DATE : 04/11/2018

Test Booklet Code

X	I&II	18

TAMIL NADU

Aakash
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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 : 101 - 200 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. 19, 24, 31, 42, 55, 72, __?__

(1) 83 (2) 89

(3) 91 (4) 93

Answer (3)

Sol. 19, 24, 31, 42, 55, 72, 91

+5 +7 +11 +13 +17 +19

Consecutive Prime Numbers

2. 10, 58, 105, __?__, 196, 240, ...

(1) 150 (2) 151

(3) 154 (4) 147

Answer (2)

Sol. 10, 58, 105, 151, 196,

+48 +47 +46 +45

3. Z, W, R, K, __?__

(1) B (2) F

(3) D (4) A

Answer (1)

Sol. Z, W, R, K, B

26 23 18 11 2

−3 −5 −7 −9

4. 1, 4, 13, 40, 121, __?__

(1) 202 (2) 364

(3) 148 (4) 210

Answer (2)

Sol. 1, 4, 13, 40, 121, 364

+3 +9 +27 +81 +243

3^1 3^2 3^3 3^4 3^5

5. 0, 1, 2, 3, 6, 11, 20, __?__

(1) 31 (2) 34

(3) 37 (4) 22

Answer (3)

Sol. 0, 1, 2, 3, 6, 11, 20, 37

fibonacci series

0+1+2=3 | 1+2+3=6 | 2+3+6=11 | 3+6+11=20

6+11+20=37

6. 6, 7, 10, 8, 16, 15, 26, 23, 42, 38, 68, __?__

(1) 61 (2) 80

(3) 106 (4) 120

Answer (1)

Sol. 6, 7, 10, 8, 16, 15, 26, 23, 42, 38, 68, 61

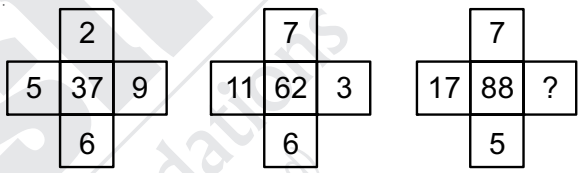
Alternative Numbers, I, 6, 10, 16, 26, 42, 68

Sum of 2 No's

give 3rd No. II, 7, 8, 15, 23, 38, 61

(7+8=15, 8+15=23, 15+23 = 38, 23+38=61)

7.

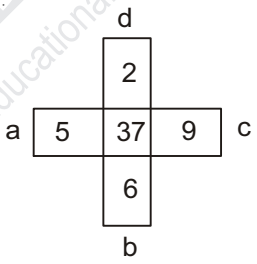


(1) 20 (2) 59

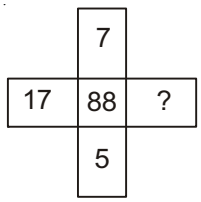
(3) 85 (4) 10

Answer (4)

Sol.



ab+(c-d)=(5x6)+(9-2)=37



(17x5)+(x-7)=88

85 + x-7=88

x-7 =3

x =7+3 = 10

8. PEN : WRITING : : CYCLE : _____

(1) REPAIRING (2) CAR

(3) RIDING (4) ROAD

Answer (3)

Sol. PEN : WRITING : CYCLE RIDING

9. EYE : FACE : : _____

(1) RING : FINGER (2) STEM : ROOT

(3) KNOB : DOOR (4) SHOE : FOOT

Answer (3)

Sol. EYE : FACE : KNOB : DOOR

10. WING : BEAK : : _____

(1) BUTION : SHIRT (2) PLUTO : VENUS

(3) HOUSE : CHIMNEY (4) BIRD : CAGE

Answer (2)

Sol. WING : BEAK : : PLUTO : VENUS

11. ROOM : HOUSE : : _____

(1) REFRIGERATOR : KITCHEN

(2) CHAIR : ROOM

(3) ROOF : BUILDING

(4) WHEEL : CHAIR

Answer (3)

Sol. ROOM : HOUSE : : ROOF : BUILDING

12. 5 : 29 : : __?__ : 41

(1) 30 (2) 6

(3) 7 (4) 4

Answer (3)

Sol. 5 : 29 :: _7_ :41 (5x6-1) = 29 7x6-1 = 41

13. CANADA : DOLLAR : : GERMANY : _____

(1) YEN (2) DOLLAR

(3) DEUTSCHE MARK (4) RIYAL

Answer (3)

Sol.

CANADA : DOLLAR :: GERMANY : DEUTSCHE MARK

14. CARBOHYDRATE : POTATO : : FAT : _____

(1) CARROT (2) TOMATO

(3) WATER (4) GHEE

Answer (4)

Sol. CARBOHYDRATE : POTATO : _FAT : GHEE_

15. DAVIS CUP : LAWN TENNIS : : DEODHAR TROPHY : _____

(1) FOOTBALL (2) CRICKET

(3) HOCKEY (4) SHUTTLE COCK

Answer (2)

Sol. DAVIS CUP : LAWN TENNIS : : DEODHARTROPHY : CRICKET

16. There are four prime numbers written in ascending order. The product of the first three is 1001 and that of the last three is 2431. The last number is :

(1) 17 (2) 19

(3) 23 (4) 13

Answer (1)

Sol. 1001 = 7 x 11 x 13

2431 = 11 x 13 x 17

N = 7 x 11 x 13 x 17

17. The largest number which divides 62, 132 and 237 to leave the same remainder in each case is :

(1) 51 (2) 35

(3) 8 (4) 53

Answer (2)

Sol. 132 - 62 = 70

237 - 132 = 105

237 - 62 = 175

HCF of 70, 105, 175 is 35.

18. Traffic lights at three different road crossings change after every 48 sec, 72 sec and 108 sec respectively. IF they all change simultaneously at 7 : 00 : 00 house then at what time will they again change simultaneously?

(1) 7 : 14 : 00 Hrs (2) 7 : 14 : 12 Hrs

(3) 7 : 07 : 12 Hrs (4) 7 : 09 : 12 Hrs

Answer (3)

Sol. $48 = 2^4 \times 3$

$72 = 2^3 \times 3^2$

$108 = 2^2 \times 3^3$

L.C.M. $= 2^4 \times 3^3$

$= 16 \times 27$

= 432 seconds

7 : 07 : 12

19. A student got twice as many sums wrong as he got right. If he attended 60 sums in all, how many did he solve correctly?

(1) 12 (2) 16

(3) 24 (4) 20

Answer (4)

Sol. Let 'x' be the number of questions solved.

2x + x = 60

3x = 60

x = 20

20. $\frac{1}{5\times6}+\frac{1}{6\times7}+\frac{1}{7\times8}+...+\frac{1}{24\times25}=?$

(1) 0.36 (2) 0.16

(3) 0.016 (4) 1.6

Answer (2)

Sol. $\frac{1}{5}-\frac{1}{25}$

$\frac{4}{25}=0.16$

21. If $\frac{2x}{1+\frac{1}{1+\frac{x}{1-x}}}=3$ then the value of x is :

(1) $\frac{5}{6}$ (2) $\frac{6}{5}$

(3) $\frac{4}{5}$ (4) $\frac{5}{4}$

Answer (2)

Sol.

$\frac{2x}{1+\frac{1}{1+\frac{x}{1-x}}}=3$

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

22. If x means +, ÷ means −, − means x and + means ÷ then 36 + 18 ÷ 9 − 3 x 26 is :

(1) − 40 (2) 78

(3) − 1 (4) 1

Answer (4)

Sol. 1

23. Notebooks were distributed equally among children of a class. The notebooks each child got was one-eighth of the number of children. IF the number of children is half, each child would have got 16 notebooks. The total number of notebooks distributed is :

(1) 512 (2) 312

(3) 248 (4) 428

Answer (1)

Sol. Let 'x' be the number of children.

Each child will get $\frac{x}{8}$ books.

Therefore, total books distributed $x\times\frac{x}{8}=\frac{x^2}{8}$

Given $\frac{\left(\frac{x^2}{8}\right)}{\left(\frac{x}{2}\right)}=16 \Rightarrow x=64$

Total number of books distributed = 512

24. If $x=\frac{\sqrt{5}+\sqrt{4}}{\sqrt{5}-\sqrt{4}}$ and $y=\frac{\sqrt{5}-\sqrt{4}}{\sqrt{5}+\sqrt{4}}$ then x^2+y^2 is :

(1) 322 (2) 100

(3) 312 (4) $8\sqrt{5}$

Answer (1)

Sol.

$x=\left(\sqrt{5}+\sqrt{4}\right)^2,\ y=\left(\sqrt{5}-\sqrt{4}\right)^2$

$x^2+y^2=(x+y)^2-2xy$

$=322$

25. If $\sqrt{13}=3.605$ and $\sqrt{130}=11.40$ find :

(1) 37.34 (2) 37.034

(3) 37.0034 (4) 37.304

Answer (4)

Sol. 37.304

26. $\frac{1}{\sqrt{9}-\sqrt{8}}-\frac{1}{\sqrt{8}-\sqrt{7}}+\frac{1}{\sqrt{7}-\sqrt{6}}-\frac{1}{\sqrt{6}-\sqrt{5}}+\frac{1}{\sqrt{5}-\sqrt{4}}=?$

(1) $\sqrt{8}$ (2) 5

(3) 3 (4) - 3

Answer (2)

Sol.

$\sqrt{9}+\sqrt{8}-\left(\sqrt{8}+\sqrt{7}\right)+\left(\sqrt{7}+\sqrt{6}\right)-\left(\sqrt{6}+\sqrt{5}\right)+\sqrt{5}+\sqrt{4}$

$=\sqrt{9}+\sqrt{8}-\sqrt{8}-\sqrt{7}+\sqrt{7}+\sqrt{6}-\sqrt{6}-\sqrt{5}+\sqrt{5}+\sqrt{4}$

$=3+2$

$=5$

27. $\sqrt{\frac{(0.03)^2+(0.21)^2+(0.065)^2}{(0.003)^2+(0.021)^2+(0.0065)^2}}=?$

(1) $\frac{1}{10}$ (2) 100

(3) 10 (4) $\frac{1}{100}$

Answer (3)

Sol.

