DATE : 05/11/2017 TELANGANA

Aakash
Medical | IIT-JEE | Foundations
(Divisions of Aakash Educational Services Pvt. Ltd.)

Regd. Office : Aakash Tower, 8, Pusa Road, New Delhi-110005
Ph.: 011-47623456 Fax : 011-47623472

Time : 3 Hours

Answers & Solutions

Max. Marks : 200

for

NTSE (Stage-I) 2017-18

INSTRUCTIONS TO CANDIDATES

1. Use blue/black ball point pen only. There is no negative marking.
2. This test booklet contains 200 questions of one mark each. All the questions are compulsory.
3. Part-I : MAT : 1 - 50 questions

   Part-II : Language : 51 - 100 questions

   Part-III : 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.

   Example :

	Q. No.	Alternatives
Correct way :	1	① ② ● ④
	Q. No.	Alternatives
Wrong way :	1	⊗ ② ③ ④

   Student must darkening the right oval only after ensuring correct answer on OMR Sheet.
5. Disparity in mentioning (SC, ST & PH) in application form and OMR Sheet can make your candidature invalid.
6. 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.
7. Separate Sheet has been provided for rough work in this test booklet.
8. Please handover the OMR Sheet to the invigilator before leaving the Examination Hall.

   *Take all your question booklets with you.
9. Darken completely the ovals of your answers on OMR Sheet in the time limit allotted for that particular paper.
10. Your OMR Sheet will be evaluated through electronic scanning process. Incomplete and incorrect entries may render your OMR Sheet invalid.
11. Use of electronic gadgets, calculator, mobile etc., is strictly prohibited.

PART - I : MENTAL ABILITY TEST (MAT)

Directions: (Question 1 to 5) : *In the Number series given below, one number is missing. Each series is followed by five alternatives (1), (2), (3), (4) and (5). One of them is the right answer: Identify and indicate it as per the "Instructions".*

1. 13, 74, 290, 650, ...
   (1) 1248 (2) 1470
   (3) 1346 (4) 1452
   (5) 1625

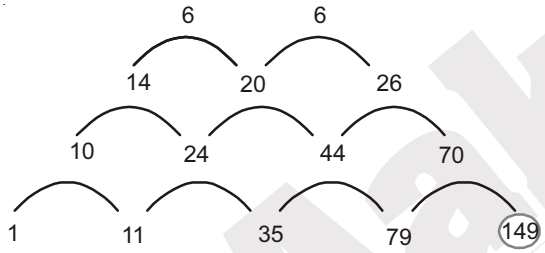
Answer (No option)

Sol. $2^2+3^2, 5^2+7^2, 11^2+13^2, 17^2+19^2, 23^2+29^2 = 1370$

2. 1, 11, 35, 79, ...
   (1) 81 (2) 93
   (3) 149 (4) 124
   (5) 136

Answer (3)

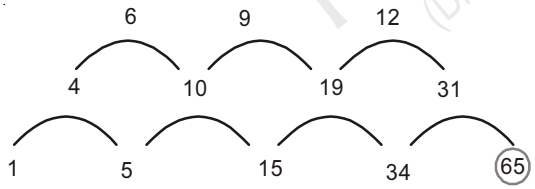
Sol.



3. 1, 5, 15, 34, ...
   (1) 50 (2) 48
   (3) 37 (4) 65
   (5) 72

Answer (4)

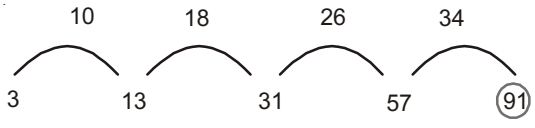
Sol.



4. 3, 13, 31, 57, ...
   (1) 65 (2) 72
   (3) 88 (4) 94
   (5) 91

Answer (5)

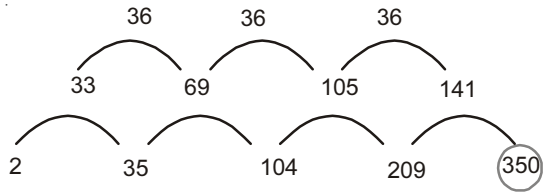
Sol.



5. 2, 35, 104, 209, ...
   (1) 350 (2) 248
   (3) 256 (4) 311
   (5) 413

Answer (1)

Sol.



Directions: (Questions 6 to 10) : *In each of the following questions, a letter series is given, in which some letters are given, in which some letters are missing. The missing letters are given in the proper sequence as one of the alternative. find the correct alternative.*

6. A.....BBC.....AAB.....CCA.....BBCC
   (1) BACB (2) ABBA
   (3) CABA (4) AABC
   (5) ACBA

Answer (5)

Sol. AABBCCAABBCCAABBCC

7. BC....B....C...B...CCB
   (1) BBCB (2) CBBC
   (3) CBCB (4) BCBC
   (5) CCBB

Answer (3)

Sol. BCCB BCCB BCCB

8. C....BBB....ABBBB.....ABBB....
   (1) BACBB (2) AABCB
   (3) ABACB (4) ABCCB
   (5) ABBCC

Answer (4)

Sol. CABBBB | CABBBB | CABBBB

9. C....BCCD...CCDB...CDBCC....BC
   (1) DBCD (2) DBDD
   (3) BDAA (4) BDCD
   (5) DCBD

Answer (1)

Sol. C D BC | C D B C | C D B C | C D B C | C D B C |

10. BA....B....AAB...A...B

(1) AABB

(2) BABB

(3) BAAB

(4) ABBA

(5) ABAA

Answer (4)

Sol. B A A B|B A AB|B A A B

Directions : (Questions 11 to 15) : *Questions have become wrong due to wrong order of signs. choose the correct order of signs from the five alternatives give under each question, so that the equations becomes right. Qrite it in your answer sheet againts the corresponding question number.*

11. $6+3=4\times22$

(1) $\times+=$

(2) $+-\times$

(3) $=\times-$

(4) $+-=$

(5) $+\times-$

Answer (1)

Sol. $6\times3+4=22$

12. $12\div3=4\times11$

(1) $+\div=$

(2) $\times+=$

(3) $+-=$

(4) $\times=-$

(5) $\div=\times$

Answer (3)

Sol. $12+3-4=11$

13. $16\times4\div3=7$

(1) $\div\times=$

(2) $-\div=$

(3) $+=-$

(4) $+-=$

(5) $\div+=$

Answer (5)

Sol. $16\div4+3=7$

14. $7\div3=8-13$

(1) $\div+=$

(2) $\times-=$

(3) $\div=+$

(4) $-+=$

(5) $-\times=$

Answer (2)

Sol. $7\times3-8=13$

15. $15-3\times4=9$

(1) $+\times=$

(2) $\times-=$

(3) $+-=$

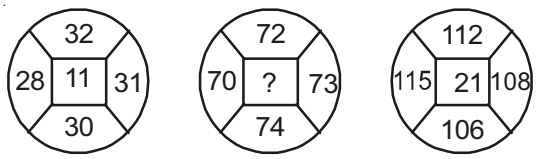
(4) $\div+=$

(5) $+\div=$

Answer (4)

Sol. $15\div3+4=9$

Directions : (Questions 16 to 20) : *In these questions, numbers are placed in the figures on the basis of some rules. One place is vacant which is indicated as '?'. Find out the correct alternatives to replace the question mark '?'.*

16. 

(1) 14

(2) 15

(3) 16

(4) 17

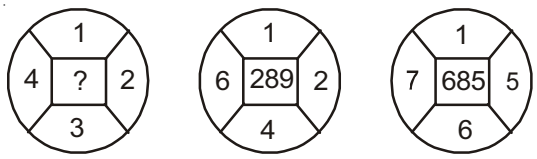
(5) 18

Answer (4)

Sol. $32+28+30+31=121=11^2$

$112+115+106+108=441=21^2$

$72+70+74+73=289=17^2$

17. 

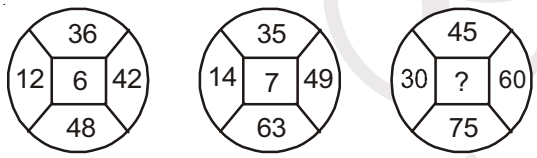
(1) 14
(2) 15
(3) 16
(4) 17
(5) 18

Answer (No option)

Sol. $6^3 + 2^3 + 4^3 + 1^3 = 289$

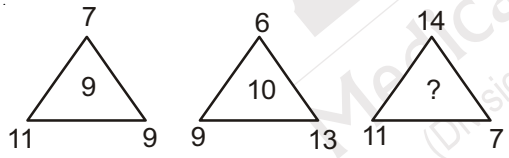
$7^3 + 6^3 + 5^3 + 1^3 = 685$

$4^3 + 3^3 + 2^3 + 1^3 = 100$

18. 

(1) 12
(2) 15
(3) 18
(4) 21
(5) 24

Answer (2)

19. 

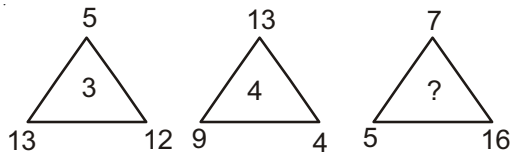
(1) 7
(2) 9
(3) 4
(4) 5
(5) 10

Answer (4)

Sol. $7 + 11 + 9 = 27 = 2 + 7 = 9$

$6 + 9 + 13 = 28 \Rightarrow 2 + 8 = 10$

$14 + 11 + 7 = 32 = 3 + 2 = 5$

20. 

