(D) 4451

Answer (D)

Sol. $44 \times 75 = 7454$

+1 -1

(45) (74)

$34 \times 65 = 6453$

+1 -1

(35) (64)

$14 \times 45 = 4451$

+1 -1

(15) (44)

38. In the following number series, how many 8 are there before that there is 7 but after the 5 is not there -

7 8 3 7 8 5 1 2 7 8 3 3 4 7 8 2 5 6 6 8 3

(A) One

(B) Two

(C) Three

(D) Four

Answer (C)

Sol. (1) (2) (3)

7 8 3 7 8 5 1 2 7 8 3 3 4 7 8 2 5 6 6 8 3

39. If the digits of number 6 4 9 2 7 5 8 are written in ascending order then how many digits will remain constant?

(A) One

(B) Two

(C) Three

(D) None

Answer (B)

Sol. ascending order = 2 (4) 5 6 (7) 8 9

40. In the number series how many 9 are there, before them. There is 3 and after them there is 2.

3 9 2 4 3 9 2 3 9 3 9 2 3 9 2 9 3

(A) Zero

(B) One

(C) Two

(D) More than 3

Answer (D)

Sol. (1) (2) (3) (4)

3 9 2 4 3 9 2 3 9 3 9 2 3 9 2 9 3

41. If the following series is arranged in opposite direction then which number will be 4th from the left?

7, 3, 9, 7, 0, 3, 8, 4, 6, 2, 1, 0, 5, 11, 13

(A) 9

(B) 7

(C) 5

(D) 0

Answer (D)

Sol. 7 3 9 7 0 3 8 4 6 2 1 0 5 11 13

13 11 5 (0) 1 2 6 4 8 0 7 9 3 7

42. In the following number series, how many numbers are written twice?

G O S S R G M L G T O P Q Q R P P S O G
T L G P

(A) 3

(B) 5

(C) 1

(D) 2

Answer (A)

Sol. SS QQ PP

43. C is the mother of A and B. If D is husband of B, then what is the relation between C and D?

(A) Mother

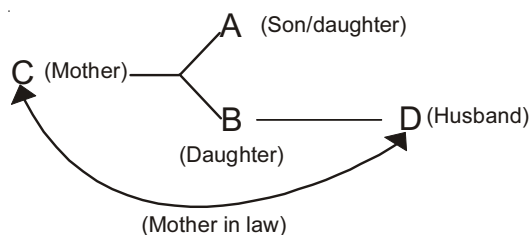
(B) Aunt

(C) Mother in law

(D) Sister

Answer (C)

Sol.



44. Pointing towards a woman Simon told that she is the daughter of only sister of my father. How that woman is related with Simon?

(A) Mother

(B) Father's sister/aunt (paternal aunt)

(C) Sister

(D) Cousin=daughter of paternal aunt/

Daughter of Father's sister

Answer (D)

45. If EODGH is code for BLADE; what is the code for CRICKET?

(A) FULFNHW

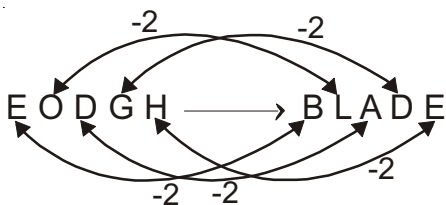
(B) FLUNFWH

(C) FULFNWH

(D) None

Answer (A)

Sol.



FULFNHW = CRICKET

46. What is the code of DESK if KITE is written as % 2 \$ # and STUD is written as @ \$ 57.

- (A) 8 % © # (B) © 8% #
(C) # 7 % @ (D) 7 # @ %

Answer (D)

Sol. KITE - % 2 \$ #

STUD - @ \$ 57

DESK - 7 # @ %

47. If 'A' is substituted by 1, 'B' by 2 and upto 'Z' which is '26', what will be, the sum of the numbers for the word DECAF?

- (A) 38 (B) 41
(C) 40 (D) 37

Answer (A)

Sol. DECAF - 4 + 5 + 3 + 1 + 25 = 38

48. If 'Spoon' is called 'Plate', 'Plate' is called 'Knife', 'Knife' is called 'Jug', Jug is called 'Glass', 'Glass' is called 'Saucer' and 'Saucer' is called 'Spoon', by what do you cut fruit?

- (A) Spoon (B) Jug
(C) Glass (D) Saucer

Answer (B)

Sol. Spoon - Plate

Plate - Knife

Knife - Jug

Jug - Glass

Glass - Saucer

Saucer - Spoon

Fruit cut by Knife

Knife is called Jug

49. In a certain code ROBE is written as 5136 and BIND is written as 3792. How is RIDE written in that code?

- (A) 5276 (B) 5726
(C) 5376 (D) 5326

Answer (B)

Sol. ROBE - 5136

BIND - 3792

RIDE - 5726

50. If 'table' is called 'chair', 'chair' is called 'cot', 'cot' is called 'pot' and 'pot' is called 'filter', where does a person 'sit'?