$\sqrt{\frac{(0.03)^2+(0.21)^2+(0.065)^2}{(0.003)^2+(0.021)^2+(0.0065)^2}}$

$=\sqrt{\frac{(0.03)^2+(0.21)^2+(0.065)^2}{\frac{(0.03)^2}{10^2}+\frac{(0.21)^2}{10^2}+\frac{(0.065)^2}{10^2}}}$

$=\sqrt{10^2\left(\frac{(0.03)^2+(0.21)^2+(0.065)^2}{(0.03)^2+(0.21)^2+(0.065)^2}\right)}$

$=10$

28. A lead pencil is in the shape of right circular cylinder. The pencil is 28 cm long and its radius is 3 mm. IF the lead is of radius 1 mm, the volume of the wood used is :

(1) 0.352 cm^3 (2) 7.04 cm^3

(3) 3.52 cm^3 (4) 70.4 cm^3

Answer (2)

Sol. Volume of the wood used for

$$\text{Pencil} = \pi\left(\left(\frac{3}{10}\right)^2 - \left(\frac{1}{10}\right)^2\right)28 \text{ cm}^3$$

$$= \pi \times \frac{4}{10} \times \frac{2}{10} \times 28$$

$$= \frac{22}{7} \times \frac{2}{25} \times 28$$

$$= 7.04 cm^3$$

29. The difference between a two digit number and the number obtained by interchanging the positions of its digits is 36. The difference between the two digits of that number is :

(1) 4 (2) 3

(3) 6 (4) 5

Answer (1)

Sol. Let the digits be x & y with x > y.

Given (10x + y) - (x + 10y) = 36

9 (x - y) = 36

(x - y) = 4

30. A and B are two stations 390 km apart. A train starts from A at 10 am and travels towards B at 65 kmph. Another train starts from B at 11 am and travels towards A at 35 kmph. At what time do they meet?

(1) 3.15 pm (2) 2.15 pm

(3) 4.15 pm (4) 12.15 pm

Answer (2)

Sol.

d = 390 - 65

= 325 km

s = 65 + 35

= 100 KmPh

$t = \frac{d}{s}$

$= \frac{325}{100}$

= 3:25 hours

= 3 Hours 15 mins

t = 11 AM + 3.15

= 2:15 PM

31. A cone, a hemisphere and a cylinder have equal bases. IF the heights of the cone and the cylinder are equal to its common radius, then the ratio between their volumes is :

(1) 2 : 3 : 1 (2) 3 : 2 : 1

(3) 1 : 2 : 3 (4) 2 : 1 : 3

Answer (3)

Sol.

$$\frac{1}{3}\pi r^3 : \frac{2}{3}\pi r^3 : \pi r^3$$

$$\frac{1}{3} : \frac{2}{3} : 1$$

1 : 2 : 3

32. One side of a rhombus is 20 cm and one diagonal is 24 cm. Find the area of the rhombus.

(1) 200 cm^2 (2) 384 cm^2

(3) 298 cm^2 (4) 348 cm^2

Answer (2)

Sol. Area of Rhombus $= \frac{1}{2} \times 24 \times 32$

$= 12 \times 32$

$= 384 cm^2$

33. E + K = ?

(1) O (2) M

(3) N (4) P

Answer (3)

Sol. E + K = 4 + 10 = 14

34. B + U = ?

(1) U (2) W

(3) V (4) X

Answer (1)

Sol. B + U = 1 + 20 = 21 = U

35. A + C + F = ?

(1) O (2) G

(3) H (4) I

Answer (3)

Sol. A + C + F = 0 + 2 + 5

= 7 = H

36. L - S = ?

(1) U (2) T

(3) R (4) S

Answer (2)

Sol.

L - S = 11 - 18 = - 7

26 - 7 = 19

19th Letter : T

37. - D - P = ?

(1) I (2) J

(3) H (4) K

Answer (1)

Sol. - D - P = - 3 - 15 = - 18

26 - 18 = 8

8th Letter : I

38. In a certain code GOOD is written as JRRG and JACK is written as MDFN, then FRUIT is written as:

(1) IUYLW (2) IUXLW

(3) IUXMW (4) IVXLW

Answer (2)

39. In a certain code JUNGLE is written as JNLEGU the FOREST is written as :

(1) ROFEST (2) FORISE

(3) TSEROF (4) FRSTEO

Answer (4)

40. The 10th consonant from the first consonant of the English alphabet is :

(1) N (2) M

(3) Q (4) R

Answer (1)

Sol. 10th consonant from the first consonant is N.

41. What letters appear in ECONOMY and not in SECOND ?

(1) MY (2) NM

(3) EY (4) CN

Answer (1)

42. Which letter would divide the letters between N and Z into two equal halves?

(1) V (2) I

(3) T (4) W

Answer (3)

Pick the odd item from the following sets :

43. (1) Buddhism (2) Jainism

(3) Pessimism (4) Hinduism

Answer (3)

44. (1) Hunger (2) Cakes

(3) Vegetables (4) Pastries

Answer (1)

45. (1) King (2) Queen

(3) Princess (4) Labourer

Answer (4)

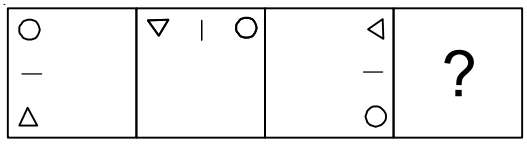
46. (1) Egypt (2) West Bengal

(3) China (4) India

Answer (2)

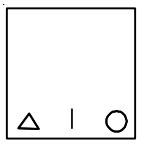
Figures A and B are related in some manner. In the same manner figures C and D are related. Choose the figure D in the given four alternatives.

47.

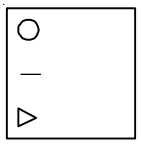


(A) (B) (C) (D)

(1) 

(2) 

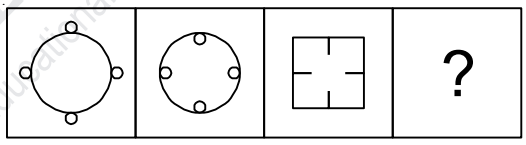
(3) 

(4) 

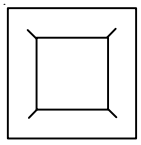
Answer (1)

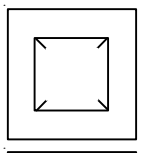
Sol. By seeing first figure, the arrangment is moving in anticlockwise direction.

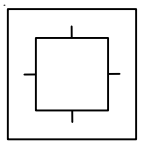
48.

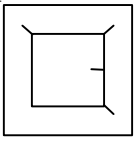


(A) (B) (C) (D)

(1) 

(2) 

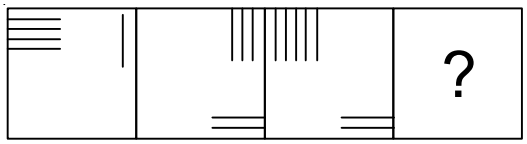
(3) 

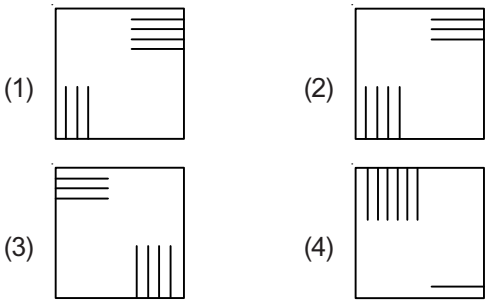
(4) 

Answer (3)

Sol. By observing figures the small circle present outside in fig(A) are present inside in fig(B). similarly lines present inside fig(C) will present outside in missing

49.

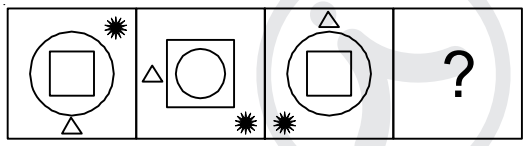


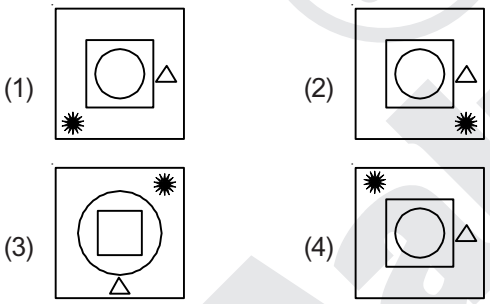


Answer (1)

Sol. Moving in Clockwise

50.

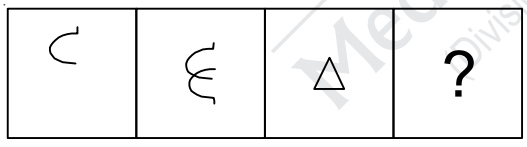


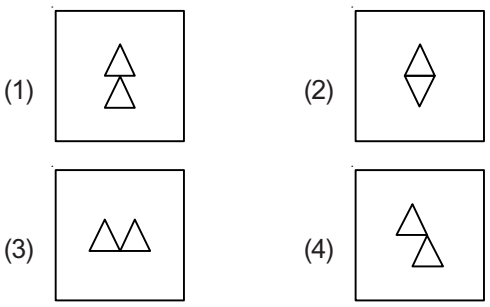


Answer (4)

Sol. By observing figure, the circle inscribed in rectangle and symbols moving clockwise direction

51.