(1) 5
(2) 4
(3) 10
(4) 8
(5) 6

Answer (5)

Sol. $5 + 13 + 12 = 30 \Rightarrow 3 - 0 = 3$

$9 + 4 + 13 = 26 \Rightarrow 6 - 2 = 4$

$7 + 5 + 16 = 28 \Rightarrow 8 - 2 = 6$

Directions : **(Questions 21 to 25) :** Some letters are given in column I and, some digits are given in column II. Each digit of column II represents any letter of column I. Study the columns and write the alternative letter after choosing the correct alternative against the corresponding question.

Column - I	Column - II
ABLMS	24538
QRLBA	93526
PTQAB	52601
LRNPQ	93716
ATRNP	29071
MSPTQ	84106
QPNAR	16729
RABLS	29583
TSLBA	80325
PLQST	31860

21. The code for M is .....

(1) 0
(2) 8
(3) 1
(4) 6
(5) 4

Answer (5)

Sol. A $\rightarrow$ 2

B $\rightarrow$ 5

L $\rightarrow$ 3

S $\rightarrow$ 8

M $\rightarrow$ 4

Q $\rightarrow$ 6

R $\rightarrow$ 9

P $\rightarrow$ 1

T $\rightarrow$ 0

N $\rightarrow$ 7

22. The code for N is .....

(1) 9 (2) 6

(3) 1 (4) 7

(5) 2

Answer (4)

23. The code for A is .....

(1) 9 (2) 5

(3) 2 (4) 8

(5) 3

Answer (3)

24. The code for S is ....

(1) 3 (2) 2

(3) 5 (4) 0

(5) 8

Answer (5)

25. The code for P is ....

(1) 3

(2) 8

(3) 0

(4) 1

(5) 6

Answer (4)

Directions : **(Questions 26 to 30) :** There are six persons in a family A, B, C, D, E and F.

(i) C is the sister of F.

(ii) A is the brother of the husband of E.

(iii) D is the father of A & D is the grand father of F.

(iv) There are two fathers, three brothers and a mother in the family.

On the basis of above details, choose the correct alternative.

26. What is the relationship between E and F?

(1) Daughter

(2) Son

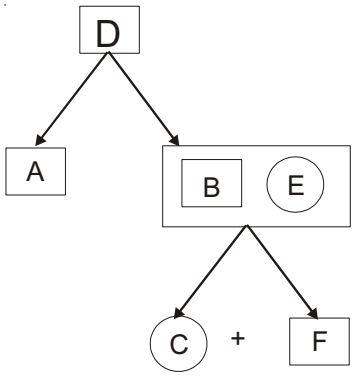
(3) Husband

(4) Grandson

(5) Father-in-law

Answer (2)

Sol.



27. Who is the mother?

(1) E (2) D

(3) C (4) B

(5) A

Answer (1)

Sol. E is the mother of 'C' & 'F'

28. How many male members are there in this family?

(1) One (2) Two

(3) Three (4) Four

(5) Five

Answer (4)

Sol. There are four male members

i.e., D, A, B, F

29. Who is the husband of E?

(1) F (2) D

(3) B (4) C

(5) A

Answer (3)

Sol. 'B' is the Husband of 'E'

30. How many persons are there in the category of brothers?

(1) 1

(2) 2

(3) 4

(4) 2

(5) 3

Answer (5)

Sol. There are three persons in the categoty of brothers.

i.e., A, B & F

Directions *: **(Questions 31 to 35) :** There are four terms in each question. The term right to symbol : : have some relationship as the term of the left to symbol : : and out of the four, one term is missing, which is among one of the given five alternatives. Find the correct alternatives.*

31. KMF : LLH :: RMS : ....

(1) TVT (2) SUS

(3) SLR (4) SSU

(5) SLU

Answer (5)

Sol. RMS : SLU (+1, -1)

32. GFH : EGG :: ...?... : FSS

(1) GHF (2) HRT

(3) HGF (4) HFG

(5) GEF

Answer (2)

33. UVST : WTUR ::...?... : RILO

(1) PKJQ (2) TSUV

(3) UVTS (4) TSVU

(5) SRUT

Answer (1)

Sol. Before W we get U (One letter Gap)

Before R we get P (one opt Starts with P)

34. Newspaper : Editor :: Film : ...?....

(1) Actor (2) Producer

(3) Director (4) Musician

(5) Audience

Answer (3)

Sol. Director

35. Smoke :Pollution ::War " ...?

(1) Victory (2) Death

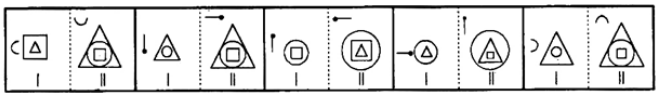
(3) Army (4) Enemy

(5) Treaty

Answer (2)

Directions : (Questions 36 to 40) : *In each of the following questions, in four out of the five figures of element I is related to element II in some particular way. Find out the figure in which the element is not related to element II.*

36.

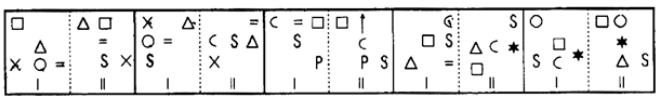


(1) (2) (3) (4) (5)

Answer (1)

Sol. As in the figure(1) Inside triangle become outside and big Δ^{le} but others are not

37.

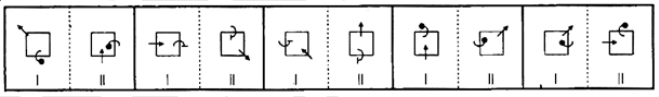


(1) (2) (3) (4) (5)

Answer (4)

Sol. Cyclic rotation of two figures.

38.

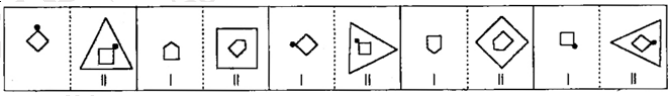


(1) (2) (3) (4) (5)

Answer (3)

Sol. As the symbol "J" took reciprocal direction

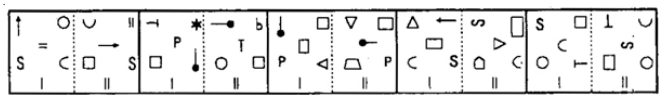
39.



(1) (2) (3) (4) (5)

Answer (5)

40.

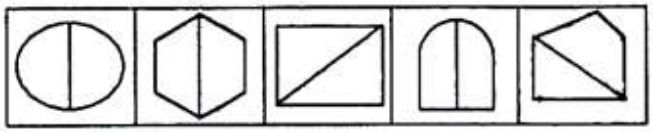


(1) (2) (3) (4) (5)

Answer (2)

Directions : (Questions 41 to 45) : *Out of the five figures (1), (2), (3), (4), (5) given in each problem, four are similar in a certain way. Choose the figure which is different from the other figures.*

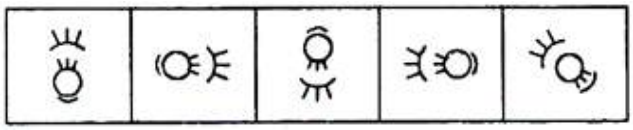
41.



(1) (2) (3) (4) (5)

Answer (5)

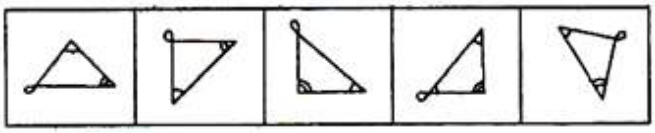
42.



(1) (2) (3) (4) (5)

Answer (5)

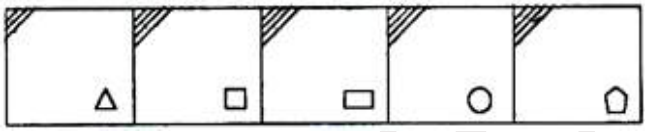
43.



(1) (2) (3) (4) (5)

Answer (4)

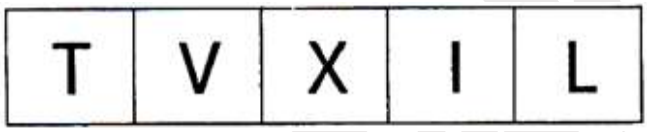
44.



(1) (2) (3) (4) (5)

Answer (5)

45.