- (A) Pot (B) Cot
(C) Chair (D) Filter

Answer (B)

Sol. table - chair

chair - cot

cot - pot

pot - filter

then person sit on chair

chair is called 'Cot'

51. Anita ranks twelfth in a class of forty six. What will be her rank from the last.

- (A) 34th (B) 35th
(C) 36th (D) 37th

Answer (B)

Sol. 11 Students. 12th 34 Students

Rank from Last = 34 + 1 = 35

52. Five boys took part in a race. Prabir finished before Mohit but behind Mihir. Suresh finished before Sanchit but behind Mohit. Who won the race?

- (A) Prabir (B) Mihir
(C) Mohit (D) Suresh

Answer (B)

Sol. Suresh Mohit Prabir Mihir

Mihir won the race

Direction : In question no. - 53-65, there is a question mark in blank space and it is only one of the four alternatives given under the question which satisfies the same relation as is found between two patterns to the left of the sign :: given in the question. Find the correct alternative-

53. Cobbler : Leather :: Tailor : ?

- (A) Thread (B) Cloth
(C) Shirt (D) Button

Answer (B)

Sol. Cobbler : Leather :: Tailor : Cloth

54. AB : ZY :: CD : ?

- (A) XY (B) WV
(C) WX (D) XW

Answer (D)

Sol. AB : ZY :: CD : XW

55. $125 : 5 :: 64 : ?$

- (A) 2 (B) 4
 (C) 8 (D) 16

Answer (B)

Sol. $125 : 5 :: 64 : 4$

$$125 : 5^3 :: 64 : 4^3$$

56. Jewellery : Gold :: Furniture : ?

- (A) Table (B) Tree
 (C) Wood (D) Paint

Answer (C)

Sol. Jewellery : Gold :: Furniture : Wood

57. $1 : 8 :: 27 : ?$

- (A) 37 (B) 47
 (C) 57 (D) 64

Answer (D)

Sol. $(1)^3 : (2)^3 :: (3)^3 : (4)^3$

$$1 : 8 :: 27 : 64$$

58. Fish : Water :: Bird : ?

- (A) Water (B) Sky
 (C) Food (D) Air

Answer (B)

Sol. Fish : Water :: Bird : Sky

59. Defeat : Win :: Grief : ?

- (A) Joy (B) Farsh
 (C) Sorrow (D) Defeat

Answer (A)

Sol. Defeat : Win :: Grief : Joy

60. Time : Second :: Power : ?

- (A) Joule (B) Watt
 (C) Newton (D) Litre

Answer (B)

Sol. Time : Second :: Power : Watt

Unit of time is Second

So, Unit of Power is Watt

61. Madhya Pradesh : Bhopal :: Gujarat : ?

- (A) Gandhinagar (B) Gangtok
 (C) Ganganagar (D) Gandhipur

Answer (A)

Sol. Capital of M.P. - Bhopal

Capital of Gujarat - Gandhinagar

62. India : Rupee :: Japan : ?

- (A) Dollar (B) Yen
 (C) Rubal (D) Piso

Answer (B)

Sol. Currency of India is Rupee

Currency of Japan is Yen

63. Thermometer : Temperature :: Seismograph : ?

- (A) Temperature (B) Humidity
 (C) Earthquake Intensity (D) Electric current

Answer (C)

Sol. Thermometer : Temperature :: Seismograph : Earthquake Intensity

64. Aeroplane : Hangar :: Cloth : ?

- (A) Home (B) Shop
 (C) Almirah (D) Hanger

Answer (C)

Sol. Aeroplane : Hangar :: Cloth : Almirah

65. Sachin Tendulkar : Cricket :: P.V. Sindhu : ?

- (A) Badminton (B) Hockey
 (C) Cricket (D) Women cricket

Answer (A)

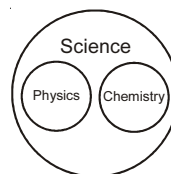
Sol. Sachin Tendulkar : Cricket :: P.V. Sindhu : Badminton

66. Science, Physics, Chemistry

- (A) a (B) b
 (C) c (D) d

Answer (A)

Sol.

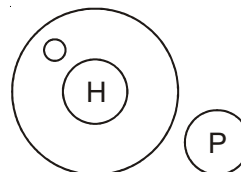


67. Organism, Human, Planet

- (A) a (B) b
 (C) c (D) d

Answer (B)

Sol.



68. Doctor, Man, Actor

- (A) a (B) b
(C) c (D) d

Answer (D)

Sol.



69. Gold, Ornaments, Silver

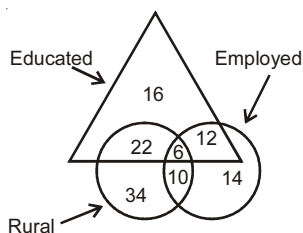
- (A) a (B) b
(C) c (D) d

Answer (D)

Sol.



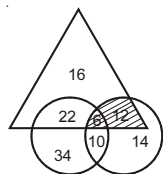
70. How many educated people are employed?