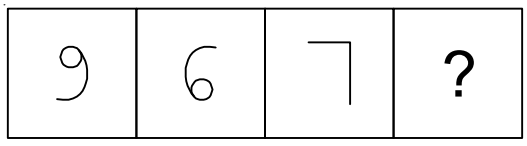


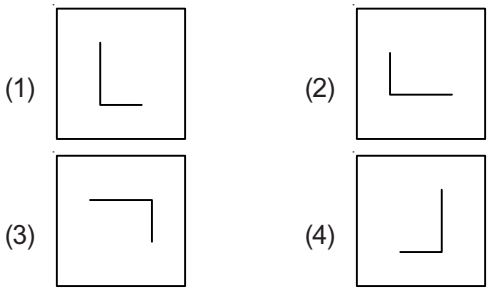


Answer (2)

Sol. The water image will form in missing image

52.

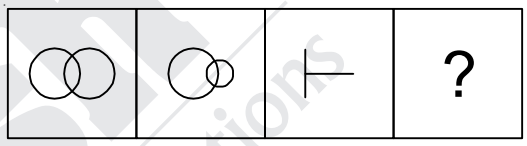


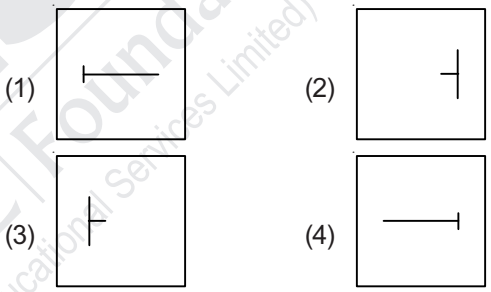


Answer (1)

Sol. Mirror Reflection

53.

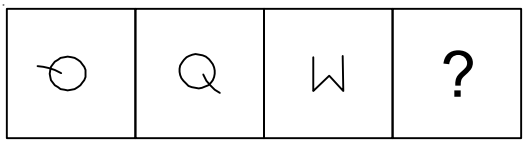


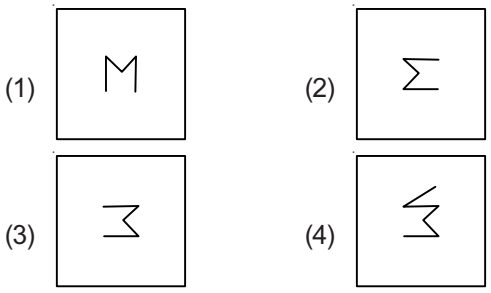


Answer (3)

Sol. Observing two parts the second part size will be decreased

54.



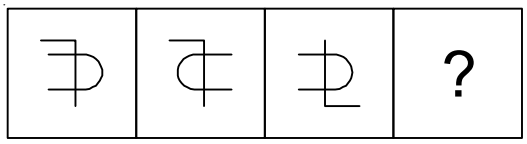


Answer (3)

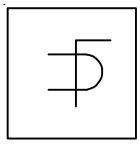
Sol. W rotation 135 degrees

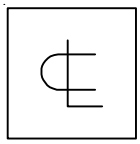
All the four figures in the set of problem figures have a definite sequence. Discover the sequence and pick-up one figure from answer figures that completes the series.

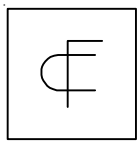
55.

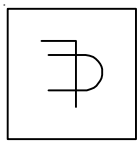


(A) (B) (C) (D)

(1) 

(2) 

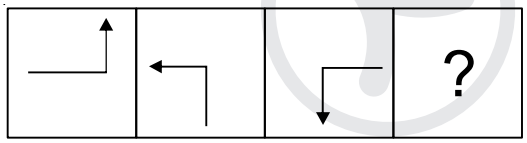
(3) 

(4) 

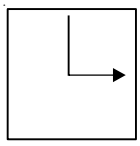
Answer (2)

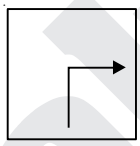
Sol. The L symbol remains same but C shape get inverted

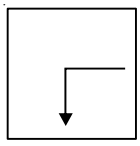
56.



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

(1) 

(2) 

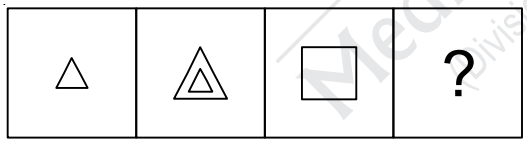
(3) 

(4) 

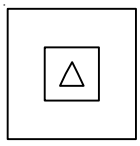
Answer (1)

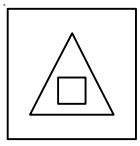
Sol. By carefull observation of rotation

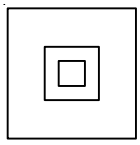
57.

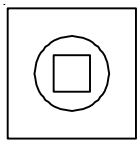


(A) (B) (C) (D)

(1) 

(2) 

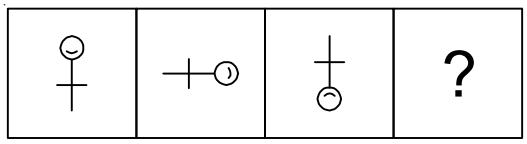
(3) 

(4) 

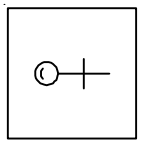
Answer (3)

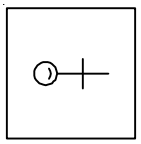
Sol. The triangle inscribed in bigger triangle, similarly square will inscribe in bigger square.

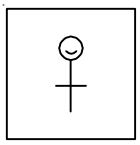
58.

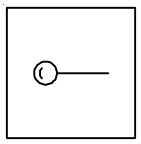


(A) (B) (C) (D)

(1) 

(2) 

(3) 

(4) 

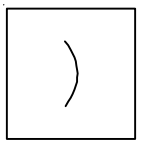
Answer (1)

Sol. By observing figure the ball should face towards West

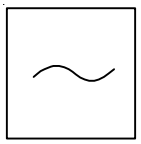
Pick the figure not in same category.

59.

(1) 

(2) 

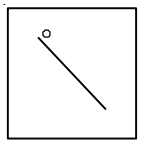
(3) 

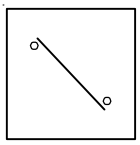
(4) 

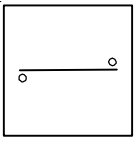
Answer (4)

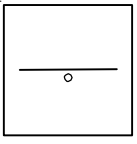
Sol. The fourth option is not having bracket shape

60.

(1) 

(2) 

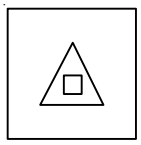
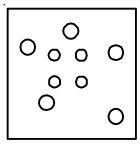
(3) 

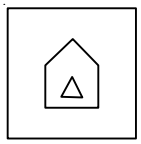
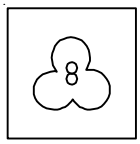
(4) 

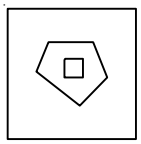
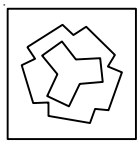
Answer (4)

Sol. All the figures having circles at end, but not 4th figure

Match the following based on common characteristics:

61. 
(1) 

62. 
(2) 

63. 
(3) 

64. 
(4) 

61. Answer (4)

62. Answer (3)

63. Answer (1)

64. Answer (2)

65. First two words are related to each other. Choose the word which bears the same relationship.
Monk: Brotherhood : : letter: _____

(1) jumble
(2) gang
(3) album
(4) budget

Answer (3)

Sol. Monk - religious community of men having same ideas:

Brotherhood - community of people linked with common interest

Similarly Letter album : they comprise of set of alphabets.

Read the following information carefully and answer the question.

(i) Five persons J, K, L, M and N participated in a quiz contest.

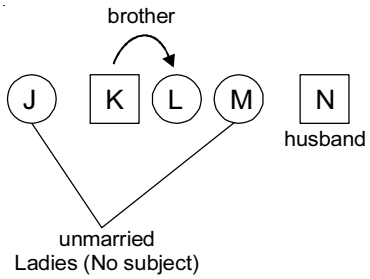
(ii) One is master of sports, one is master of current events and one is master of art and culture.

(iii) J and M are unmarried ladies and do not hold command in any subject.

(iv) N is the husband in a married couple

(v) K is the brother of L and is neither master of current events nor art and culture.

(vi) none of the ladies has command over current events and sports.



66. Who is the master of sports?

(1) M (2) L
(3) J (4) K

Answer (4)

Sol. I - M - no command in any subject

K - neither current events, not art & culture (remaining master in sports)

67. Who is the master of art and culture?

(1) N (2) L
(3) K (4) M

Answer (2)

Sol. 'L" Master of art and culture

68. Who is the master of current events?

(1) N (2) M
(3) J (4) L

Answer (1)

Sol. N - Master of current events

69. Wife of N is:

(1) K (2) J
(3) Data inadequate (4) L

Answer (4)

Sol. J, M, L are Ladies

J - M - unmarried so, "L" is wife of N.

70. The three ladies are:

(1) J, K and M (2) J, K and L
(3) J, L and M (4) K, L and M

Answer (3)

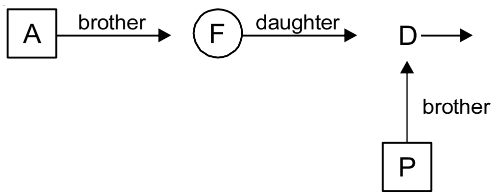
Sol. The three ladies are: J, L, M

71. If A is brother of F and F is the daughter of D and P is brother of D. HOw is P related to A?

(1) Father (2) Uncle
(3) Grand-father (4) Co-brother

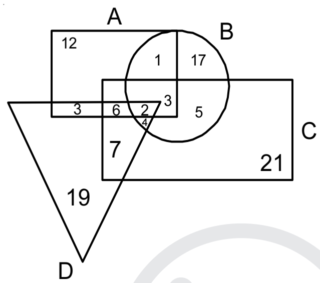
Answer (2)

Sol.



Father's / Mother's brother will be uncle to A.

Observe the diagram carefully and answer the following questions:



Let A - denote the set of persons who speak Tamil

B - who speak English

C - Who speak Malayalam and

D - Set of people who speak Telugu

72. The number of people who can speak both Tamil and English is :

(1) 12 (2) 4

(3) 1 (4) 6

Answer (4)

Sol. No. of people speak bother Tamil & English are the numbers present in circle and square combined. The sum of numbers present are = 2+3+1 = 6.