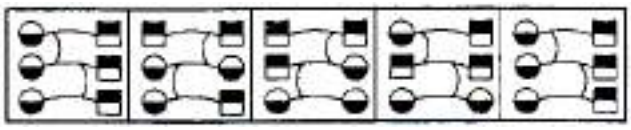


(1) (2) (3) (4) (5)

Answer (4)

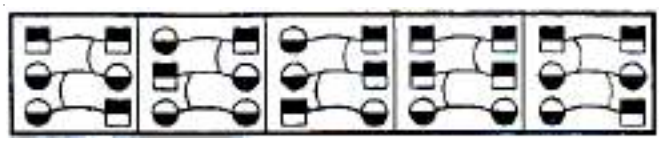
Directions : (Questions 46 to 50) *Each of the following questions consists of the five figures marked A, B, C, D and E called the problem figures followed by five alternatives marked 1, 2, 3, 4 and 5 called the answer figures. Select a figure which will continue the same series established by the five problem figures.*

46. Problem Figures



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

Answer Figures



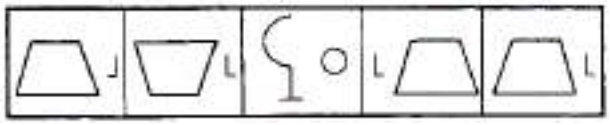
(1) (2) (3) (4) (5)

Answer (1)

47. Problem Figures

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

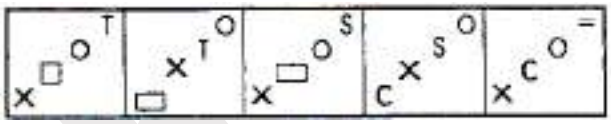
Answer Figures



(1) (2) (3) (4) (5)

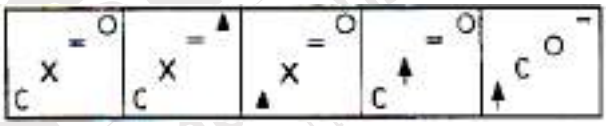
Answer (5)

48. Problem Figures



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

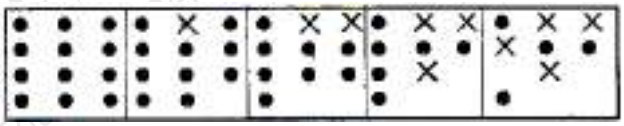
Answer Figures



(1) (2) (3) (4) (5)

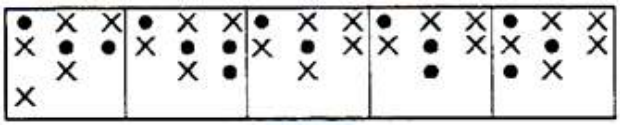
Answer (3)

49. Problem Figures



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

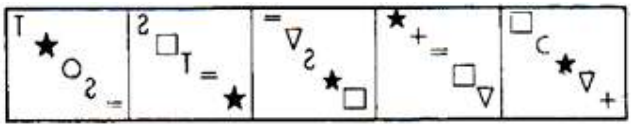
Answer Figures



(1) (2) (3) (4) (5)

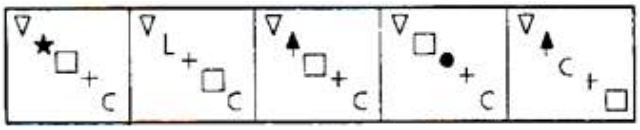
Answer (3)

50. Problem Figures



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

Answer Figures



(1) (2) (3) (4) (5)

Answer (3)

PART - II : LANGUAGE COMPREHENSIVE TEST

Direction: (Questions 51 to 55) : *Read the following passage and answer the questions given after it.*

At this stage of civilization, when many nations are brought into close and vital contact for good and evil, it is essential,as never before, that their gross ignorance of one another, should be diminished, that they should begin to understand a little of one another's histrorical experience and resulting mentality. It is the fault of the English to expect the people of other countries to react as they do, to political and international situations. Our genuine goodwill and good intentions are often brought to nothing, because we expect other people to be like us.This would be corrected if we knew the histtory, not necessarily in detail but in broad outlines, of the social and political conditions which have given to each nation its present character.

51. According to the author,"mentality" of a nation is mainly the product of its....
(1) present character. (2) international position.
(3) history. (4) politics.

Answer (3)

52. The character of a nation is the result of its...
(1) mentality.
(2) gross ignorance.
(3) cultural heritage.
(4) socio-political conditions.

Answer (4)

53. The need for a greater understanding between nations....
(1) is more than ever before.
(2) is no longer there.
(3) is always there.
(4) will always be there.

Answer (1)

54. Englishmen like others to react to political situations like.....
(1) us (2) others
(3) each other (4) themselves

Answer (4)

55. According to the author, his countrymen should....
(1) not react to other nations.
(2) have a better understanding of other nations.
(3) read the stories of other nations.
(4) have vital contacts with other nations.

Answer (2)

Direction:(Questions 56 to 60): *Read the following passgae and answer the questions given after it.*

Mahatma Gandhi, father of our nation, was of the opinion that villages are the backbone of our country. He advocated that strengthening of villages leads to strengthening of India. He believed that industrialisation was no answer to the problems that plagues the mass of India's poor and that villagers should be taught to be self sufficient in food, Weave their own cloth from cotton and eschew the glittering prizes that the 20th century so temptingly, offers. 'Prosperous Indian Villages' was his dream. He suggested several ways of developing villages in all aspects. He wanted Indian villages to be self sufficient. Such and idyllic and rural paradise did not appear to those who inherited the reins of political power.

56. The meaning of "glittering prizes that the 20th century so temptingly offers" is....
(1) pursuit of commercialised material culture.
(2) replacement of rural by urban interests.
(3) complete removal of poverty.
(4) absence of violence and corruption.

Answer (3)

57. Mahatma Gandhi's views opposed industrialisation of villages because...
(1) it would help the poor and not the rich.
(2) it would affect the culture of the Indians.
(3) it would take away the skill of the villagers.
(4) it would underrmine self sufficiency and destroy the beauty of life of the villagers.

Answer (3)

58. The basis of "an idyllic and rural paradise" is....
(1) self sufficiency in food and clothes and simplicity of the lifestyle.
(2) rapid industrialisation of villages.
(3) bringing the glittering prizes of the 20th century to the villages.
(4) supporting those holding powerful political positions.

Answer (1)

59. Which one of the following best illustrates the relationship between the phrases:

(i) eschew the glittering prizes,and

(ii) idyllic and rural paradise.

(1) Unless you do (i), you cannot have (ii).

(2) (i) and (ii) are identical in meaning.

(3) First of all you must have (ii) in order to do (i).

(4) The meaning of (i) is directly opposite to (ii).

Answer (1)

60. Mahatma Gandhi's dream of 'an idyllic and rural paradise' was not shared by...

(1) those who called him the "Father of Nation".

(2) those who inherited political powers after independence.

(3) those who did not believe in the industrialisation of the country.

(4) those who belived that villages should be self sufficient in food and cloth.

Answer (2)

(Questions 61 to 65): Read the following passage and answer the questions given after it.

What needs to be set right is our approach to work. It is a common sight in our country of empolyees reporting for duty on time and at the same time doing little work. If an assessment is made of time, they spent in gossiping,drinking tea, eating 'pan' and smoking cigarettes. It will be shocking to know that the time devoted to actual work is negligible. The problem is the standard which the leadership in administration sets for the staff. Forget the ministers because they mix politics and administration. What do top bureaucrats do ? What do the below down officials do ? The administration set up remains weak because the employees do not have the right example to follow and they are more concerned about being in the good books of the bosses than doing work.

61. The employees in our country ____

(1) are quite punctual but not duty conscious

(2) are not punctual ,but somehow manage to complete their work.

(3) are somewhat lazy but good natured

(4) are not very highly qualified.

Answer (1)

62. According to the writer, the administration in India ...

(1) is by and large effective

(2) is very strict and firm

(3) is affected by red tape

(4) is more or less ineffective.

Answer (4)

63. The word 'assessment' in the passage means____.

(1) Enquiry (2) Evaluation

(3) report (4) summary

Answer (2)

64. The leadership in administration.....

(1) sets a fine example to the employee

(2) is of a reasonably high standard.

(3) is of a very poor standard

(4) is composed of idealists.

Answer (3)

65. The central idea of passage could be best expressed by the following.

(1) The employees outlook towards work is justified.

(2) The employees must change their outlook towards work.

(3) The employees would never change their work culture.

(4) The employer-employee relationship is far from healthy.

Answer (2)

Direction: (Question: 66 to 71) : *In the following passage, there are some numbered blanks. Fill in the blanks by selecting the most appropriate word for each blank from the given options.*

Well, it was done and the debt was paid. But I began to feel so sorry for myself that I could not 66 it, I made up my mind never to steal again.I also made up my mind to tell 67 to my father. But i did not have the 68 to speak to him. It was not that 69 was afraid that my father would beat me, I 70 not remember any time when he beat any of us . I was afraid that my confession would cause him great pain. But I 71 felt that I had to take this risk. I would never be happy again unless I told him everything.

66. (1) accept (2) bear

(3) like (4) understand

Answer (2)

67. (1) something (2) anything
(3) everything (4) nothing

Answer (3)

68. (1) gallantry (2) bravery
(3) courage (4) fortitude

Answer (3)

69. (1) I (2) he
(3) she (4) me

Answer (1)

70. (1) should (2) would
(3) did (4) do

Answer (3)

71. (1) again (2) soon
(3) once (4) since

Answer (1)

Direction: (Questions 72 and 73): *The following sentences are from a paragraph. The first and the last sentences/parts are given. Choose the order in which the four sentences/parts (PQRS) should appear to complete the paragraph.*

72. S_1: It was a dark moonless night.

S_2:_____

S_3:_____

S_4:_____

S_5:_____

S_6: They all seemed to him to be poor and ordinary mere childish words.

P: He turned over the pages, reading passages here and there.

Q: He heard them on the floor last night

R: The poet took down his books of poems from his shelves.