- (A) 18 (B) 26
(C) 24 (D) 1

Answer (A)

Sol. Employed People = 12+6 = 18



71. If 'L' is equal to 'X', 'X' is equal to '+', '+' is equal to '÷', '÷' is equal to '-' then -

$$40 \times 12 + 3 - 6 \div 60 = ?$$

- (A) 44 (B) 16
(C) 76 (D) 4

Answer (D)

Sol. $40 \times 12 + 3 - 6 \div 60$

According to question

$$40 + 12 \div 3 \times 6 - 60 = 4$$

(Using BODMAS Rule)

72. Fill in the blank and find the correct answer-

$$31 - 4 - 2 - 1 = 30$$

- (A) \times, \div, \times (B) $-, +, \div$
(C) $+, -, \times$ (D) $-, +, +$

Answer (D)

Sol. $31 - 4 + 2 + 1 = 30$

73. Choose the right

M O E A S J T Z
3 5 7 6 2 9 4 0

- (A) 7620 (B) 7623
(C) 7624 (D) 7625

Answer (C)

Sol.

E	A	S	T
7	6	2	4

74. Choose the right one out of the following:

$$96 * 6 * 8 * 2$$

- (A) $\div, =, \times$ (B) $\times, =, \div$
(C) $=, \div, \times$ (D) $=, \times, \div$

75. If 'P' means ' \div ', 'R' means '+', 'T' means '-' and 'V' means ' \times ',

$$\text{then } 12 \text{ V } 4 \text{ R } 16 \text{ P } 8 \text{ T } 6 = ?$$

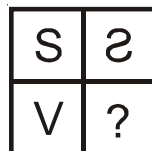
- (A) 44 (B) 28
(C) 32 (D) 50

Answer (A)

Sol. Using BODMAS Rule

Directions: From Q . No. 76-90, Analyze the figures and identify the rules followed by the figures. Also complete the missing figure of the matrix.

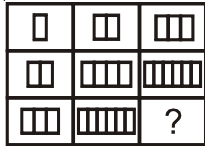
76.



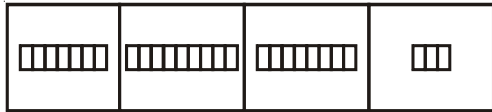
- (A) (B) (C) (D)

Answer (A)

83. Question Figure



Answer Figure



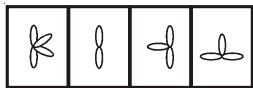
(A) (B) (C) (D)

Answer (B)

84. Question Figure



Answer Figure



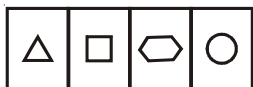
(A) (B) (C) (D)

Answer (A)

85. Question shapes



Answer Shapes

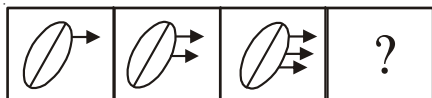


(A) (B) (C) (D)

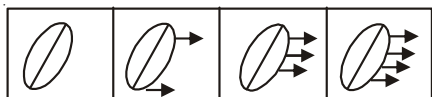
Answer (C)

Direction (86-90) In each of the following questions which one of the answer figure should come after the problem figure:

86. Question Figure



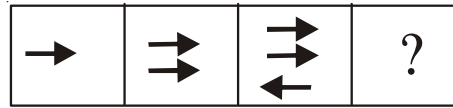
Answer Figure



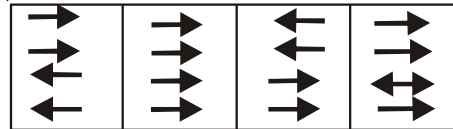
(A) (B) (C) (D)

Answer (D)

87. Question Figure



Answer Figure



(A) (B) (C) (D)

Answer (A)

88. Problem Figure



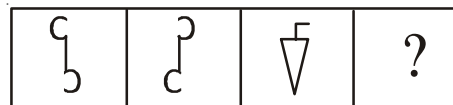
Answer Figure



(A) (B) (C) (D)

Answer (D)

89. Problem Figure



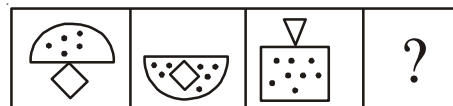
Answer Figure



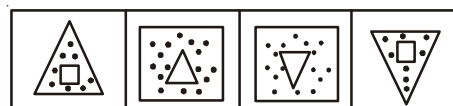
(A) (B) (C) (D)

Answer (B)

90. Problem Figure



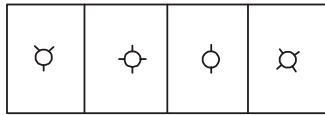
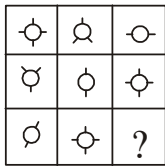
Answer Figure



(A) (B) (C) (D)

Answer (B)

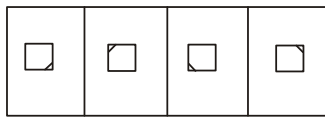
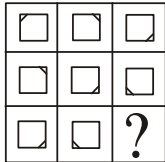
91.



(A) (B) (C) (D)

Answer (A)

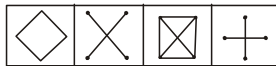
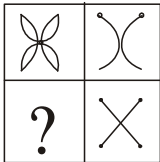
92.