73. Find the number of people who can speak English, MAlayalam and Telugu.

(1) 4 (2) 9

(3) 6 (4) 82

Answer (3)

Sol. The number of people who speak English, Malayalam, Telugu.

The present in triangle, Circle, rectangle combindly.

4 + 2 = 6.

74. Find the number of people who can speak either English or Malayalam.

(1) 66 (2) 53

(3) 60 (4) 56

Answer (2)

Sol. The no. of people who can speak either English or Malayalam.

Total no. of people present in circle = 1 + 17 + 3 + 4 + 2 + 5

Total no. of people present in rectangle = 6 + 7 + 21

Total = 66.

75. If the total population is 100, how many do not speak either language?

(1) 2 (2) 0

(3) 1 (4) 4

Answer (2)

Sol. There are non of them who doesn't know any language.

76. Find the missing terms in the table which follows some pattern.

5	7	x
3	4	12
6	y	18
11	9	99

(1) x = 3, y = 35 (2) x = 35, y = 3

(3) x = 12, y = 12 (4) Data insufficient

Answer (2)

Sol. 5 x 7 = 35 x = 35

3 x 4 = 12

6 x y = 18 y = 3

11 x 9 = 99

77.

0	-2	?
2	0	6
5	-6	0

(1) 5 (2) - 5

(3) 4 (4) - 4

Answer (2)

Sol. Sum of diagonal should be 0.

So the missing number is - 5

78. Select any one alternative whose alphabets when placed at the missing places, complete the series.

a _ aa _ a _ baa _ aaba

(1) bbba (2) bbab

(3) bbaa (4) baab

Answer (2)

Sol. The pattern is abaabaabaabaaba.

Find the water image of the following questions.

79. The water image of APPLE79 is :

(1) ∀ЬЬΓƎ⅃6 (2) ∀ЬЬΓE⅃6

(3) ∀ძძΓE⅃6 (4) AძძΓE⅃6

Answer (wrong)

Sol. Water image of 9 is wrong.

80. TRUTH

(1) ⊥ꓤ∩⊥H (2) ⊥ꓤ∩⊥H

(3) ⊥ꓤ∩TH (4) Tꓤ∩TH

Answer (1)

Sol. ⊥ꓤ∩⊥H

Read the relations carefully and answer the questions.

□ is greater than

△ is smaller than

⊙ is equal to

≠ is not equal to

81. If A□B ; C△B and D⊙C then :

(1) C△A (2) D□A

(3) C≠D (4) A⊙C

Answer (1)

Sol. A□B ; C△B and D⊙C

A > B > C = D from options

C < A

C △ A

82. IF A≠C ; C△B and B⊙A then :

(1) A⊙C (2) A△C

(3) B□A (4) A□C

Answer (4)

Sol. A > C

A□C

83. If A△C, B□C and B⊙E then:

(1) A□E (2) A△E

(3) A⊙E (4) A⊙B

Answer (2)

Sol. A < C < B = E

from options A < E is correct, A□E

84. A□O and AB□AC then :

(1) (A+B)□(C+D) (2) (B+D)⊙(C+D)

(3) (B+D)□(C+D) (4) (B+D)△(C+D)

Answer (wrong)

Sol. Instead of D, O is given in question.

Read the statements and answer the questions.

(i) A family consists of 6 memebrs P, Q, R, S, T and U.

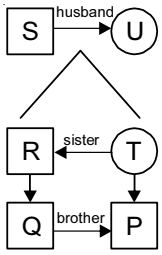
(ii) The family consists of only two female members.

(iii) S is father of R, who is brother of T.

(iv) T is daughter of U.

(v) Q and P are grandsons of S.

(vi) P is a son of T.



85. The female members of the family are:

(1) T and R (2) T and U

(3) T and P (4) T and S

Answer (2)

Sol. Female members of family in circle.

86. The relationship of S to U is:

(1) husband (2) daughter

(3) son (4) wife

Answer (1)

87. The relationship of P to Q is:

(1) sister (2) father

(3) brother (4) mother

Answer (3)

88. The male members of the family are:

(1) S, R, Q, P (2) P, Q, R, U

(3) Q, R, U, T (4) P, R, S, T

Answer (1)

89. T is a sister of :

(1) U (2) R

(3) Q (4) P

Answer (2)

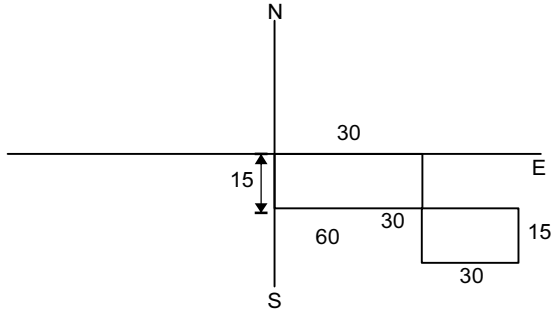
90. Mahesh starts walking towards east and after walking 30 m takes right turn and walks again 30 m. Then he turns left and walks 30 m. Again he takes left turn and after walking 15 m finally turn to his left and walks 60 m. How far and in which direction is Mahesh from the starting point ?

(1) 20 m North (2) 30 m West

(3) 30 m South (4) 15 m South

Answer (4)

Sol.



Mahesh is 15m in South far from starting point

Two statements (i) and (ii) are followed by two conclusions numbered (I) and (II). Choose the option which logically follows.

91. **Statements:**
(i) Some goats are sheeps.
(ii) All sheeps are cows.
Conclusions :
(I) All cows are sheeps.
(II) Some goats are cows.
(1) (I) only true (2) (II) only true
(3) (I) and (II) are true
(4) Both (I) and (II) not are true

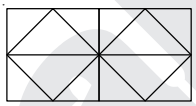
Answer (2)

Sol. Some goats are cows is correct Option

92. **Statements:**
(i) All mangoes are apples.
(ii) Some grapes are apples.
Conclusions:
(I) All apples are mangoes.
(II) Some apples are mangoes.
(1) (I) only true
(2) (I) and (II) are true
(3) (II) only true
(4) none of these are true

Answer (3)

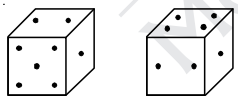
Sol. Some apples are mangoes

93. The number of triangles in  is:
(1) 10 (2) 4
(3) 6 (4) 12

Answer (1)

Sol. Total = 10

94. Two positions of dice are shown below. How many points will appear on the opposite to the face containing 5 ?

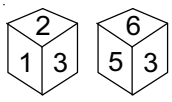


(1) 3 (2) 1
(3) 2 (4) 4

Answer (4)

Sol: 5, 4 are opposite to each other

95. Which digit will appear on the face opposite to the face with number 4?



(1) 3 (2) 5
(3) 6 (4) 2/3

Answer (1)

Sol. opposite face with 4

96. Find the mirror image of "MALAYALAM".
(1) MALAYALAM
(2) MAꓶAYAꓶAM
(3) MAꓶAYAꓶAM
(4) MAΓAYAΓAM

Answer 2

Sol. MAꓶAYAꓶAM

97. Find the mirror image of "EFFECTIVE".
(1) ƎVITƆƎꟻꟻƎ (2) EVITCEFFE
(3) ƎꟻꟻƎƆTIVƎ (4) ƎVITƆƎFꟻƎ

Answer (1)

Sol. ƎVITƆƎꟻꟻƎ

98. Find the mirror image of "MAGAZINE".
(1) MAGAΣIИƎ (2) ƎИIZAGAM
(3) MAGAZIИƎ (4) ƎИIΣAGAM

Answer (4)

Sol. ƎИIΣAGAM

99. If a clock shows 6.45 AM, what is the angle between the needles?
(1) 90° (2) 45°
(3) 22.5° (4) 67.5°

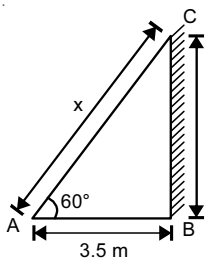
Answer (4)

Sol. In 12 hrs, hours hand cover 360 degree
In 60 min 30 degrees
In 45min 22.5 degrees
Angle between needles 90-22.5 = 67.5

100. A ladder leaning against a vertical wall makes an angle of 60° with the ground. IF the foot of the ladder is 3.5 m away from the wall, the length of t he ladder, is :
(1) 7 m (2) 3.5 m
(3) 14 m (4) $\frac{7}{\sqrt{3}}$m

Answer (1)

Sol.