S: Some of them contained his earliest writings which he had almost forgotten.

Choose the correct sequence from the options given below.

(1) RPQS (2) RQSP
(3) RSPQ (4) RPSQ

Answer (4)

73. S_1: I usually sleep quite well in the train, but this time I slept only a little.

S_2:_____

S_3:_____

S_4:_____

S_5:_____

S_6: It was shut all night,as usual.

P: Most people wanted it shut and I wanted it open

Q: As usual, I got angry about the window.

R: The quarrel left me completely upset.

S: There were too many people, too much hug luggage all around.

Choose the correct sequence from the options given below.

(1) RSQP (2) SQRP
(3) SQPR (4) RSPQ

Answer (3)

Direction: (Questions 74 to 77): *Fore each of the following groups of four words, find the incorrectly spelt word.*

74. (1) teaser (2) teething
(3) tedious (4) teatotaller

Answer (4)

75. (1) passion (2) fashion
(3) ration (4) tution

Answer (4)

76. (1) quarrelled (2) rebellions
(3) commission (4) miraculous

Answer (All are Correct)

77. (1) inflamable (2) musician
(3) righteousness (4) negotiate

Answer (1)

Direction: **(Questions 78 to 85):** Select the most appropriate option to fill in the blanks from the given alternatives.

78. The Mediterranean Sea, which means "in the midst of lands ' in Latin, is the world's ..... inland sea and surrounded by Europe,Asia and Africa.

(1) larger (2) as large
(3) largest (4) the largest

Answer (3)

79. As..... traffic means ..... traffic accidents people should use public transportation more.

(1) fewer/fewer (2) less/fewer
(3) more/less (4) few/less

Answer (2)

80. The current ..... in fashion indicates that printed designs will be in style this year.
(1) Potential (2) vindication
(3) trend (4) hamlet

Answer (3)

81. If you approach the job with ____,you should be able to finish it more quickly.
(1) eagerness (2) reluctance
(3) vulgarity (4) wholesomeness

Answer (4)

82. A: Did you believe Srinu's story ?
B: No, I'm afraid it.....water .
(1) will hold (2) held
(3) doesn't hold (4) is holding

Answer (3)

83. I hope you're going to stand..... your promise ?
(1) in (2) by
(3) of (4) to

Answer (2)

84. I'm really tired of ..... him complain all the time.
(1) hearing (2) crying
(3) telling (4) saying

Answer (1)

85. The pigeons were sitting on the ..... of the building.
(1) lark (2) ledge
(3) lurk (4) ladle

Answer (2)

Direction: (Questions 86 to 90): *Choose the one which best expresses the meaning of the given phrase.*

86. apple pie order
(1) in random order
(2) related to fruits packing
(3) related to dry fruit packing
(4) in perfect order.

Answer (4)

87. at sea
(1) baffled (2) very happy
(3) very excited (4) very sad

Answer (1)

88. around the clock
(1) early morning
(2) day and night
(3) at different timings
(4) throughout the afternoon

Answer (2)

89. wild goose chase
(1) timely action (2) useless search
(3) delayed action (4) wise decision

Answer (2)

90. come to light
(1) ignited (2) flared up
(3) brightened (4) been revealed

Answer (4)

91. accord
(1) refusal (2) confer
(3) oppose (4) dissent

Answer (2)

92. propel
(1) drive (2) modify
(3) burst (4) acclimatize

Answer (1)

93. massive
(1) huge (2) strong
(3) little (4) gaping

Answer (1)

94. defer
(1) indifferent (2) defy
(3) differ (4) postpone

Answer (4)

95. scowled
(1) shouted (2) beamed
(3) frowned (4) paid

Answer (3)

96. reckless
(1) forthright (2) rash
(3) careful (4) gallant

Answer (3)

97. vanity
(1) pride (2) humility
(3) conceit (4) ostentatious

Answer (2)

98. hostility
(1) courtesy (2) hospitality
(3) relationship (4) friendliness

Answer (4)

99. crowded
(1) busy (2) congested
(3) quiet (4) deserted

Answer (4)

100. benign
(1) malevolent (2) soft
(3) friendly (4) unwise

Answer (1)

PART - III : SCHOLASTIC APTITUDE TEST (SAT)

101. A train of length 50 m is moving with a constant speed of 10m/s. Calculate the time taken by the train to cross an electric pole and a bridge of length 250 m.

(1) 25 sec

(2) 30 sec

(3) 45 sec

(4) 15 sec

Answer (2)

Sol. Length of train 50 m

Speed = 10 m/s

Time taken by train to cross

an electric pole t = ?

$\therefore$ Total distance travelled by the train = (50 + 250)m

train = (50 + 250)m

= 300 m

$\therefore \quad \text{Speed} = \frac{\text{Distance}}{\text{time}}$

$\text{Speed} = \frac{300}{\text{time}}$

$10 = \frac{300}{t}$

t = 30 seconds

102. A car travels at a speed of 80 km/h during the first half of its running time and at 40 km/h during the other half, then the average speed of the car .....

(1) 50 km/hr

(2) 75 km/r

(3) 60 km/hr

(4) 40 km/hr

Answer (3)

Sol. Speed of car during 1st half : 80km/h

Speed of car during other half : 40 km/h

Average speed = ?

For equal time interval

Average speed $= \frac{v_1 + v_2}{2}$

$\bar{v} = \frac{80 + 40}{2}$ = 60 km/h.

103. The distance travelled by an object in a specified direction is .....

(1) Speed

(2) Displacement

(3) Velocity

(4) Acceleration

Answer (2)

Sol. The distane travelled by an object in a specified direction is,

Displacement

104. What is the acceleration of the race car that moves at constant velocity of 300 km/hr?

(1) 73.32 m/sec

(2) 83.33 m/sec

(3) 63.33 m/sec

(4) 53.33 m/sec

Answer (2*)

Sol. v = u + at

0 = (300 × 5/18) – a (1)

$\Rightarrow a = \frac{250}{3} = 83.33 \, m/s^2$

(in options units are given m/s)

105. A Car travels from rest with a constant acceleration 'a' for t seconds. What is the average speed of the car for its journey, if the car moves along a straight road?

(1) $v = \frac{at^2}{2}$ (2) $v = 2at^2$

(3) $v = \frac{at}{2}$ (4) None

Answer (3)

Sol. Initial velocity 'u' = 0

Acceleration : 'a'

Time : 't'

Average speed = ?

$S = ut + \frac{1}{2}at^2$

$S = 0 + \frac{1}{2}at^2 = \frac{1}{2}at^2$

$\therefore \quad V_{avg} = \frac{s}{t}$

$$V_{avg} = \frac{\frac{1}{2}at^2}{t}$$

$$V_{avg} = \frac{at}{2}$$

$$\therefore \quad V = \frac{at}{2}$$

106. A table clock has its minutes hand 4 cm long. Find the average velocity of the tip of the minute hand between 6.00 am to 6.30 am.

(1) 0.04 cm/sec

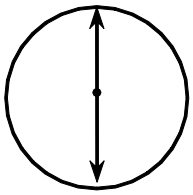
(2) 0.004 cm/sec

(3) 0.0044 cm/sec

(4) None

Answer (3)

Sol. Time taken by the minute hand is 6:00 am to 6:30 am



minute hand = 4 cm long

= 30 min

= 30 × 60 sec = 1800 seconds

$\therefore$ Displacement of minute hand

Diameter = 2 × radius

= 2 × 4 cm = 8 cm

$$\text{Average Vlocity} = \frac{\text{Total Displacement}}{\text{Total time}}$$

$$= \frac{8}{1800} = 0.0044 \text{ cm/sec}$$

107. Two people push a car for 3 sec, with a combined net force of 200 N. The impulse provided to the car .....

(1) 400 N-sec (2) 500 N-sec

(3) 600 N-sec (4) 300 N-sec

Answer (3)

Sol. Time taken by 2 people = 3 sec

Net force = 200 N

$\therefore$ Impulse = ?

Impulse = force × Δt

I = F.Δt

I = 200 × 3

I = 600 N-sec

108. A man of mass 30 kg uses a rope to climb which bears only 450 N. The maximum acceleration with with he can climb safely .....

(1) 10 m/sec^2 (2) 15 m/sec^2

(3) 20 m/sec^2 (4) 25 m/sec^2

Answer (Correct Option Not Given)

Sol. Given mass (m) = 30 kg

Tension (T) = 450 N

a = ? (g = 10m/s^2)

T = m(g + a)

450 = 30(10 + a)

450 = 300 + 30a

30a = 150

a = 5m/s^2 **(Correct Answer)**

109. The value of least distance of clear vision is about .....

(1) 55 cm (2) 40 cm

(3) 20 cm (4) 25 cm

Answer (4)

Sol. The value of least distance of clear vision is about :25 cm

110. The unit of power of a lens (P) is .....

(1) cm (2) mm

(3) diapter (4) hertz

Answer (3)

Sol. The unit of power of a lens (P) is

diapter.