(A) (B) (C) (D)

Answer (B)

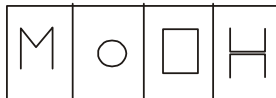
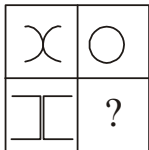
93.



(A) (B) (C) (D)

Answer (C)

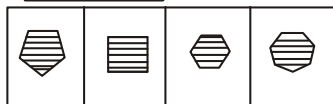
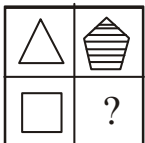
94.



(A) (B) (C) (D)

Answer (C)

95.

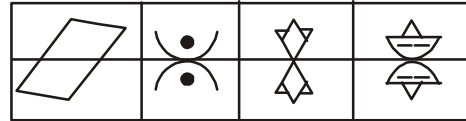


(A) (B) (C) (D)

Answer (C)

Sol. { (N+1) sides }

96. Choose the odd figure out of the given

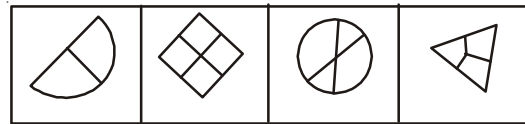


(A) (B) (C) (D)

Answer (A)

Sol. (Due to unsymmetry)

97. Choose the odd figure.

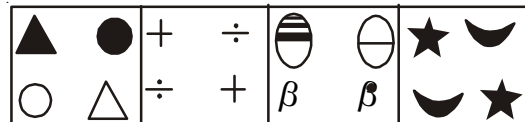


(A) (B) (C) (D)

Answer (C)

Sol. (Due to unsymmetry)

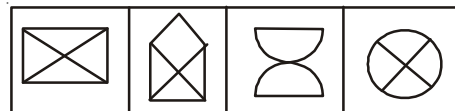
98. Choose the odd figure



(A) (B) (C) (D)

Answer (C)

99. Choose the odd one

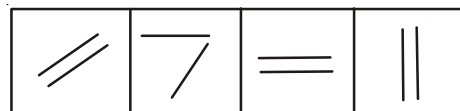


(A) (B) (C) (D)

Answer (C)

Sol. (Other are symmetric)

100. Choose the odd one



(A) (B) (C) (D)

Answer (B)

Sol. (Other are parallel)

PAPER-II : SCHOLASTIC APTITUDE TEST (SAT)

1. Conductivity of superconductors is:
 (A) Infinite (B) Very large
 (C) Very small (D) Zero

Answer (A)

Sol. Superconductors have infinite conductivity.

2. The S.I. Unit of magnetic field intensity is:
 (A) Weber (B) Tesla
 (C) Oerstead (D) Gauss

Answer (B)

Sol. S.I. Unit of magnetic field is Tesla

3. If the distance travelled by an object is zero, then the displacement of the object is:
 (A) Zero
 (B) not zero
 (C) negative
 (D) may or may not be zero

Answer (A)

Sol. Zero distance implies that body is at rest hence its displacement is zero

4. Which of the following is non-conservative force?
 (A) Electrostatic force (B) Gravitational force
 (C) Viscous force (D) Spring force

Answer (C)

Sol. All other forces are conservative and viscous force is non conservative

5. Escape velocity of a particle from the earth is approximately.
 (A) 7 km/s (B) 1.1 km/s
 (C) 11.2 km/s (D) 112 km/s

Answer (C)

Sol. $V_{\text{escape}} = 11.2 \text{ km/sec}$ for particle at Earth surface.

6. When a satellite falls to an orbit of smaller radius its kinetic energy:
 (A) decrease (B) increase
 (C) remain same (D) none of these

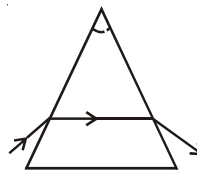
Answer (B)

Sol. As potential energy in lower orbit decreases so kinetic energy in lower orbit increases as per energy conservation.

7. How many time does a ray bend on passing through a prism?
 (A) once (B) twice
 (C) thrice (D) none

Answer (B)

Sol. Light bend twice as shown in diagram.



8. Waves inside a gas are:
 (A) longitudinal
 (B) transverse
 (C) partly longitudinal partly transverse
 (D) none of these

Answer (A)

Sol. Wave inside gas are longitudinal.

9. Choose the source of energy which is different from others.
 (A) Sun light (B) Falling water
 (C) Wind (D) Petroleum

Answer (D)

Sol. Petroleum is conventional source of energy and all other are non-conventional.

10. Which is called Earth's satellite?
 (A) moon (B) sun
 (C) venus (D) mars

Answer (A)

Sol. Moon is the only natural satellite of Earth.

11. Which is the colour at lower end of visible spectrum?
 (A) red (B) green
 (C) yellow (D) violet

Answer (D)

Sol. According to wavelength violet colour lies on lower end of visible spectrum.