Let AC be ladder
Cos60 = BC/ AC
1/2 = 3.5/AC
AC = 7m

PAPER-II : SCHOLASTIC APTITUDE TEST (SAT)

101. The value of $\left[9\left(\frac{1}{64^{\frac{-1}{3}}}+125^{\frac{1}{3}}\right)\right]^{\frac{1}{4}}$ is

(1) 9 (2) 3

(3) 81 (4) $9\sqrt[4]{9}$

Answer (2)

Sol. $\left[9\left(\frac{1}{64^{-1/3}}+125^{1/3}\right)\right]^{1/4}$

$=\left[9\left(\frac{1}{4^{-1}}+5\right)\right]^{1/4}$

$=[9X9]^{1/4}$

$=(3^4)^{1/4}$

$=3$

102. If $\sqrt{m}+\sqrt{n}-\sqrt{p}=0$ then the value of $(m+n-p)^2$ is

(1) mn (2) -mn

(3) 2mn (4) 4mn

Answer (4)

Sol. $Given \sqrt{m}+\sqrt{n}-\sqrt{p}=0$

$\sqrt{m}+\sqrt{n}=\sqrt{p}$

$\Rightarrow m+n+2\sqrt{mn}=p$

$\Rightarrow m+n-p=-2\sqrt{mn}$

$\Rightarrow (m+n-p)^2=4mn$

103. If $x^2+\frac{1}{x^2}=14$, then the value of is

(1) 52 (2) 42

(3) 24 (4) 25

Answer(1)

Sol. $Given: x^2+\frac{1}{x^2}=14$

$\Rightarrow \left(x+\frac{1}{x}\right)^2-2=14$

$\Rightarrow x+\frac{1}{x}=\sqrt{16}$

$\Rightarrow x+\frac{1}{x}=4$

$c.b.s$

$\Rightarrow x^3+\frac{1}{x^3}+3x\times\frac{1}{x}(x+\frac{1}{x})=64$

$\Rightarrow x^3+\frac{1}{x^3}+3\times1\times4=64$

$\therefore x^3+\frac{1}{x^3}=52$

104. The polynomials $ax^3 + 4x^2 + 3x - 4$ and $x^3 - 4x + a$ leave the same remainder when divided by x - 3, then the value of a is :

(1) –1 (2) –4

(3) 4 (4) 1

Answer (1)

Sol. Let

$f(x) = ax^3 + 4x^2 + 3x - 4$

$g(x) = x^3 - 4x + a$

Given $f(3) = g(3)$

$\Rightarrow$ $27a + 36 + 9 - 4 = 27 - 12 + a$

$\Rightarrow$ $26a = -26$

$\therefore$ $a = -1$

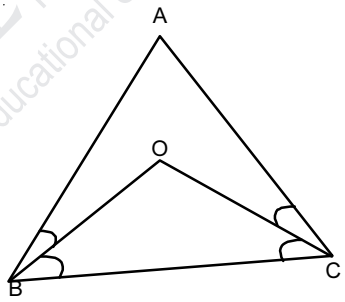
105. The bisectors of $\angle B$ and $\angle C$ of a triangle ABC meet at a point O. If $\angle A = 60°$, then $\angle BOC$ is :

(1) 30° (2) 60°

(3) 90° (4) 120°

Answer (4)

Sol.



Given $\angle A = 60^0$

Clearly, $\angle BOC = 90^0 + \frac{\angle A}{2}$

$= 90^0 + 30^0$

$= 120^0$

106. The side BC of ΔABC is produced to a point D. The bisectors of $\angle ABC$ and $\angle ACD$ meet at point E. If $\angle BAC = 60°$ then $\angle BEC$ is :

(1) 15°

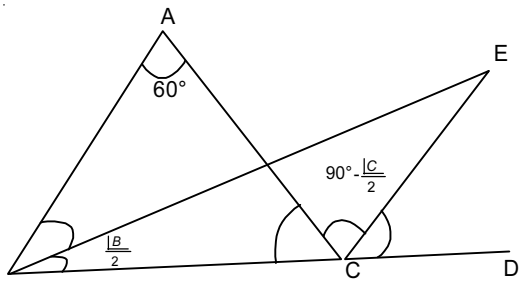
(2) 30°

(3) 60°

(4) 120°

Answer (2)

Sol.



Clearly,

$$|\underline{BEC} = \frac{|\underline{BAC}}{2} = \frac{60^0}{2} = 30^0$$

From Δ BCE,

$$|\underline{EBC} + |\underline{BEC} + |\underline{BCE} = 180^0$$

$$\Rightarrow \frac{|\underline{B}}{2} + |\underline{C} + 90^0 - \frac{|\underline{C}}{2} + |\underline{BEC} = 180^0$$

$$\Rightarrow |\underline{BEC} = 90^0 - \left(\frac{|\underline{B}}{2} + \frac{|\underline{C}}{2}\right)$$

$$= 90^0 - \left(\frac{180^0 - |\underline{A}}{2}\right)$$

$$= \frac{|\underline{A}}{2}$$

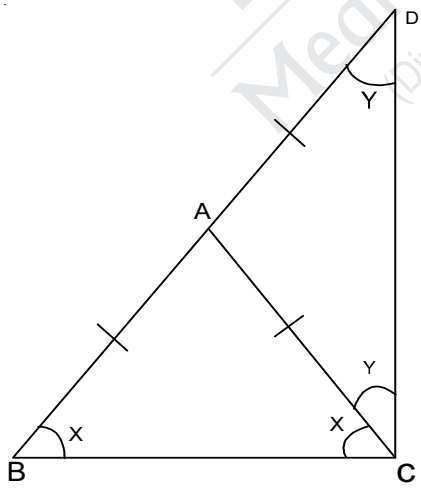
107. ΔABC is an isosceles triangle in which AB = AC. IF the side BA is produced to D such that AD = AB, then $\angle$BCD is :

(1) 30° (2) 45°

(3) 60° (4) 90°

Answer (4)

Sol.



Clearly BA = AD = AC

BCD is a right angled triangle

$$\Rightarrow |\underline{BCD} = 90^0$$

In ΔABC

Since BA = AC

$$\Rightarrow |\underline{ABC} = |\underline{ACB} = X(say)$$

$$\Rightarrow |\underline{ACD} = |\underline{ADC} = Y(say)$$

In ΔBDC

$$|\underline{DBC} + |\underline{BCD} + |\underline{CDB} = 180^0$$

$\Rightarrow$ x + x + y + y = 180°

$\Rightarrow$ 2(x + y) = 180°

$\therefore$ x + y = 90°

$$|\underline{BCD} = 90°$$

108. In an A.P., the sum of m terms is equal to n and the sum of n terms is equal to m, then the sum of (m+n) terms is:

(1) m + n (2) –(m + n)

(3) (m – n) (4) (n – m)

Answer (2)

Sol.

$S_m = n$, $S_n = m$

$$\Rightarrow \frac{m}{2}[2a+(m-1)d]=n \text{ and } \frac{n}{2}[2a+(n-1)d]=m$$

$$\Rightarrow 2a + (m-1)d = \frac{2n}{m} \quad ...(i)$$

$$2a + (n-1)d = \frac{2m}{n} \quad ...(ii)$$

eqn. (i) & (ii)

$$[(m-1)-(n-1)]d = \frac{2n}{m} - \frac{2m}{n}$$

$$(m-n)d = 2\left(\frac{n^2-m^2}{nm}\right)$$

$$d = -\frac{2(m+n)}{mn}$$

From (i)

$$2a + (m-1)\left(\frac{-2(m+n)}{mn}\right) = \frac{2n}{m}$$

$$\Rightarrow 2a = \frac{2n}{m} + \frac{2(m-1)(m+n)}{mn}$$

$$= \frac{2n^2 + 2m^2 + 2mn - 2m - 2n}{mn}$$

Now,

$$S_{m+n} = \frac{m+n}{2}[2a+(m+n-1)d]$$

$$= \frac{m+n}{2}\left[2n^2+2m^2+2mn\right]-2m-2n+(m+n-1)\left(\frac{-2(m+n)}{mn}\right)$$

$$= \frac{m+n}{2}\left[\frac{2n^2+2m^2+2mn-2m-2n-2m^2-2mn+2m-2mn-2n^2+2n}{mn}\right]$$

$$= \frac{m+n}{2}\left[\frac{-2mn}{mn}\right]$$

$$= -(m+n)$$

109. If the roots of the equation $(a^2 + b^2)x^2 - 2b(a + c)x + (b^2 + c^2) = 0$ are equal, then :

(1) $2b = a+c$ (2) $b = \frac{2ac}{a+c}$

(3) $b^2 = ac$ (4) $b = ac$

Answer (3)

Sol. $(a^2 + b^2)x^2 - 2b(a + c)x + (b^2 + c^2) = 0$

$A = a^2 + b^2$, $B = -2b(a + c)$, $C = b^2 + c^2$

Given roots are equal

$B^2 - 4AC = 0$

$\Rightarrow (-2b(a + c))^2 - 4(a^2 + b^2)(b^2 + c^2) = 0$

$$\Rightarrow b^2(a^2+c^2+2ac)-(a^2b^2+a^2c^2+b^4+b^2c^2)=0$$

$$\Rightarrow a^2b^2+b^2c^2+2ab^2c-a^2b^2-a^2c^2-b^4-b^2c^2)=0$$

$$=-(b^4-2ab^2c+a^2c^2)=0$$

$$=(b^2-ac)^2=0$$

$$\Rightarrow b^2=ac$$

110. A right triangle has hypotenuse of length p cm and one side of length q cm. If $(p - q) = 1$, then the length of third side is

(1) $2q + 1$ (2) $\sqrt{2q+1}$

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

Answer (2)

Sol. Given p-q=1

$$BC^2 = AC^2 - AB^2$$

$$BC^2 = p^2 - q^2$$

$$BC^2 = (p+q)(p-q)$$

$$BC^2 == (p+q)x1$$

$$\Rightarrow BC = \sqrt{p+q} = \sqrt{2q+1}(\because p = 1+q)$$

111. The longest pole that can be kept in a room of dimensions 5m × 4m × 2m is

(1) $9\sqrt{5}$ m (2) $6\sqrt{5}$ m

(3) $3\sqrt{5}$ m (4) $5\sqrt{3}$ m

Answer (3)

Sol. Longest pole will be along body diagonal

Length= $\sqrt{l^2+b^2+h^2} = 3\sqrt{5}$

112. If the volume of a sphere is equal to its surface area, then the circumference of a cross sectional circle whose centre coincides with the sphere is

(1) 2π (2) 4π

(3) 6π (4) 8π

Answer (3)

Sol. Volume of sphere= Surface area of sphere

$$\frac{4}{3}\pi r^3 = \frac{4}{3}\pi r^2$$

r = 3

Circumference of cross sectional

Circle= 2π x 3 =6π

113. A circle is inscribed in a triangle ABC with right angle at A. The length of the two sides containing the right angle are 6 cm and 8 cm respectively. The radius of the circle is:

(1) 2 cm (2) 6 cm

(3) 8 cm (4) 10 cm

Answer (1)

Sol. Let radius = r

ON = OM = AM = AN = r

CM = 8 – r, BN = 6 – r

BC = 10 [Pythagoras theorem]