111. A wire of length 1 m and of radius 0.1 mm has a resistance of 100Ω. The resistivity of the material .....

(1) 0.0214 Ω-m (2) 0.0314 Ω-m

(3) 0.000314 Ω-m (4) 0.00214 Ω-m

Answer (3*)

Sol. Length of wire = 1m

radius = 0.1 mm = 10^{-4} m

Reistance R = 100 Ω

resistivity ρ = ?

$$\rho = \frac{RA}{l}$$

$$\rho = \frac{100 \times \pi r^2}{1}$$

$$\rho = 100 \times \frac{22}{7} \times (10^{-4})^2$$

$\rho = 100 \times 3.14 \times 10^{-8}$

$\rho = 10^2 \times 3.14 \times 10^{-8}$

$\rho = 3.14 \times 10^{-6}$

$\rho = 314 \times 10^{-8}$

$\rho = 0.00000314\ \Omega.m$ **(Correct Answer)**

$\rho = 0.000314\ \Omega$ cm

If l = 1 cm then $\rho = 0.000314\ \Omega m$ (then only this is correct)

112. The S.I. unit of potential difference is .....

(1) ohm (2) ampere

(3) ohm-meter (4) volt

Answer (4)

Sol. The S.I unit of potential difference is Volt.

113. The value of magnetic field induction; which is uniform, is 2T. What is the flux pasing through a surface of area 1.5 m^2 perpendicular to the field .....

(1) 3 Tesla (2) 1 Wb/m^2

(3) 2 Tesla (4) None

Answer (4)

Sol. Magnetic field (B) = 2T

Area (A) = $1.5m^2$

Magnetic flux (ϕ) = B × A

$\phi = 2 \times 1.5$

$\phi = 3$ Tesla.m^2 or weber **(Correct Answer)**

114. Precipitate in a reaction is indicated by which arrow mark?

(1) $\rightarrow$ (2) $\uparrow$

(3) $\downarrow$ (4) $\leftarrow$

Answer (3)

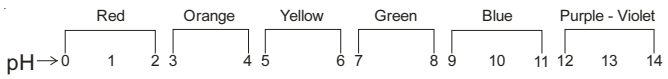
Sol. Precipitate is denoted by arrow down ($\downarrow$) in chemical reaction.

115. What colour would Hydrochloric acid (pH=1) turn universal indicator?

(1) Orange (2) Purple

(3) Yellow (4) Red

Answer (4)



116. The pain due to honey-bee sting can be relieved by using .....

(1) Washing soda (2) Salt

(3) Acid (4) Baking soda

Answer (4)

Sol. Honey bee sting releases methanoicacid (very weak acid) neutrialised with baking soda ($NaHCO_3$).

117. The quantum number which explains about the size and energy of the orbit or shell is .....

(1) n (2) l

(3) m_l (4) m_s

Answer (1)

Sol. n = principle quantum number

= Tells about the size and energy of the orbit

size & energy α n.

118. The maximum number of electrons in any shell is given by ..... rule.

(1) 2n (2) n^2

(3) $2n^2$ (4) $4n^2$

Answer (3)

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

if n = 1 $\Rightarrow$ $2 \times 1^2 = 2$

n = 2 $\Rightarrow$ $2 \times 2^2 = 8$

n = 3 $\Rightarrow$ $2 \times 3^2 = 18$

n = 4 $\Rightarrow$ $2 \times 4^2 = 32$.

119. Example of Dobereiner's triad is .....

(1) Li, Al, Ca (2) Li, Na, K

(3) Li, K, Na (4) K, Al, Ca

Answer (2)

Sol.

Li	Na	K
7	23	39

Atomic weight of middle element

$$Na = \frac{7+39}{2} = \frac{46}{2} = 23.$$

120. Unit of Ionization energy

(1) J/m

(2) K.J. mol

(3) J. mol

(4) KJ. mol^{-1}

Answer (4)

Sol. Ionization energy units in SI = KJ.$mol.^{-1}$.

121. The concept hybridisation of orbits of an atom was introduced by .....
(1) Linus Pauling (2) Moseley
(3) Lewis (4) Kossel

Answer (1)

122. Which one of the following is available in three states.....
(1) Petrol (2) Water
(3) Milk (4) Kerosene

Answer (2)

123. The gas that diffuses from blood to lungs is
(1) Oxygen (2) Carbon Dioxide
(3) Hydrogen (4) Helium

Answer (2)

124. If 100 gm of salt solution contains 20g of salt dissolved in it, the percentage of mass of the solution is ...
(1) 10% (2) 20%
(3) 15% (4) 25%

Answer (2)

Sol. Hint : % Mass of solution

$$= \frac{Mass\ of\ Solute}{Mass\ of\ Solution} \times 100$$

$$= \frac{20g}{100g} \times 100 = 20\%$$

125. Miscible liquids can be separated by
(1) Distillation process
(2) Fractional distillation
(3) Chromatography
(4) Separating funnel

Answer (1* or 2)

126. Molecular mass of water.....
(1) 18 u (2) 16 u
(3) 15 u (4) 10 u

Answer (1)

127. According to the compatibility of Antigen and Antibody, select the correct pair.
(1) Antigen B and Antibody b.
(2) Antigen A and Antibody b.
(3) Antibody a and Antigen B.
(4) Bothe (2) and (3)

Answer (4)

128. In atmosphere, Ozone hole refers to .....
(1) A hole in Ozone layer.
(2) Decrease in Ozone layer thickness in troposhere
(3) Decrease in thickness of Ozone layer in stratosphere
(4) Increase in the thickness of Ozone layer in troposphere.

Answer (3)

129. The function of enzyme Trypsin is to .....
(1) Breakdown fats. (2) Breakdown proteins.
(3) Synthesise proteins.
(4) Breakdown carbohydrates.

Answer (2)

130. The offspring resulting from a cross between two pure homozygous recessives would be.....
(1) 50% homozygous recessive and 50% homozygous dominant.
(2) 75% homozygous recessive and 25% heterozygous dominant.
(3) 75% homozygous recessive and 25% homozygous dominant.
(4) 100% homozygous recessive.

Answer (4)

131. Match the following pairs correctly.

(i) Fish	*(a)* Three chambered heart.
(ii) Lizard	*(b)* Incomplete four chambered heart.
(iii) Man	*(c)* Two chambered heart.
(iv) Frog	*(d)* Complete four chambered heart.

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

Answer (2)

132. The significance of Greenhouse gases in earth's atmosphere is.....
(1) They maintain a warm temperature on earth by absorbing short wave-length radiations.
(2) They do not allow earth's temperature to drop very low by absorbing long wavelength radiations.
(3) They reflect Sun's heat back to atmosphere.
(4) Both (1) and (2)

Answer (2)

133. Which of the below given statements stands trure?

(1) A person can contract AIDS due to unprotected sexual intercourse with an infected person.

(2) A person can contract AIDS while getting permanent tattooing with an infected needle.

(3) A person cannot contract AIDS by donating blood to a HIV infected person.

(4) All the statements are true.

Answer (4)

134. Among the vertebrates, which organism exhibits maximum power of re-generation?

(1) Dog (2) Lizard

(3) Pigeon (4) Man

Answer (2)

135. What will happen if the deer is missing in the food chain given below:

Grass $\longrightarrow$ Deer $\longrightarrow$ Tiger

(1) The population of tiger increases.

(2) The population of grass decreases.

(3) Tiger will start eating grass.

(4) The population of tiger decreases and the population of grass increases.

Answer (4)

136. One gram mole of Glucose on complete oxidation to CO_2 and H_2O produces about.....

(1) 6,86,000 Cal (2) 6,860 Cal

(3) 68,600 Cal (4) 68,60,000 Cal

Answer (1)

137. The transport of soluble products of photosynthesis is called Translocation, which occurs in the part of vascular tissue called .....

(1) Xylem

(2) Sclerenchyma

(3) Phloem

(4) Collenchyma

Answer (3)

138. What will be the genotypic ratio of the cross between Rr and rr?

(1) 1 : 2 : 1

(2) 3: 1

(3) 1 : 1

(4) 1 : 1 : 1

Answer (3)

Sol. 1 : 1

Parents :

Genotype : Rr × rr

Gametes (R) (r) × (r) (r)

(R) (r) × (r) (r)

F1 Progeny :

♀ \ ♂	(R)	(r)
(r)	Rr	rr
(r)	Rr	rr

Genotypic ratio = (2 : 2) or (1 : 1)

Rr rr Rr rr

139. By studying analogous structures, we look for.....

(1) Similarities in appearance and function but difference in structure.

(2) Similarities in appearance but difference in function.

(3) Similarities in organ structure.

(4) Similarities in cell make up.

Answer (1)

140. Placenta is the structure formed.....

(1) by fusion of germ layers.

(2) by foetus only.

(3) by the union o foetal and uterine tissue.

(4) by uterus only.

Answer (3)

141. When 31513 and 34369 are divided by a certain three digit number, the remainders are equal, then the remainder is .....

(1) 86

(2) 97

(3) 374

(4) 113

Answer (2)

Sol.
$$\begin{array}{r} q_1x + r = 34369 \\ q_2x + r = 31513 \\ \hline (q_1 - q_2)x = 2856 \end{array}$$

$(q_1 - q_2)x = 24 \times 119$

$\Rightarrow x = 119$

$31513 = 119(264) + 97$

$34369 = 119 \times 288 + 97$

142. The greatest number of four digits which when divided by 3, 5, 7, 9 leaves the remainders 1, 3, 5, 7 respectively, is .....