12. How many planets have rings around them?
 (A) 3 (B) 2
 (C) 4 (D) 5

Answer (D)

Sol. Saturn, Jupiter, Uranus and Neptune have rings around it

13. 1 kWh equals to:

- (A) $3.6 \times 10^4 \text{ J}$ (B) $3.6 \times 10^5 \text{ J}$
 (C) $3.6 \times 10^6 \text{ J}$ (D) $3.6 \times 10^7 \text{ J}$

Answer (C)

Sol. $1 \text{ kWh} = 1 \times 10^3 \times \frac{\text{J}}{\text{sec}} \times 60 \times 60 \text{ sec}$
 $= 36 \times 10^5 \text{ J}$
 $1 \text{ kWh} = 3.6 \times 10^6 \text{ J}$

14. Which one of the following will show Tyndall Effect.

- (A) Solution of salt
 (B) Milk
 (C) Solution of copper sulphate
 (D) None of the above

Answer (B)

Sol. Milk is colloidal mixture

15. Which one of the following is solution.

- (A) Soil (B) Aerosols
 (C) Coal (D) Soda-water

Answer (D)

Sol. Soda water is homogeneous mixture because CO_2 is dissolve in water so it is solution

16. Write chemical formula of Magnesium Chloride

- (A) MgCl_2 (B) CaCl_2
 (C) $\text{Cu}(\text{NO}_3)_2$ (D) CaCO_3

Answer (A)

Sol. $\text{MgCl}_2 \Rightarrow \begin{matrix} (2) & & (1) \\ & \diagdown & / \\ \text{Mg} & & \text{Cl} \\ & / & \diagdown \\ & & \text{MgCl}_2 \end{matrix}$

17. Isotopes of an element contains

- (A) Similar physical properties
 (B) Different chemical properties
 (C) Different no. of Neutrons
 (D) Different atomic number

Answer (C)

Sol. Isotopes have same no. of protons and different no. of neutrons or mass no. is different.

18. Valency electron in Cl^- ion is

- (A) 16 (B) 8
 (C) 17 (D) 18

Answer (B)

Sol. Cl^- ion = 2,8,8 so valence electron is 8

19. Which one of the following is correct electronic configuration of sodium.

- (A) 2,8 (B) 8,2,1
 (C) 2,1,8 (D) 2,8,1

Answer (D)

Sol. $\text{Na} \Rightarrow 11 e^- - 2,8,1$

20. Physical state of water at 0°C is.

- (A) Solid (B) Liquid
 (C) Gas (D) None of the above

Answer (A,B,C)

Sol. Physical state of water at 0°C is liquid.

21. Solution is

- (A) Homogeneous mixture
 (B) Heterogeneous mixture
 (C) colloidal
 (D) All of the above

Answer (A)

Sol. True solution is homogeneous mixture

22. Components present in air can be separated

- (A) Fractional distillation
 (B) Evaporation
 (C) Boiling
 (D) None

Answer (A)

Sol. Air can be separated by fractional distillation

23. Which one of the following is

- (A) Na^+ (B) Cl^-
 (C) H_2 (D) None of the above

Answer (*)

Sol. Question is incomplete

24. Electron is invented by

- (A) J.J. Thomson (B) Dalton
 (C) Niels Bohr (D) None of the above

Answer (A)

Sol. Electron is invented by J.J. Thomson

25. The maximum number of electrons in a shell can be shown by

- (A) $2n^2$ (B) $2n^3$
 (C) $2n^2+1$ (D) None of the above

Answer (A)

Sol. Maximum no. of electrons in a shell is $2n^2$

26. Distribution of electrons in carbon is as follow
 (A) 2,4 (B) 2,2,2
 (C) 4,2 (D) None of the above

Answer (A)

Sol. Carbon $6 e^- = 2,4$

27. All fungi are
 (A) Parasites (B) Saprophytes
 (C) Symbiont (D) Heterotrophs

Answer (D)

Sol. Fungi are non chlorophyllous, so they depend on others for their food.

28. An exception to cell theory is
 (A) Bacteria (B) Virus
 (C) Algae (D) All

Answer (B)

Sol. Virus are acellular structure made up of protein and nucleic acid.

29. Chemical composition of chromosome is
 (A) DNA and lipids
 (B) DNA and carbohydrates
 (C) Proteins and lipids
 (D) DNA and proteins

Answer (D)

Sol. Chromosome are made up of chromatin fibres, these are made up of DNA and Histone protein.

30. DNA replication (synthesis) occurs in
 (A) G-phase (B) S-phase
 (C) G_2 phase (D) M phase

Answer (B)

Sol. In cell cycle, 's' is synthetic phase in which replication of DNA takes place.

31. Bacteria 'eaters' are
 (A) Virus (B) Bacteria
 (C) Fungi (D) Algae

Answer (A)

Sol. Bacteriophage are virus that eat bacteria.

32. Cristae is associated with
 (A) Nucleus (B) Chloroplast
 (C) Cell wall (D) Mitochondria

Answer (D)

Sol. Inner membrane of mitochondria have finger like projections called cristae.

33. Association of algae and fungi forms
 (A) Mycorrhiza (B) Lichen
 (C) Flower (D) Bio fertilizer

Answer (B)

Sol. Lichens show symbiotic association between algae and fungi.

34. Energy flow in ecosystem is
 (A) Tetra direcional (B) Tri direcional
 (C) Bi-direcional (D) Uni-direcional

Answer (D)

Sol. Energy always flow from producer (autotroph) to consumer (heterotroph)

35. Absorption of water is associated with
 (A) Root apex (B) Root hairs
 (C) Bark of roots (D) All of these

Answer (B)

Sol. Root hairs are the extension of epidermal cell of maturation zone of roots.