BC + PC = 10

8 – r + 6 – R = 10

14 – 2r = 10

2r = 4

114. A fiar die is thrown once. The probability of getting neither a prime nor a composite number is

(1) 1 (2) 0

(3) $\frac{5}{6}$ (4) $\frac{1}{6}$

Answer (4)

Sol. S = {1,2,3,4,5}

A = {1}

P(A) = 1/6

115. If the product of two zeroes of the polynomial $x^3 - 6x^2 + 11x - 6$ is 2, then the third zero is :

(1) 1 (2) 2

(3) 3 (4) 4

Answer (3)

Sol. $x^3 - 6x^2 + 11x - 6$

α, β, γ

Be 3 zeroes

$\alpha\beta = 2$ (Given)

$\alpha\beta\gamma = 6$

$\gamma = 3$

116. If the HCF of 55 and 22 is expressed in the form of 55 m – 22 × 2 then the value of m is

(1) 2 (2) 1

(3) 11 (4) 22

Answer (2)

Sol. HCF of 55 & 22 = 11

11 = 55 × 1 – 22 × 2

m = 1

117. The graphs of the linear system x + y = 1, 2x + 2y = 2 gives

(1) no solution

(2) unique solution

(3) infinitely many solutions

(4) two solutions

Answer (3)

Sol. $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Coinciding lines

118. If $\tan\theta = \frac{a}{x}$, , then the value of $\frac{x}{\sqrt{a^2 + x^2}}$

(1) $\cos\theta$ (2) $\sin\theta$

(3) $\text{cosec}\theta$ (4) $\sec\theta$

Answer (1)

Sol. $\tan\theta = \frac{a}{x}$

$a = x\tan\theta$

$$\frac{x}{\sqrt{a^2 + x^2}} = \frac{x}{\sqrt{x^2 + \tan^2\theta + x^2}}$$

$$= \frac{x}{\sqrt{n^2 \sec^2\theta}} = \frac{x}{x\theta} = \cos\theta$$

119. The remainder when $x^n + n$ divided by x - 1 is:

(1) n

(2) cannot be determined

(3) n + 1

(4) 0

Answer (3)

Sol. $f(x) = x^n + n$

$f(x) \div x - 1$

$R = f(1)$

$R = 1 + n$

120. Which of the following statements are not true?

(a) sum of two irrational numbers is always irrational

(b) difference between two irrational numbers is irrational

(c) product of two irrational numbers is irrational

(d) quotient of two irrational numbers is irrational

(1) (a) and (b) only (2) (a), (b), (c) and (d)

(3) (a), (b) and (c) only (4) none of the above

Answer (2)

Sol. Refer to properties of irrational number

121. A car travels from Chennai to Bengaluru with a speed of 60 Km/hr and returns back along the same path with a speed of 40 km/hr. The average speed of the car is given by:

(1) 50 km/hr (2) 13.8 m/s

(3) 48 km/hr (4) 172.8 m/s

Answer (3)

Sol. $V_{avg} = \frac{2V_1V_2}{V_1 + V_2} = 48$ km/hr

122. What will be the percentage change in momentum of a body when both its mass and velocity are doubled?

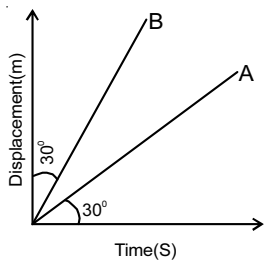
(1) 400 (2) 75

(3) 500 (4) 300

Answer (4)

Sol. $\frac{\Delta P}{P} \times 100 = \frac{4mV - mV}{mV} \times 100 = 300$

123. The displacement-time graph of two particles are shown in the figure. The ratio of velocity of A to velocity of B is:



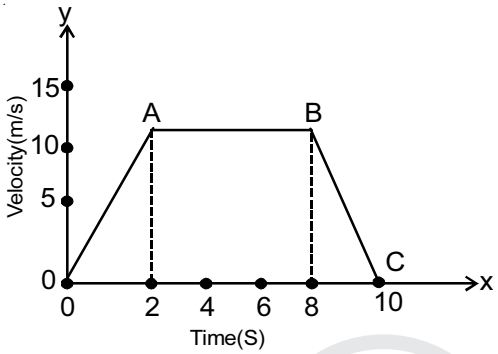
(1) 1 (2) 3

(3) $\frac{1}{3}$ (4) $\sqrt{3}$

Answer (3)

Sol. $\frac{V_A}{V_B} = \frac{\tan 30^\circ}{\tan 60^\circ} = \frac{1}{3}$

124. The velocity-time graph of a body moving along a straight line is shown below. The acceleration of the body along OA, AB and BC is:



(1) $5 m/s^2, 0, -5 m/s^2$

(2) $-5 m/s^2, 0, +5 m/s^2$

(3) $5 m/s^2, 1.6 m/s^2, -5 m/s^2$

(4) $-5 m/s^2, 1.6 m/s^2, 5 m/s^2$

Answer (1)

Sol. $a = \Delta v/\Delta t$

$a(O \text{ to } A) = 5 m/s^2$

$a(A \text{ to } B) = 0$

$a(B \text{ to } C) = -5 m/s^2$

125. Two bodies A and B having masses 2 kg and 4 kg resepectively are separated by 2m. Where should a body of mass 1 kg be placed so that the gravitational force on this body due to A and B i zero?

(1) 8.3 m (2) 0.83 m

(3) 3.8 m (4) 0.38 m

Answer (2)

Sol. $x = \frac{d}{1+\sqrt{\frac{m_2}{m_1}}}$

$x = \frac{2}{1+\sqrt{\frac{4}{2}}} = 0.83m$

126. A ship of mass 3×10^7 kg intially at rest is pulled by force of 5×10^4 N through a distance of 3m. Assuming that the resistance due to water is negligible the speed of the ship is:

(1) 1.5 m/s (2) 60 m/s

(3) 0.1 m/s (4) 5 m/s

Answer (3)

Sol. $V^2 - U^2 = 2as$

$V^2 = 2 \times \frac{f}{m} \times s$

$V = \sqrt{2 \times \frac{f}{m} \times s} = 0.1 m/s$

127. An electric bulb is rated 220V, 110W. When it is operated on 110V, the power consumed will be:

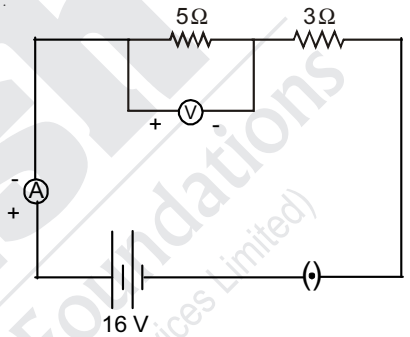
(1) 55 W (2) 110 W

(3) 25 W (4) 27.5 W

Answer (4)

Sol. $P_2 = \left(\frac{V_2}{V_1}\right)^2 \times P_1$

128.



In the above electrical circuit, the readings shown by the ammeter and voltmeter are:

(1) 2A, 10 V (2) 3.2 A, 16 V

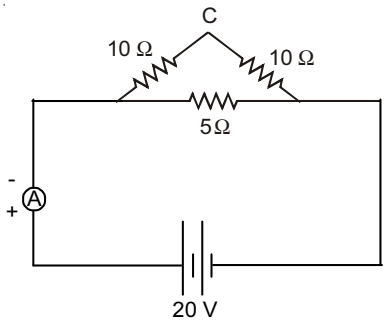
(3) 2 A, 16 V (4) 3.2 A, 10 V

Answer (1)

Sol. $I = \frac{V}{Req} = 2A$

$V = IR = 2 \times 5 = 10$

129.



In the circuit shown the current in the ammeter is:

(1) 5 A (2) 4 A

(3) 1.5 A (4) 8 A

Answer (1)

Sol. $I = \frac{V}{Req} = \frac{20}{4} = 5A$

130. If 5 coulombs of charge flows through a conductor in 2 seconds, then the number of electrons flowing through a conductor in one second approximately is:

(1) 30×10^{18} (2) 15×10^{18}

(3) 6×10^{18} (4) 12×10^{18}

Answer (2)

Sol. $n = \frac{q}{e} = \frac{2.5}{1.6 \times 10^{-19}} = 15 \times 10^{18}$

131. A stone is dropped from the top of a tower 490m high into a pond of water at the base of the tower. The splash is heard after (Given g = 9.8 m/s^2, speed of sound = 350 m/s

(1) 11.4 s (2) 10 s

(3) 22.8 s (4) 20 s

Answer (1)

Sol. $t = \sqrt{\frac{2h}{g}} + \frac{h}{v}$

$= 11.4$ s

132. Infrasound can be heard by:

(1) dog (2) bat

(3) rhinoceros (4) tiger

Answer (3)

Sol. It is a Fact

133. Among the statements which is / are correct?

Acceleration due to gravity:

(a) decreases from equator to poles

(b) decreases from poles to equator

(c) is maximum at the centre of the earth

(1) (a) only

(2) (b) and (c) only

(3) (c) only

(4) (b) only

Answer (4)

Sol. It is a concept

134. An element "X" has six electrons in the "M" shell. It belongs to:

(1) 3rd period,16th group

(2) 2nd period, 14th group

(3) 3rd period, 13th group

(4) 2nd period, 15th group

Answer (1)

Sol.

K	L	M
2	8	6

$\Rightarrow Z = 16 \Rightarrow$ element is sulphur [S]

Belongs to 3rd period, 16th group

135. Pick out the Isobar pair

(1) $_1H^1, _1H^2,$ (2) $_6CI^{13}, _7N^{14}$

(3) $_{17}Cl^{35}, _{17}Cl^{37}$ (4) $_{18}Ar^{40}, _{20}Ca^{40}$

Answer (4)

Sol. The elements having different atomic numbers but same mass number are called Isobars.

136. An example of a homo atomic molecule is:

(1) Ozone (2) Ammonia

(3) Methane (4) Sulphur di oxide

Answer (1)

Sol. Ozone is made up of oxygen atoms only.