(1) 9763 (2) 9673

(3) 9367 (4) 9969

Answer (1)

Sol. LCM of 3, 5, 7, 9 = 315

Reminder of $\frac{9999}{315}$ is 234

$\therefore$ The required number = 9999 – reminder – the common difference = 9999 – 234 – 2 = 9763.

143. *e f g h* is a four digit number. One hundredth of *e f g h* is the mean of *e f* and *g h,* then the four digit number is .....

(1) 3648 (2) 4950

(3) 4590 (4) 3468

Answer (2)

Sol. by Option verification Option (2)

144. If $x^2+xy+x=12$ and $y^2+xy+y=18,$ then the value of $x+y$ is .....

(1) 5 or -6 (2) 3 or 4

(3) 5 or 3 (4) 6 or -3

Answer (1)

Sol. $x^2+xy+x=12$

$x(x+y)+x=12 \rightarrow \boxed{1}$

$y(x+y)+y=18 \rightarrow \boxed{2}$

by adding

$x(x+y)+x+y(x+y)+y=30$

$(x+y)(x+y)+(x+y)=30$

$Let\ \ P=x+y$

$P^2+P=30$

$P^2+P-30=0$

$P^2+6P-6P-30=0$

$P(P+6)-5(P+6)=0$

$(P+6)(P-5)=0$

$P=-6, P=5$

$\therefore x+y=P \qquad i.e\ \ -6,5$

145. If $217x+131y=913$ and $131x+217y=827,$ then the value of $x+y$ is .....

(1) 8

(2) 5

(3) 7

(4) 6

Answer (2)

Sol. $217x+131y=913$

$131x+217y=827$

$348x+348y=1740$

$x+y=\frac{1740}{348}$

$x+y=5$

146. If $x=\frac{1}{2-\frac{1}{2-\frac{1}{2-x}}}, (x\neq 2),$ then the value of x is.....

(1) 1

(2) 3

(3) 2

(4) 5

Answer (1)

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

$x=\frac{1}{2-\frac{1}{4-\frac{2x-1}{2-x}}}$

$x=\frac{1}{2-\frac{(2-x)}{3-2x}}$

$x=\frac{3-2x}{4-3x}$

$\Rightarrow 4x-3x^2=3-2x$

$\Rightarrow 3x^2-6x+3=0$

$x^2-2x+1=0$

$\boxed{x=1}$

147. $x_1, x_2, x_3, \ldots\ldots$ are in A.P.

If $x_1 + x_7 + x_{10} = -6$ and $x_3 + x_8 + x_{12} = -11$

then $x_3 + x_8 + x_{22} = \ldots\ldots$

(1) -21 (2) -15

(3) -18 (4) -31

Answer (1)

Sol. $a + a + 6d + a + 9d = -6$

$a + 2d + a + 7d + a + 11d = -11$

$3a + 15d = -6$

$3a + 20d = -11$

$-5d = 5$

$d = -1$

$3a + 15(-1) = -6$

$3a - 15 = -6$

$3a = -6 + 15$

$3a = 9$

$a = 3$

$x_3 + x_8 + x_{22}$

$= a + 2d + a + 7d + a + 21d$

$= 3 + 21(-1) + 3 + 7(-1) + 3 + 21(-1)$

$= (3-2) + (3-7) + (3-21)$

$= (1) + (-4) + (-18)$

$= -21$

148. If $\dfrac{2 + 5 + 8 + \ldots\ldots n \text{ terms}}{7 + 11 + 15 + \ldots\ldots n \text{ terms}} = \dfrac{23}{35}$,

then n value is .....

(1) 17 (2) 15

(3) 18 (4) 23

Answer (2)

Sol. $\dfrac{2 + 5 + 8 + \ldots\ldots n \text{ times}}{7 + 11 + 15 + \ldots\ldots n \text{ times}} = \dfrac{23}{35}$

$\Rightarrow \dfrac{\frac{n}{2}[2(2) + (n-1)3]}{\frac{n}{2}[2(7) + (n-1)4]} = \dfrac{23}{35}$

$\Rightarrow \dfrac{4 + 3n - 3}{14 + 4n - 3} = \dfrac{23}{35}$

$\Rightarrow \dfrac{3n + 1}{4n + 10} = \dfrac{23}{35}$

$\Rightarrow 35(3n + 1) = 23(4n + 10)$

$\Rightarrow 105n + 35 = 92n + 230$

$\Rightarrow 13n = 195$

$n = 15$

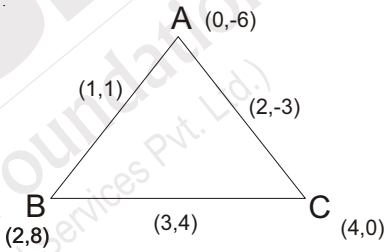
149. If the co-ordinates of the midpoints of the sides of a triangle are $(1,1), (2,-3)$ and $(3,4)$, then the centroid of the traingle is .....

(1) $\left(3, \dfrac{1}{3}\right)$ (2) $\left(1, \dfrac{2}{3}\right)$

(3) $(3,1)$ (4) $\left(2, \dfrac{2}{3}\right)$

Answer (4)

Sol.



$A(0,-6), B(2,8), C(4,0)$

$G = \left(\dfrac{0 + 2 + 4}{3}, \dfrac{-6 + 8 - 0}{3}\right)$

$= \left(\dfrac{6}{3}, \dfrac{2}{3}\right)$

$= \left(2, \dfrac{2}{3}\right)$

150. If two vertices of an equilateral triangle be $(0,0)$ and $(3, \sqrt{3})$, then the third vertex is .....

(1) $(1, 3\sqrt{3})$

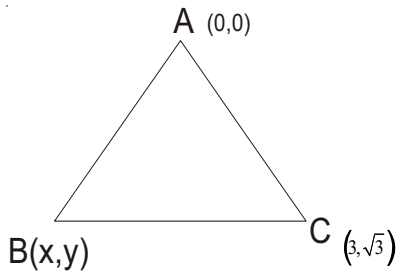
(2) $(0, 2\sqrt{3})$

(3) $(3, \sqrt{3})$

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

Answer (2)

Sol.



$AB = \sqrt{12}$

$x^2 + y^2 = 12$ ——— (1)

$BC = \sqrt{12}$

$(x-3)^2 + (y-\sqrt{3})^2 = 12$

$x^2 + y^2 - 6x - 2\sqrt{3}y + 12 = 12$

$\Rightarrow 6x + 2\sqrt{3}y = 12$

$y = \dfrac{6-3x}{\sqrt{3}}$ from (1)

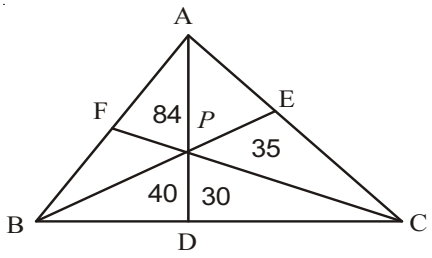
$x^2 + \left(\dfrac{6-3x}{\sqrt{3}}\right)^2 = 12$

$x^2 + 3x^2 - 12x + 12 = 12$

$\boxed{x = 0}$

$\boxed{y = \dfrac{6}{\sqrt{3}} = 2\sqrt{3}}$

151. As shown in the given figure, Δ ABC is divided into six smaller triangles by lines drawn from the vertices through a common interior point. The areas of four of 6 triangles are as indicated, then the area of Δ ABC is....



(1) 238

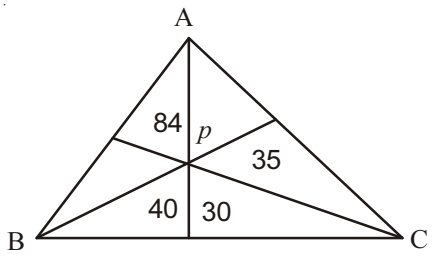
(2) 464

(3) 315

(4) 412

Answer (3)

Sol.



$Ar(\Delta PBD) = \dfrac{1}{2} \times BD \times h.$——(1)

$Ar(\Delta PDC) = \dfrac{1}{2} \times DC \times h.$——(2)

$\dfrac{(1)}{(2)} \Rightarrow \dfrac{40}{30} = \dfrac{BD}{DC}$——(5)

$And \ldots Ar(\Delta ABD) = \dfrac{1}{2} \times BD \times h1$——(3)

$\cdots Ar(\Delta ACD) = \dfrac{1}{2} \times DC \times h1$——(4)

$\dfrac{(3)}{(4)} \Rightarrow \dfrac{124+x}{65+y} = \dfrac{BD}{DC}$——(6)

$From (5) \& (6)$

$\dfrac{4}{3} = \dfrac{124+x}{65+y}$

Similarly,

$\dfrac{Ar(\Delta APE)}{Ar(\Delta PEC)} = \dfrac{y}{35} = \dfrac{\frac{1}{2} \times AE \times h2}{\frac{1}{2} \times EC \times h2}$

$\dfrac{y}{35} = \dfrac{AE}{EC}$——(8)

$\dfrac{Ar(\Delta ABE)}{Ar(\Delta BEC)} = \dfrac{84+x+y}{105} = \dfrac{AE}{EC}$——(9)

From (8) and (9)

$\dfrac{y}{35} = \dfrac{84+x+y}{105}$

x-2y + 84 = 0 ---------- (10)

From (7) and (10)

We get x = 56, y=70

Total area = 315

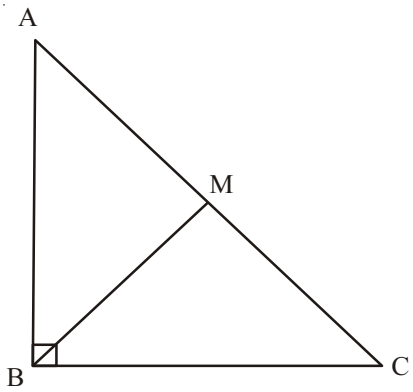
152. ABC is a right angled triangle with $\angle$B = 90°, m is the midpoint of AC and Bm =-$\sqrt{117}$ cm, AB + BC=30, then the area of the triangle is ....