36. Which gas is not responsible for global warming?
 (A) CO_2 (B) O_3
 (C) NO_2 (D) N_2

Answer (D)

Sol. Nitrogen is inert in nature, so they do not absorb Infrared radiations emitted by the earth surface.

37. Lipoprotein is found in
 (A) Cell membrane (B) Nucleus
 (C) Cytoplasm (D) Cell wall

Answer (A)

Sol. Cell membrane or plasma membrane are made up of protein and lipid.

38. Glycolysis takes place in
 (A) Mitochondria (B) Cytoplasm
 (C) Nucleus (D) Chloroplast

Answer (B)

Sol. Break down of glucose into pyruvic acid in cytoplasm during respiration.

39. Amphibians of plant kingdoms are
 (A) Bacteria (B) Gymnosperm
 (C) Bryophyta (D) Algae

Answer (C)

Sol. Bryophytes are land plants they require water for fertilization.

40. When ATP is converted in to ADP it releases
(A) Enzymes (B) Secretions
(C) Energy (D) Hormones

Answer (C)

Sol. Breaking of phosphate bond, releases energy
 $ATP \rightarrow ADP + P + E$

41. The Harappan towns and cities were divided in to large blocks
(A) Square (B) Rectangular
(C) Circular (D) Semi-circular

Answer (B)

42. The most famous centre of learning during the Mauryan period was
(A) Taxila (B) Ujjain
(C) Nalanda (D) Vallabhi

Answer (A)

43. In which year of Ashok coronation did the Kailnga war take place
(A) Fifth year (B) First year
(C) Eighth year (D) Thirteenth year

Answer (C)

44. Who built the stup of Sanchi ?
(A) Sariputra (B) Mahamogallana
(C) Mahinda (D) Ashok

Answer (D)

45. The founder of Vijaynagar kingdom was
(A) Harihar I (B) Bukkaraya I
(C) Both (A) & (B) (D) Krishnadevraya

Answer (C)

46. Taj Mahal is located
(A) In Agra (B) Fatehpur Sikeri
(C) In Delhi (D) None of these

Answer (A)

47. At where Britishers established the first factory in Bengal in 1651 A.D.
(A) Hugli (B) Murshidabad
(C) Kasim Bazar (D) Calcutta

Answer (A)

48. Who is associated with the policy of Doctrine of Laps?
(A) Lord Hastings (B) Lord Dalhousie
(C) Lord Wellesley (D) Lord Cornwallis

Answer (B)

49. At which place was Tanya Tope hanged to death
(A) Jhansi (B) Kanpur
(C) Shivpuri (D) Sagar

Answer (C)

50. Rani Lamibai was also known as by which name
(A) Chhabili (B) Manu
(C) Manikarnika (D) All of the above

Answer (D)

51. What was the real name of Swami Vivekanand ?
(A) Narendranath
(B) Mula Shankar
(C) Gadadhar Chattopadhyaya
(D) Mahes Das

Answer (A)

52. Chandra Shekhar Azad was born on 23rd July 1806 at
(A) Jhabua (B) Bangagaon
(C) Gurudaspur (D) Gwalior

Answer (A)

53. Who gave the title of Mahatma to Gandhiji
(A) Romain Rolland
(B) Louis Fisher
(C) Ravindranath Tagore
(D) Subhash Chandra Bose

Answer (C)

54. The credit of merger of states in India goes to ?
(A) Jawahar Lal Nehru (B) Sardar Patel
(C) Fazal Ali (D) Mahatma Gandhi

Answer (B)

55. When was the constitution of India adopted
(A) 9 December 1946
(B) 16 August 1947
(C) 26 November 1949
(D) 26 January 1950

Answer (C)

56. The rosuece are those things which:
(A) Satisfy human needs
(B) Full fill some specific objectives
(C) Are needed for the human welfare
(D) All the above

Answer (D)

57. Meaning of Resource conservation is:

- (A) No use of resources
- (B) To keep resources reserved
- (C) Prevent misuse of resources
- (D) Balanced use of resources

Answer (C/D)

58. The major natural hazard of India is:

- (A) Drought
- (B) Flood
- (C) Earthquake
- (D) Volcano

Answer (B)

59. Kagiranga National park is located in:

- (A) Uttar Pradesh
- (B) Assam
- (C) Rajasthan
- (D) Orissa

Answer (B)

60. Suitable soil for cotton production is

- (A) Alluvial soil
- (B) Black soil
- (C) Red soil
- (D) Laterite soil

Answer (B)

61. Father of Green revolution is

- (A) Dr. Bennett
- (B) Billcox
- (C) Norman Borlaug
- (D) Nixon

Answer (C)

62. Yellow revolution is related to

- (A) Oilseeds production
- (B) Fruits production
- (C) Sheep production
- (D) Fish production

Answer (A)

63. Kharif crops are

- (A) Rice, Millet, Maize
- (B) Wheat, Gram, Jow
- (C) Jute, Tea, Coffee
- (D) Tobacco, Rubber, Linseed