137. Identify the wrong statement in the following:

(1) Sodium benzoate is used as food preservative

(2) Sulphuric acid is called as the 'King of Chemicals'.

(3) The pH of acid is equal to 7

(4) Curd contains lactic acid

Answer (3)

Sol. pH of acids is less than 7

138. The metal present in chlorophyll is

(1) Al (2) Fe

(3) Mg (4) Zn

Answer (3)

139. The hardening of plaster of paris on reaction with water is due to the formation of:

(1) $CaSO_4.H_2O$ (2) $CaSO_4.2H_2O$

(3) $CaSO_4.\frac{3}{4}H_2O$ (4) $CaSO_4.\frac{1}{2}H_2O$

Answer (2)

Sol. $CaSO_4.\frac{1}{2}H_2O + \frac{3}{2}H_2O \rightarrow CaSO_4.2H_2O$

140. Foul-smelling of eatables prepared by using oil and fat is due to:

(1) reaction with Nitrogen in air

(2) reaction with CO_2 in air

(3) reaction with sulphur di oxide in air

(4) reaction with oxygen in air

Answer (4)

Sol. Oxidation of oil and fat (Rancidity)

141. Magnesium ribbon starts floating when it is placed in hot water. Why?
(1) Light metal
(2) Highly reactive
(3) Hydrogen gas stick at the bottom of the metal
(4) Neither light nor heavy

Answer (3)

Sol. It is a Fact

142. Common Hydrogen is also called as:
(1) Protium atom
(2) Deuterium atom
(3) Tritium atom
(4) None of the above

Answer (1)

Sol. It is a Fact

143. Arrange the following in the increasing order of forces of attraction:
(1) water,air,sugar
(2) O_2,H_2O, sugar
(3) salt, air, fruit juice
(4) sugar,oil,air

Answer (2)

Sol. Force of attraction increasing oder gases < liquids < solids i.e $O_2 < H_2O <$ Sugar

144. The Ionic compounds are solids at room temperature on account of:
(1) electrostatic force between the opposite ions
(2) electrostatic force between the same ions
(3) weak intermolecular forces between opposite ions
(4) both electrostatic and intermolecular force between the opposite ions.

Answer (1)

Sol. It is a Fact

145. The rate of Chemical reaction depends on:
(1) absence of Catalyst
(2) greater the surface area of the reactant
(3) decrease in temperature
(4) low concentration of the reactant

Answer (2)

Sol. Greater the surface area of the reactant, higher is the rate

146. The best method to detect and identify of the drugs present in the blood of criminals in Forensic Science is
(1) Sublimation (2) Evaporation
(3) Chromatography (4) filtration

Answer (3)

Sol. It is a Fact

147. Match of the following:

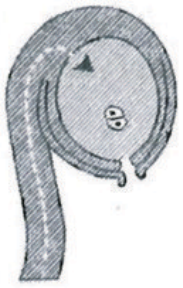
Column-I	**Column-II**
(a) Seed borne disease	(i) Blast of rice
(b) Soil borne disease	(ii) Bacterial blight of rice
(c) Air borne disease	(iii) Leaf spot of rice
(d) Water borne disease	(iv) Tikka disease of groudnut

(1) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
(2) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
(3) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
(4) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

Answer (1)

Sol: It is a Fact

148. Observe the diagram given below. Read the question and select the correct answer.



(a) Which gives the nourishment for the developing embryo sac?
(b) After fertilization, which develops into a seed coat?
(c) Name the nuclei which face towards the chalazal end.
(d) When a soaked seed is pressed, the water oozes out through
(1) Nucellus, Integuments, Micropyle, Antipodals
(2) Antipodals, Micropyle, Nucellus, Integuments
(3) Integuments, Nucellus, Antipodals, Micropyle
(4) Nucellus, Integuments, Antipodals, Micropyle

Answer (1)

Sol: It is a Fact

149. Soil contains decomposed matter. Plants that grow from the soil absorb nutrient elements. when we eat the plants, the nutrients enter into our body. After out death, when our body are buried into the soil, our body will become decomposed matter. This cylic proces refers to

(1) Life cycle

(2) Bio-Geo Chemical cycle

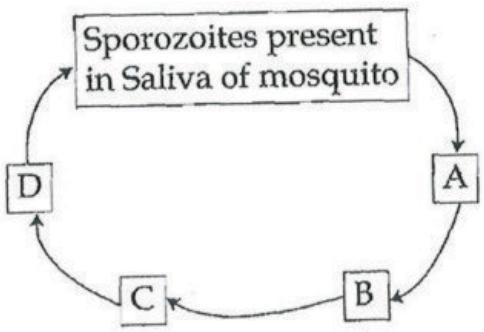
(3) Biological cycle

(4) Geological cyle

Answer (2)

Sol. It is a Fact

150. Choose the correct series of life cycle of malarial parasite.



(1) A - Life cycle in human liver
B - Life cycle in erythrocytes
C - Sucking of gametocytes by mosquites
D - Life cycle in the body of mosquito

(2) A - Life cycle in erythrocytes
B - Life cycle in human liver
C - Sucking of gametocytes by mosquites
D - Life cycle in the body of mosquito

(3) A - Life cycle in erythrocytes
B - Sucking of gametocytes by mosquito
C - Life cycle in the body of mosquito
D - Life cycle in human liver

(4) A - Life cycle in the body of mosquito
B - Life cycle in erythrocytes
C - Sucking of gametocytes by mosquito
D - Life cycle in human liver

Answer (2)

Sol: It is a Fact

151. Find out the true and false statements from the following:

(a) Pepo is developed from tricarpellary ovary

(b) Drupe is developed from pentacarpellary ovary

(c) Pome is called a pseudofruit

(d) Hesperidium is developed from multicarpellary ovary

(1) (a) true (b) false
(c) true (d) false

(2) (a) true (b) false
(c) true (d) true

(3) (a) false (b) true
(c) false (d) true

(4) (a) false (b) false
(c) true (d) true

Answer (2)

Sol. Drupe is developed from multi carpellary ovary

152. Choose the incorrect pair

(1) Stomata-transpiration

(2) Osmosis-Semipermeable membrane

(3) Guard Cells - Potassium ions

(4) Exosmosis-Turgidity

Answer (4)

Sol. It is a Fact

153. **Asseration (A) :** Mule is the product of inter specific hybridization

Reason (R): Mule is produced from cross between female donkey and male horse

(1) (A) is correct; (R) is wrong

(2) Both (A) and (R) are correct

(3) (A) is wrong and (R) is correct

(4) Both (A) and (R) are wrong

Answer (1)

Sol: It is a Fact

154. Centipede and earthworms have a segmented body, but they are in two different phyla. Identify the phyla they belong to.

(1) Arthropoda and Annelida

(2) Arthropoda and Aschelminthes

(3) Annelida and Aschelminthes

(4) None of the above

Answer (1)

Sol: It is a Fact

155. Lysosomes are considered as suicidal bags of cell.

The reason is:

(1) Lysosomes contain poison required to kill the cell.

(2) Lysosomes contain lytic enzyme to digest the whole cell content

(3) Lysosomes contain genes to stop cellular activities.

(4) Lysosomes do not permit oxidation process of the cell.

Answer (2)

Sol. It is a Fact

156. Pick out the items which has sequential arrangement

(1) Zygotene $\rightarrow$ Leptotene $\rightarrow$ Pachytene $\rightarrow$ Diplotene $\rightarrow$ Diakinesis

(2) Diakinesis $\rightarrow$ Zygotene $\rightarrow$ Leptotene $\rightarrow$ Pachytene $\rightarrow$ Diplotene

(3) Leptotene $\rightarrow$ Zygotene $\rightarrow$ Pachytene $\rightarrow$ Diplotene $\rightarrow$ Diakinesis

(4) Leptotene $\rightarrow$ Pachytene $\rightarrow$ Diplotene $\rightarrow$ Diakinesis $\rightarrow$ Zygotene

Answer (3)

Sol: It is a Fact

157. Assertion (A): The pituitary gland is called as the 'conductor of Endocrine Orchestra'.

Reason (R) : The pituitary gland regulates the other endocrine glands.

(1) Both **(A)** and **(R)** are true and **(R)** explains **(A)**

(2) Both (A) and (R) are true but (R) doesn't explain **(A)**

(3) **(A)** is true but **(R)** is false

(4) **(A)** is false but **(R)** is true

Answer (1)

Sol: It is a Fact

158. The parental genotypes are BB x bb. The probability of having bb genotype in the F1 generation is:

(1) 25%

(2) 50%

(3) 75%

(4) 0%

Answer (4)

Sol: It is a Fact

159. Which of the following statement is not correct about vasopressin hormone?

(1) It constricts the blood vessels and raises the blood pressure.

(2) Vasopressin helps in the reabsorption of water.

(3) Its less production results in diabetes insipidus

(4) It dilates the blood vessels and raises the blood pressure.

Answer (4)

Sol: It is a Fact

160. Subsequent generations show greated improvement in genetic characters. It is seen in higher animals particularly. This is due to:

(1) crossing over process of sexual reproduction

(2) living in an area for many generations.

(3) due to pressure for improvement of characters from peers.

(4) asexual reproduction brings improvement.