(1) 108 cm^2 (2) 248 cm^2

(3) 316 cm^2 (4) 156 cm^2

Answer (1)

Sol.



$BM = \sqrt{117}$

AB+BC=30

Squaring on both sides

$AB^2 + BC^2 + 2AB.BC = 900$

AC^2+2AB.BC=900

Here $AC = 2\sqrt{117}$ ($\because$ BM=AM=MC., 'M' is the circumcenter of ΔABC)

468+2AB.BC=900

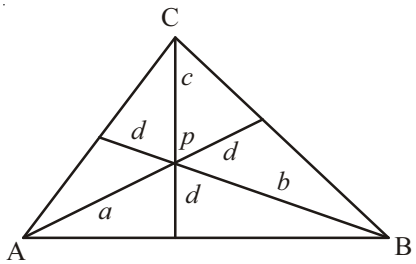
2AB.BC=432

Area of ΔABC = $\frac{1}{2} AB.BC = \frac{1}{4}(2AB.BC)$

$= \frac{1}{4}(432)$

= 108.

153. Let p be an interior point of Δ ABC and extend lines from the vertices through p to the opposite sides. Let a, b, c and d divides the lengths of the segments indicated in the figure. Find the product of *abc*, if a + b + c = 43 and d = 3.

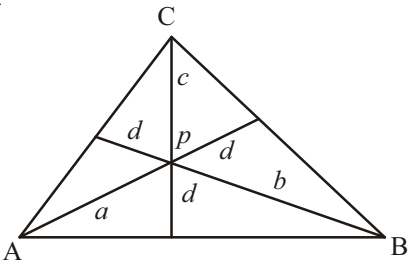


(1) 168 (2) 256

(3) 346 (4) 441

Answer (4)

Sol.



Here distance from P to AB, BC, CA are equal

$\Rightarrow$ P will be the incentre.

$$\frac{Area\ of\ \Delta PBC}{Area\ of\ \Delta ABC} = \frac{d}{a+d}$$

$$\frac{Area\ of\ \Delta PAC}{Area\ of\ \Delta ABC} = \frac{d}{b+d}$$

$$\frac{Area\ of\ \Delta PAB}{Area\ of\ \Delta ABC} = \frac{d}{c+d}$$

$$\frac{Area\ of\ \left[(\Delta PBC)+(\Delta PCA)+(\Delta PAB)\right]}{Area\ of\ \Delta ABC} = 1$$

$$\frac{d}{a+d} + \frac{d}{b+d} + \frac{d}{c+d} = 1$$

$$\frac{3}{a+3} + \frac{3}{b+3} + \frac{3}{c+3} = 1$$

After simplification we get

$$3\left[(a+3)(b+3)+(a+3)(c+3)+(b+3)(c+3)\right]$$

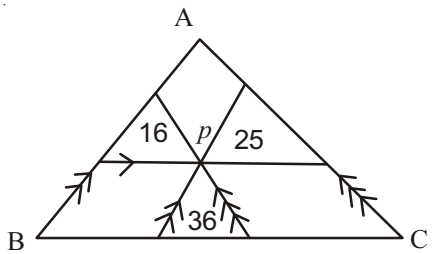
$$= (a+3)(b+3)(c+3)$$

$$3(ab+bc+ca)+18(a+b+c)+81$$

$$= abc + 3(ab+bc+ca) + 9(a+b+c) + 27$$

abc = $9(a+b+c)+54$ = 441

154. As shown in the figure in Δ ABC, p is an interior point. Through the point p, three lines are drawn parallel to three sides as shown in the figure. If the areas of smaller triangles are 16, 25 and 36 square units respectively, then the area of Δ ABC in square units is

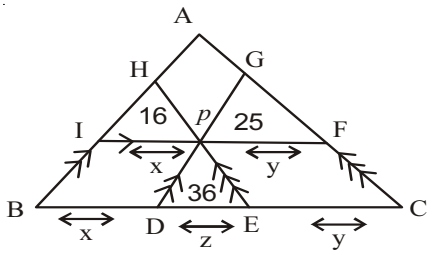


(1) 324 (2) 196

(3) 225 (4) 784

Answer (3)

Sol.



$$\frac{x^2}{y^2}=\frac{16}{25}\Rightarrow\frac{x}{y}=\frac{4}{5}$$

$$\frac{x^2}{z^2}=\frac{16}{36}\Rightarrow\frac{x}{z}=\frac{4}{6}$$

$$\Rightarrow x=\frac{4y}{5}=\frac{4z}{6}$$

$$z=\frac{6y}{5}$$

$$\frac{Ar(ABC)}{25}=\frac{(x+y+z)^2}{y^2}=\frac{9y^2}{y^2}$$

Ar (ABC) = 225

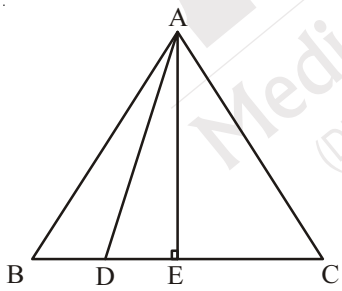
155. In an equilateral triangle ABC, the side BC is trisected at D, then $9AD^2$ is...

(1) $7AB^2$ (2) $8BC^2$

(3) $4AC^2$ (4) $\frac{3}{2}AB^2$

Answer (1)

Sol.



Δ ADE is right angled triangle so

$AD^2=DE^2+AE^2$ .....(1)

Δ ABE is right angled triangle so

$AB^2=AE^2+BE^2$ .....(2)

From (1) and (2)

$AD^2-AB^2=DE^2-BE^2$

(Put DE=BE-BD, BE=$\frac{BC}{2}$, BD=$\frac{BC}{3}$,BC=AB)

$$AD^2-AB^2=\left(\frac{BC}{2}-\frac{BC}{3}\right)^2-\left(\frac{BC}{2}\right)^2$$

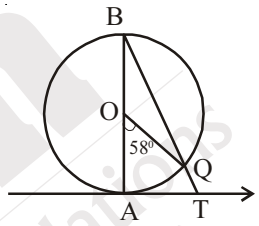
$$AD^2-AB^2=\frac{BC^2}{36}-\frac{BC^2}{4}$$

$$AD^2=AB^2-\frac{2AB^2}{9}$$

$$AD^2=\frac{7AB^2}{9}$$

$$9AD^2=7AB^2$$

156. In the given figure, AB is the diameter of a circle with O and AT is a tangent. If $\angle$AOQ = 58°, then the value of $\angle$ATQ is



(1) 52^0 (2) 61^0

(3) 46^0 (4) 75^0

Answer (2)

Sol. In the given fig. $\angle BOQ=122^0$

ΔOBQ is an isosceles triangle . so,

$\angle OBQ=\angle OQB=29^0$

as ΔBAT is right angles triangle

$\angle ATQ=61^0$

157. The radii of two cylinders are in the ratio 2:3 and their heights are in the ratio 5:3, then the ratio of their volumes is.....

(1) 15:16

(2) 14:17

(3) 20:27

(4) 4:9

Answer (3)

Sol. $\frac{V_1}{V_2}=\frac{\pi r_1^2h_1}{\pi r_2^2h_2}$

$=\frac{20}{27}$

158. If the area of three adjacent faces of a cuboid are x, y and 2 respectively, then the volume of a cuboid is.....

(1) $\sqrt{xyz}$ (2) $x+y+z$

(3) x^2yz (4) $xy+z$

Answer (1)

Sol. Let the given surface areas $x=l_1l_2$

$y=l_2l_3$

$z=l_3l_1$

$xyz = (l_1l_2l_3)^2$

$l_1l_2l_3=\sqrt{xyz}$

159. If $\tan\theta+\cot\theta=2$, then the value of $\tan^2\theta+cot^2\theta$ is.....

(1) 4 (2) 2

(3) $\frac{3}{2}$ (4) 5

Answer (2)

Sol. $\tan\theta+\cot\theta=2$,

squaring on both sides

$\tan^2\theta+cot^2\theta+2 = 4$

$\tan^2\theta+cot^2\theta = 2$

160. A bag contains 15 balls of which x are black and remaining are red. If the number of red balls are increased by 5, the probability of drawing the red balls doubles, then the probability of drawing red ball is.....

(1) $\frac{1}{5}$ (2) $\frac{4}{5}$

(3) $\frac{3}{5}$ (4) $\frac{2}{5}$

Answer (1)

Sol. N0. of black balls = x

No. of red balls = 15-x

Probability of drawing a red ball = $\frac{15-x}{15}$

If the No. of red balls are increased by 5, then the probability of drawing red balls doubles.