Answer (A)

64. Metallic Mineral is

- (A) Iron
- (B) Diamond
- (C) Mica
- (D) Coal

Answer (A)

65. Which type is not included in iron-ore

- (A) Hematite
- (B) Magnetite
- (C) Limonite
- (C) Lignite

Answer (D)

66. Which is not a part of Public Distribution System.

- (A) Proper value shop
- (B) Co-operative customer storage
- (C) Super market
- (D) Buffer stock

Answer (C)

67. First rank of Diamond Production in India.

- (A) Madhya Pradesh
- (B) Bihar
- (C) Uttar Pradesh
- (D) Orissa

Answer (A)

68. Tarapur is famous for

- (A) Nuclear electricity
- (B) Solar energy
- (C) Hydro electricity
- (D) Wind energy

Answer (A)

69. The Manchester of cotton textile in South India is called-

- (A) Secunderabad
- (B) Coimbatore
- (C) Thiruvananthapuram
- (D) Guntur

Answer (B)

70. Which is the cheapest means of transport-

- (A) Air transport
- (B) Water transport
- (C) Rail transport
- (D) Road transport

Answer (B)

71. Which country's parliament is treated as the mother of world parliament.

- (A) America
- (B) Britain
- (C) India
- (D) Switzerland

Answer (B)

72. Who protects the constitution-

- (A) Judiciary
- (B) Legislature
- (C) Executive
- (D) Finance Commission

Answer (A)

73. From which country did we adopt fundamental rights?

- (A) England
- (B) China
- (B) U.S.A.
- (D) Ireland

Answer (C)

74. How long can an ordinance remain in force?

- (A) Three months
- (B) Four months
- (C) Five months
- (D) Six months

Answer (D)

75. The quorum requirement to the Rajya Sabha-

- (A) 25 (B) 50
 (C) 75 (D) 100

Answer (A)

76. The main function of the Foreign Exchange bank is

- (A) Receiving the deposits
 (B) Advancing loans
 (C) Exchange of money
 (D) All above

Answer (D)

77. Agmark security icon is :

- (A) for Jewellery
 (B) for agricultural products
 (C) for woolen clothes
 (D) for electrical appliances

Answer (B)

78. Employment is provided in the National Rural Employment Guarantee Scheme for-

- (A) 150 days
 (B) 100 days
 (C) 200 days
 (D) One year

Answer (B)

79. Expansion of the market is sported by-

- (A) Means of Transport
 (B) Means of Communication
 (C) Bank and Financial Institution
 (D) All of the above

Answer (D)

80. World Trade Organization has been established :

- (A) 1985 year
 (B) 1995 year
 (C) 2001 year
 (D) 2005 year

Answer (B)

81. Number r is termed as Rational number if it can be expressed as $\frac{p}{q}$, where p and q are integers and,

- (A) $p = q$ (B) $p \neq q$
 (C) $q = 0$ (D) $q \neq 0$

Answer (D)

82. Zero of the polynomial $p(x) = 2x + 1$ is :

- (A) $-\frac{1}{2}$ (B) $\frac{1}{2}$
 (C) 0 (D) ∞

Answer (A)

Sol. $2x + 1 = 0$

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

83. Number of straight lines passing through the point (1, 2) is.

- (A) 1 (B) 2
 (C) 3 (D) ∞

Answer (D)

84. Shape made by the bisectors of angles of a parallelogram is

- (A) Rectangle (B) Square
 (C) Circle (D) Straight line

Answer (A)

85. If side of each cube is 3 cm. then volume of given figure is

- (A) 3 cm^3 (B) 27 cm^3
 (C) 15 cm^3 (D) 405 cm^3

Answer (D)

Sol. Volume = n (volume of one cube)

$$= 15 \times (3)^3 = 405 \text{ cm}^3$$

86. Heron's formula for the Area of triangle is:

- (A) $\frac{1}{2}(\text{Base} \times \text{Height})$ (B) $\sqrt{s(s-a)(s-b)(s-c)}$
 (C) $\frac{a+b+c}{2}$ (D) $\sqrt{s.a.b.c}$

Answer (B)

87. If the number of observations n is even, then median is

- (A) $\left(\frac{n+1}{2}\right)^{\text{th}}$ term
 (B) $\left(\frac{n}{2}\right)^{\text{th}}$ term
 (C) Mean of $\left(\frac{n}{2}\right)^{\text{th}}$ and $\left(\frac{n}{2}+1\right)^{\text{th}}$ term
 (D) None of these

Answer (C)

88. Product of any three consecutive even numbers is divisible by
- (A) 2 (B) 4
(C) 16 (D) 12

Answer (A,B,C,D)

Sol. (A,B,C,D) $\Rightarrow 2n(2n+2)(2n+4) = 8n(n+1)(n+2)$ it is divisible by 2, 4, 16 and 12.