Answer (1)

Sol: It is a Fact

161. Arrange the following events in chronological order:

(a) The League of Free Nations Association

(b) The League of Nations Society

(c) The League of Nations

(d) The World League for peace

(1) (b), (a), (c), (d) (2) (a), (b), (d), (c)

(3) (a), (c), (d), (b) (4) (b), (d), (a), (c)

Answer (4)

Sol: It is a Fact

162. Who was the designer of Indian National Flag?

(1) Bankim Chandra Chatterjee

(2) Rabindranath Tagore

(3) Pinkali Venkayya

(4) Bipin Chandra Pal

Answer (3)

Sol: It is a Fact

163. The famous monument built to commemorate the end of plague in India in the year 1591.

(1) Buland Darwaza (2) Charminar

(3) Gol Gumbaz (4) Gol Konda

Answer (2)

Sol: It is a Fact

164. Who was known as "The Heroine of Quit India Movement"?
(1) Sucheta Kriplani
(2) Sarojini Naidu
(3) Jhansi Rani Lakshmi Bai
(4) Aruna Asaf Ali

Answer (4)

Sol: It is a Fact

165. Name the Greek philosopher who was the teacher of Alexander the Great and the student of Plato.
(1) Aristotle (2) Socrates
(3) Democritus (4) Pythagoras

Answer (1)

Sol: It is a Fact

166. Which is called the 'Cradle of Indian Temple Architecture'?
(1) Ajanta (2) Ellora
(3) Aihole (4) Chithannavasal

Answer (3)

Sol: It is a Fact

167. Rabindranath Tagore surrendered his 'Knighthood' to the British after the event of :
(1) Jallianwalabagh Massacre
(2) Surat Split
(3) Chouri Chaura Incident
(4) Non Cooperation Movement

Answer (1)

Sol: It is a Fact

168. The dead bodies were preserved by the Egyptians using Natron salt. Its main constituents are :
(1) Sodium carbonate and sodium bicarbonate
(2) Sodium carbonate and sodium acetate
(3) Sodium bicarbonate and sodium benzoate
(4) Sodium carbonate and sodium phosphate

Answer (1)

Sol: It is a Fact

169. From which year Kamarajar's birthday is celebrated as 'Educational Development Day' ?
(1) 2005 (2) 2006
(3) 2007 (4) 2008

Answer (2)

Sol: It is a Fact

170. The first Indian ruler who organized pilgrimage to Haj at the expense of the state.
(1) Humayun (2) Babar
(3) Akbar (4) Jahangir

Answer (3)

Sol: It is a Fact

171. Name the war fought between the period 1912-14.
(1) The second Anglo Boer War
(2) The Russian Civil War
(3) First Balcan War
(4) Jutland War

Answer (3)

Sol: It is a Fact

172. Choose the incorrect pair.
(1) Salem - Kolli hills
(2) Villupuram - Kalvarayan hills
(3) Trichy - Pachaimalai
(4) Srivilliputhur - Sathuragiri hills

Answer (4)

Sol: It is a Fact

173. Kayal goes to her grandpa's place, Coimbatore along with her sister. She says about the type of soil in Coimbatore to her sister. What is the type of soil?
(1) Alluvial soil (2) Black soil
(3) Laterite soil (4) Red loams

Answer (4)

Sol: It is a Fact

174. Appiko movement is synonymous to Chipko movement started in :
(1) Kerala (2) Odisha
(3) Tamil Nadu (4) Karnataka

Answer (4)

Sol: It is a Fact

175. Which planet has its axis highly titled?
(1) Earth (2) Uranus
(3) Mars (4) Mercury

Answer (2)

Sol: It is a Fact

176. Which famous pass, between India and China was reopened for trade after 44 years?
(1) Nathu La (2) Shipki La
(3) Jelep La (4) Karakoram

Answer (1)

Sol: It is a Fact

177. Minor Ports are

(1) Tidal port (2) Anchorage port

(3) Duty free port (4) Entrepot port

Answer (4)

Sol: It is a Fact

178. Which Wildlife Reserve in India was started in 1974 to protect Tiger population?

(1) Ranthambore National Park

(2) Bandipur National Park

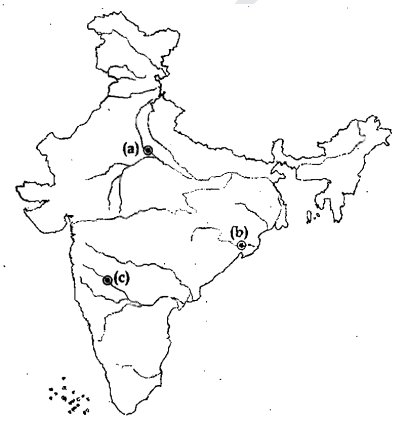
(3) Jim Corbet National Park

(4) Kanha Tiger Reserve

Answer (2)

Sol: It is a Fact

179.



Identify the rivers marked in the above map of India.

(1) (a) Yamuna, (b) Mahanadi, (c) Krishna

(2) (a) Ganga, (b) Mahanadi, (c) Krishna

(3) (a) Narmada, (b) Godavari, (c) Tapti

(4) (a) Brahmaputra, (b) Ganga, (c) Mahanadi

Answer (1)

Sol: It is a Fact

180. Which instrument is used to measure wind speed?

(1) Hygrometer (2) Beaufort scale

(3) Wind vane (4) Bolometer

Answer (2)

Sol: It is a Fact

181. What were the old names of Zambia and Zimbabwe?

(1) North West Africa and South West Africa

(2) Aberdeen and Abyssinia

(3) Northern Rhodesia and Southern Rhodesia

(4) British Honduras and Bechuanaland

Answer (3)

Sol: It is a Fact

182. Which of the following statement(s) is/are correct?

(a) Red and yellow soils develop a reddish colour due to diffusion of magnesium in crystalline and metamorphic rocks.

(b) Black Soils are generally rich in phosphoric contect.

(1) (a) only (2) (b) only

(3) (a) and (b) (4) none

Answer (4)

Sol: It is a Fact

183. Match the following :

(a)	Bandung conference	(i)	1968
(b)	Non Proliferation Treaty	(ii)	1996
(c)	Nuclear Test Ban Treaty	(iii)	1963
(d)	Comprehensive Nuclear Test Ban Treaty	(iv)	1955

(1) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)

(2) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)

(3) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(4) (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)

Answer (1)

Sol: It is a Fact

184. Pick out the wrong statement about Principles of Pancha Sheel.

(1) Each country should respect the territorial integrity and sovereignty of others.

(2) People's representative should be elected through election.

(3) No one should try to interfere in the internal affairs of others.

(4) All country shall strive for equality and mutual benefits.

Answer (2)

Sol: It is a Fact

185. Who is the India's first transgender Judge in Lok Adalat?

(1) Joyita Mondal (2) Swathi Bidhan Baruah

(3) Sathyasri Sharmila (4) Prithika Yashini

Answer (1)

Sol: It is a Fact

186. Pick the odd man out.

(1) India (2) Britain

(3) Spain (4) Saudi Arabia

Answer (4)

Sol: It is a Fact

187. Find the correct statement:

Statement (A) : The Supreme Court cannot interfere in the judgements declared by the Military Tribunals.

Statement (B) : Appeal can be taken from Military Tribunals to Supreme Court.

(1) **(A)** and **(B)** are correct

(2) **(B)** is correct

(3) **(A)** is correct

(4) **(A)** and **(B)** are wrong

Answer (1)

Sol: It is a Fact

188. Who has the authority to give suggestions to the president on politically legal problems?

(1) Supreme Court (2) Parliament

(3) Prime Minister (4) Governor

Answer (1)

Sol: It is a Fact

189. 61st amendment of the Constitution Act of _____ has lowered the voting age from 21 years to 18 years.

(1) 1998 (2) 1978

(3) 1968 (4) 1988

Answer (4)

Sol: It is a Fact

190. Which two countries got independence in the year 1971?

(1) Cameroon and Seychelles

(2) Bangladesh and Bahrain

(3) Bahamas and Mozambique

(4) Fiji and Papua New Guinea

Answer (2)

Sol: It is a Fact

191. Which of the following is not an example of an exercise of a fundamental right?

(1) Religious missionaries set up schools

(2) Businessman from Tamil Nadu sets up a resturant in Assam

(3) An accused engages a lawyer to defend his case

(4) A worker forced to render a free service.

Answer (4)

Sol: It is a Fact

192. Choose the two sovereign countries where Tamil is the official language.

(1) Srilanka, Singapore

(2) Srilanka, Malaysia

(3) Singapore, Mauritius

(4) Malaysia, Singapore

Answer (1)

Sol: It is a Fact

193. Which Chief Justice of India has acted as the Acting President of India?

(1) T.S. Thakur

(2) Mohammad Hidayatullah

(3) Ranganath Mishra

(4) Mirza Hameedullah Beg

Answer (2)

Sol: It is a Fact

194. The First Woman Chairperson of SBI :

(1) Arundhati Bhattacharya

(2) Rekha Sharma

(3) Girija Vyas

(4) Jayanthi Patnaik

Answer (1)

Sol: It is a Fact

195. Which is the tenth largest stock exchange in the world and oldest stock exchange in South Asia?

(1) National Stock Exchange

(2) Madras Stock Exchange

(3) Bombay Stock Exchange

(4) Calcutta Stock Exchange

Answer (3)

Sol: It is a Fact

196. Which Finance Minster has presented the maximum number of union budgets?

(1) Pranab Mukherjee

(2) Morarji Desai

(3) Yashwant Sinha

(4) P. Chidambaram

Answer (2)

Sol: It is a Fact

197. Expand - FERA :

(1) Foregin Exchange and Resources Act

(2) Financial Exchange Regulation Act

(3) Fiscal Exchange Reserves Act

(4) Foreign Exchange Regulation Act

Answer (4)

Sol: It is a Fact

198. Percapita income is calculated by :

(1) $\frac{\text{Total Population}}{\text{Gross Domestic Product}}$

(2) $\frac{\text{Total Population}}{\text{National Income}}$

(3) $\frac{\text{National Income}}{\text{Total Population}}$

(4) $\frac{\text{Gross Domestic Product}}{\text{Total Population}}$

Answer (3)

Sol: It is a Fact

199. MGNREGA 2005 guarantees :

(1) Emancipation of women

(2) Child upliftment

(3) 100 days of employment

(4) Minimum support price for farmers

Answer (3)

Sol: It is a Fact

200. State Bank of India before Nationalisation was known as :

(1) General Bank of India

(2) Bank of Hindustan

(3) Grand Bank

(4) Imperial Bank of India

Answer (4)

Sol: It is a Fact

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