$\frac{2(15-x)}{15}=\frac{20-x}{20}$

$\Rightarrow$ x=12

$\therefore$ Probability of drawing red balls

$= \frac{3}{15}=\frac{1}{5}$

161. "On the basis of iron, coal and textiles, Britain built up a type of civilisation which has been copied all round the world." Who said these words praising Britain ?

(1) Fisher

(2) James Watt

(3) Henry Fort

(4) Friedrich Engels

Answer (3)

162. "Which no European power would be allowed to build colonies in the American continents and US will not interfere in the affairs of Europe or colonies in other continents." Name the American President who declared this.

(1) James Monroe

(2) Franklin Roosevelt

(3) Harry 8. Truman

(4) George W. B.ush

Answer (1)

163. Find the wrong statement about Cricket

(1) The first written laws of Cricket were drawn up in 1744.

(2) The stumps must be 22 inches high and the bail across them six .inches.

(3) The world's first Cricket Club was formed in Hambledon in the 1760's.

(4) The Sikhs founded the first Indian Cricket Club, the Punjab Club in Amritsar in 1820.

Answer (4)

164. What is the reason for increase in industrialisation in Germany after 1870 ?

(1) Invention of Dynamo by Werner Siemens.

(2) Unification of Germany.

(3) Capturing of Loraine from France by Germany.

(4) All the above.

Answer (4)

165. Find out the one, which is not related to French Revolution.
(1) Estate General Meeting in 1789.
(2) Destroy of Bastille Fort.
(3) Tennis Court Oath.
(4) Glorious Revolution.

Answer (4)

166. Which of the following is not the result of the Treaty of Vienna of 1815?
(1) France lost the territories it had annexed under Napoleon
(2) Poland was given to Russia.
(3) Prussia was handed over to England.
(4) None of the above.

Answer (3)

167. Hearing about this incident, Mahatma Gandhi called a halt to the Non-Cooperation movement.
(1) Chauri Chaura incident.
(2) Jalian Wala Bagh incident.
(3) Awadh incident.
(4) Forest Revolt in Kumaon.

Answer (1)

168. Name the Viceroy of India during Civil Disobedience Movement.
(1) Lord Linlithgow (2) Lord Irwin
(3) Lord Reading (4) Lord Chelmsford

Answer (2)

169. In which year, did Gandhiji relaunch Civil Disobedience Movement ?
(1) 1931 (2) 1932
(3) 1933 (4) 1934

Answer (2)

170. Which of these is not a demand of Vladimir Lenin in April Theses ?
(1) Land to be transferred to the peasants.
(2) Nationalisation of factories and banks.
(3) War be brought to a close.
(4) Transfer of political power to middle class.

Answer (4)

171. Who wrote about the injustices of the Caste system in his "Gulamgiri" ?
(1) E.V Ramaswamy Naikar
(2) Kashi baba
(3) Jyotiba Phule
(4) B.R. Ainbedkar

Answer (3)

172. Who is the author of the novel "The Jungle Book" ?
(1) R.L. Stevenson
(2) Charles Dickens
(3) Thomas H^dy
(4) Rudyard Kipling

Answer (4)

173. In which Congress session, the resolution of Puma Swaraj was passed ?
(1) Lahore session (2) Karachi session
(3) Nagpur session (4) Wardha session

Answer (1)

174. On 15th August 1947, in which place was Gandhiji trying to bring peace to reduce the riots ?
(1) Noakhali (2) Satara
(3) Nawadwip (4) Jalandhar

Answer (1)

175. Which party gave its support to the Britishers during Second World War?
(1) Congress.
(2) Muslim League.
(3) Communist Party of India.
(4) All the above.

Answer (4)

176. Match List A with B and select the correct answers using the codes given below the list.

A	B
(a) Kankar	(i) Small streams disappear
(b) Khader	(ii) Contains calcareous deposits.
(c) Bhaber	(iii) Ideal for intensive agriculture.
(d) Terai	(iv) Thickly forested region full of wild life.

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

Answer (3)

177. The time at 20° West longitude is 2.00 AM. Then what is the time at 90° East longitude?
(1) 6.40 AM (2) 9.20 AM
(3) 8.40 AM (4) 10.20 AM

Answer (2)

178. Which of the following Indus tributaries, does not join Kashmir region?

(1) Zaskar (2) Jhelum

(3) Shyok (4) Nubra

Answer (2)

179. Consider the following statements.

(a) The amount of annual rainfall in the northern plains of India decreases from east to west.

(b) The Coromandel Coast receives winter rainfall.

(c) The delta region of the eastern coast is frequently strucked with cyclones.

(d) The speed of jet streams increases during winter.

Which of the statements given above is/are correct?

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

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

Answer (4)

180. Name the Indian forests containing upper canopy.

(1) Tropical deciduous forests.

(2) Mangrove forests.

(3) Tropical evergreen forests.

(4) Thorny forests.

Answer (3)

181. Identify the pull factor that is not related to migrations.

(1) Better living conditions.

(2) Employment opportunities.

(3) Medical facilities.

(4) None of the above.

Answer (4)

182. The famous hill station Udagamandalam, popularly known as Ooty, is located in the

(1) Nilgiris. (2) Palani hills.

(3) Anaimalai hills. (4) Cardamom hills.

Answer (1)

183. What is the reason for the Troposphere to be at a greater height at the Equator?

(1) Conventional currents.

(2) Conduction.

(3) Terrestrial radiation.

(4) All the above.

Answer (4)

184. Name the Planetary winds that meet the Inter Tropical Convergence Zone.

(1) Westerlies and Easterlies.

(2) North east trade winds, South east trade winds.

(3) South east trade winds, Westerlies.

(4) Trade winds, Easterlies.

Answer (3)

185. East, west corridor does not pass through.....

(1) Udaipur (2) Jhansi

(3) Guwahati (4) Gurgaon

Answer (1)

186. Magnetite is the .....

(1) Highest quality coal.

(2) Finest iron ore.

(3) Finest copper ore.

(4) Highest quality limestone.

Answer (2)

187. Which of the following is not correctly related to Jowar?

(1) Jowar is a kharif crop.

(2) Jowar is the third most important food crop with respect to area and production.

(3) Maharashtra is the largest producer of Jowar.

(4) None of the above.

Answer (4)

188. North eastern states are mostly covered with these soils.

(1) Red and yellow soils.

(2) Alluvial soils.

(3) Forest and mountainous soils.

(4) Laterite soils.

Answer (1)

189. Find out the wrong one about National Parks.

(1) Gir National Park - Gujarat.

(2) Simlipal National Park - Odisha.

(3) Sanjay Gandhi National Park - Uttar Pradesh

(4) Guindi National Park - Tamilnadu.

Answer (3)

190. Name the longest range in Himachal ranges?

(1) Mahabharath range

(2) Pir Panjal range

(3) Dhaula Dhar range

(4) Nagatiba range

Answer (2)

191. Which of the following freedom is not available to Indian citizen?

(1) Freedom to assemble peacefully without arms.

(2) Freedom to move freely.

(3) Freedom to reside and settle in any part of the territory of India.

(4) None of the above.

Answer (4)

192. Find the wrong statement.

(1) There was unanimity of opinions on all provisions during Constitution Assembly.

(2) The maker of Constitution represented all regions of the country.

(3) Constitution provides certain provisions to amend articles in it.

(4) Supreme Court of India has said that basic features of Constitution may also be amended.

Answer (4)

193. As per Census 2001, what is the percentage of people with Hindi as their mother tongue?

(1) 41.03% (2) 52.02%

(3) 32.14% (4) 64.91%

Answer (1)

194. Which Lok Sabha elections recorded heavy votings?

(1) 10^{th} Lok Sabha election.

(2) 12^{th} Lok Sabha election.

(3) 14^{th} Lok Sabha election.

(4) 16^{th} Lok Sabha election.

Answer (4)

195. Which of the following subjects is not under concurrent list?

(1) Adoption (2) Trade Unions

(3) Commerce (4) Succession

Answer (3)

196. Largest income under direct taxes is obtained from.....

(1) Income Tax (2) Corporation Tax

(3) Gift Tax (4) Custom Duty

Answer (2)

197. Which of the following statement is wrong about organised sector?

(1) People who work in the government or with companies or large establishment are all in organised sector.

(2) They get paid leave, payment during holidays, provident fund, etc.

(3) Workers in the organised sector enjoy security of employment.

(4) 92% of workers in India are found in organised sector.

Answer (4)

198. Find out the wrong statement about Ford Motors.

(1) Ford Motors is a largest automobile manufacturer which belongs to America.

(2) It came to India in 1995 and established a plant near Chennai.

(3) The plant near Chennai was established in collaboration with Ashok Leyland.

(4) None of the above.

Answer (3)

199. Find out the correct statements regarding Mid Day Meal scheme.

(a) This is the largest school feeding programme in the world.

(b) About 14 crore children studying in schools, eat midday meal today.

(c) The Supreme Court ruled that preference be given to dalit cooks, widows and destitute women.

(d) The scheme was first implemented in Tamilnadu.

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

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

Answer (4)

200. The most common route for investments by MNC's in countries around the world, is to...

(1) Establish new factories.

(2) Buy existing local companies.

(3) Form partnership with local companies.

(4) Giving loans to the Governments.

Answer (3)

❑ ❑ ❑