89. Indian Mathematician Varahmihir wrote the
- (A) Arya Bhattiyam (B) Panch Siddhantika
(C) Ganitsaar Sangrah (D) Leelawati

Answer (B)

90. Remainder on dividing polynomial $3x^2 - x^3 - 3x + 5$ by $x - 1 - x^2$ is
- (A) 7 (B) 3
(C) 0 (D) $2x + 5$

Answer (B)

Sol. (Apply long division)

91. A rational number becomes $\frac{1}{3}$ on subtracting 1 from its numerator and it becomes $\frac{1}{4}$ when 8 is added to its denominator, the rational number is
- (A) $\frac{5}{12}$ (B) $\frac{1}{12}$
(C) $\frac{7}{12}$ (D) $\frac{1}{17}$

Answer (A)

Sol. Let the ration number be $\frac{x}{y}$

By condition (i)

$$\frac{x-1}{y} = \frac{1}{3}$$

$$3x - y = 3 \dots\dots(i)$$

By condition (ii)

$$\frac{x}{y+8} = \frac{1}{4}$$

$$4x - y = 8 \dots\dots(ii)$$

by solving (i) and (ii)

$$x = 5, y = 12$$

92. How many numbers of two digits are divisible by 3
- (A) 30 (B) 32
(C) 40 (D) 35

Answer (A)

Sol. Numbers are 12, 15,99
number form A.P.

$$l = a + (n-1)d$$

$$\text{therefore, } 99 = 12 + (n-1)3$$

$$\frac{99-12}{3} = (n-1)$$

$$n = 30$$

93. Co-ordinates of a point on y-axis which is equidistant from the points (6,5) and (-4, 3) are
- (A) (9,0) (B) (0,9)
(C) (3,2) (D) (0,0)

Answer (B)

Sol. Let the Co-ordinate be (0, α)

$$\sqrt{(0-6)^2 + (5-\alpha)^2} = \sqrt{(0+4)^2 + (3-\alpha)^2}$$

$$\text{by solving, } \alpha = 9 \therefore (0,9)$$

94. Value of $\sec A (1 - \sin A) (\sec A + \tan A)$ is
- (A) 0 (B) 2
(C) 1 (D) ∞

Answer (C)

Sol. $\sec A (1 - \sin A) (\sec A + \tan A)$

$$\frac{1}{\cos A} (1 - \sin A) \left[\frac{1}{\cos A} + \frac{\sin A}{\cos A} \right]$$

$$\frac{1 - \sin^2 A}{\cos^2 A} = 1$$

95. Length of Minute hand of a clock is 14cm. Area formed by this hand in 5 minutes is:

- (A) $\frac{154}{3}$ (B) 154
(C) $\frac{215}{3}$ (D) $\frac{205}{3}$

Answer (A)

Sol. Area = $\frac{60^\circ}{360^\circ} \pi (14)^2$

$$\frac{22}{7 \times 6} \times 196 = \frac{154}{3} \text{ cm}^2$$

96. Mean of first n natural numbers is:

- (A) $\frac{n(n+1)}{2}$ (B) $\frac{n+1}{2}$
 (C) $\frac{n}{2}$ (D) $\frac{n(n-1)}{2}$

Answer (B)

Sol. $\bar{X} = \frac{1+2+3+\dots+n}{n} = \frac{\frac{n(n+1)}{2}}{n} = \frac{n+1}{2}$

97. A box contains 3 blue, 2 white and 4 red marbles. A marble is drawn randomly. Probability of getting white marble is

- (A) $\frac{3}{5}$ (B) $\frac{2}{6}$
 (C) $\frac{2}{9}$ (D) $\frac{2}{5}$

Answer (C)

Sol. Favourable cases = 2

Total sample space = 9

$P(E) = \frac{2}{9}$

98. Choose false statement from following

- (A) All equilateral triangles are isosceles triangle
 (B) Some rational numbers are intergers
 (C) All intergers are not rational number
 (D) Some isosceles triangles are equilateral triangles

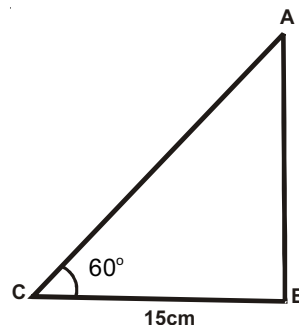
Answer (C)

99. Angle of elevation of a tower from a point at a distance of 15 meter from foot of the tower is 60° . Height of tower is

- (A) 15 meter (B) $\sqrt{3}$ meter
 (C) $15\sqrt{3}$ meter (D) $\frac{15}{\sqrt{3}}$ meter

Answer (C)

Sol.



In ΔABC ,

$\tan 60^\circ = \frac{AB}{BC}$

$\sqrt{3} = \frac{AB}{15}$

$AB = 15\sqrt{3} \text{ m}$

100. n^{th} term of a list of numbers is given by $a_n = (3+2n)$. Sum of first 24 terms will be

- (A) 672
 (B) 670
 (C) 570
 (D) 572

Answer (A)

Sol. $a_n = 3 + 2n$

$\sum_{n=1}^{24} a_n = \sum_{n=1}^{24} (3 + 2n)$

$= 3n + \frac{2n(n+1)}{2}$

$= 3 \times 24 + 24 \times 25 \text{ (where, } n = 24 \text{)}$

$= 72 + 600$

$= 672$

