Aakash

Medical | IIT-JEE | Foundations

(Divisions of Aakash Educational Services Pvt. Ltd.)

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Time : 3 Hours

Answers & Solutions

for

NTSE (Stage-I) 2017-18

Max. Marks : 200

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 :

   Correct way :

Q. No.	Alternatives
1	① ② ● ④

   Wrong way :

Q. No.	Alternatives
1	⊗ ⊘ 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)

1. Select the correct combination of numbers so that letters arranged accordingly will form a meaningful word.

   N S G R E I

   5 4 3 2 1 0

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

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

Answer (4)

Sol. 4 0 5 3 1 2 → SINGER

2. In a certain code language, DIAMOND is written as EMPLBHE. How will ROUTINE be written in that code language?

   (1) FMJSVNS   (2) FOJUVPS

   (3) FMJVSSN   (4) SNVSJMF

Answer (1)

Sol.
DIAMOND → DNOMAID (reversed)
         +1–1 +1–1+1–1+1
         E M P L B H E

ROUTINE → E N I T U O R (reversed)
          +1–1 +1–1+1–1 +1
          F M J S V N S

3. In certain code language GUIDE is written as △◐▨✳▨ and MARCH is written as @ + $ ▽%. How will DIAGRAM be written in same code language?

   (1) ✳▨+▽$+@

   (2) ✳▨+$+△@

   (3) ✳▨+△$+@

   (4) ✳▨+$+@▽

Answer (3)

Sol.
G U I D E   M A R C H
↓ ↓ ↓ ↓ ↓   ↓ ↓ ↓ ↓ ↓
△ ◐ ▨ ✳ ▨   @ + $ ▽ %

D I A G R A M
✕▨+△ $ + @

4. If MY = 16, SUN = 27 then HOTEL will be equal to:

   (1) 60   (2) 75

   (3) 77   (4) 80

Answer (2)

5. If 'water' is called 'air', 'air' is called 'tree', 'tree' is called 'sky', 'sky' is called 'sea' and 'sea' is called 'fire, where do aeroplanes fly?

   (1) water   (2) sky

   (3) fire   (4) sea

Answer (4)

6. How many '8's, are there followed by an even number and preceded by an odd number in the given number sequence?

   58478328548298685487842864 5849

   (1) 2   (2) 3

   (3) 4   (4) 5

Answer (3)

Sol. 58478328548298685487842864 5849

7. J, K and L are educated; J, L and M are hard-working, L, M and N are employed; J, K, M and N are polite. Who is educated, hard-working, polite but not employed?

   (1) J

   (2) K

   (3) L

   (4) N

Answer (1)

Sol.

8. If 'S' denote '+', 'D' denotes '–', 'Q' denotes '÷' and 'P' denotes '×', then value of following equation is:

   35 Q 7 P 5 S 5 D 6 = ?

   (1) 22   (2) 24

   (3) 26   (4) 28

Answer (2)

Sol. $35 \div 7 \times 5 + 5 - 6 = 24$

Direction : (Q No.-9 and 10) select the missing number from the given responses.

9.
   22 30   40 67   200 416
    \ /   \ /   \ /
     2   3   ?

   (1) 6   (2) 4

   (3) 5   (4) 7

Answer (1)

Sol.

$$30 - 22 = 8 = 2^3$$

$$67 - 40 = 27 = 3^3$$

$$461 - 200 = 216 = 6^3 = 6$$

10.

14	25	42
2	4	6
3	3	?
4	7	9

(1) 7   (2) 6

(3) 4   (4) 3

Answer (3)

Sol. $14 = 3 * 4 + 2$

$25 = 3 * 7 + 4$

$42 = x * 9 + 6$

$x = 4$

Direction : (Q. No.- 11 and 12) some equations are solved on the basis of a certain system. On the same basis, find out the correct answer, from amongst the four alternatives, for the unsolved equation.

11. If 9*7 = 32, 11*5 = 96,

then 17*9 = ?

(1) 160   (2) 175

(3) 208   (4) 280

Answer (3)

Sol. $9^2 - 7^2 = 32$

$11^2 - 5^2 = 96$

$17^2 - 9^2 = 208$

12. 85 + 14 = 44, 68 × 28 = 64,

79 × 45 = ?

(1) 72   (2) 83

(3) 96   (4) 124

Answer (2)

Sol. $8 * 5 + 1 * 4 = 44$

$6 * 8 + 2 * 8 = 64$

$7 * 9 + 4 * 5 = 83$

Direction : (Q.No. 13 and 14) are based on the following data.
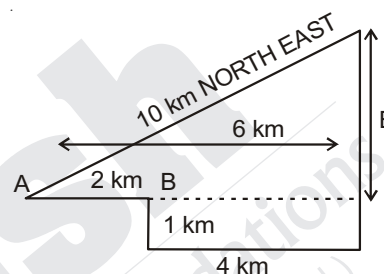
Vaibhav walks 2 km to east, turns right and walks 1 km and then turns left and walks 4 km and again turning to his left travels 9 km.

13. In which direction is Vaibhav now from his starting point?

(1) North   (2) North-East

(3) West   (4) South-West

Answer (2)

Sol.

14. What is the shortest distance between Vaibhav's starting point and the present position?

(1) 6 km   (2) 8 km

(3) 10 km   (4) 12 km

Answer (3)

Direction : (Q.No. 15 and 16)

Take the given statements are true even if they seem to be at variance from commonly known facts and decide which of the conclusions logically follows from the statements.

15. **Statements :**

All flowers are fruits.

Some fruits are vegetables.

No vegetable is tree.

Conclusions :

I. Some fruits are flowers.

II. Some trees are vegetables.

III. Some fruits are trees.

(1) Only conclusion I follow.

(2) Only conclusion II follow.

(3) Only conclusion I and II follows.

(4) Only conclusion II and III follows.

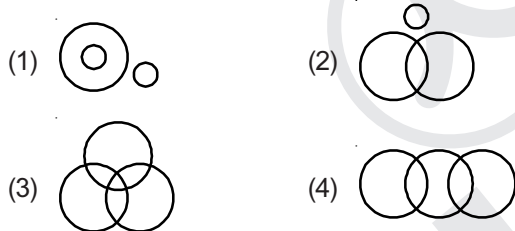**Answer (1)**

16. **Statements :**

Adversity makes a man wise.

Conclusions :

I. The poor are wise.

II. Man learns from bitter experience.

(1) If only conclusion I follow.

(2) If only conclusion II follow.

(3) If both I and II follows.
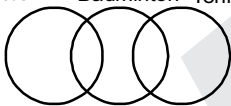
(4) If neither I and nor II follows.

Answer (2)

17. 'Some of the Football players are Badminton players, some Badminton players are Tennis players, no Football player is a Tennis player.' Which of the following venn diagrams correctly represents the above statement?

(1)

(2)

(3)

(4)

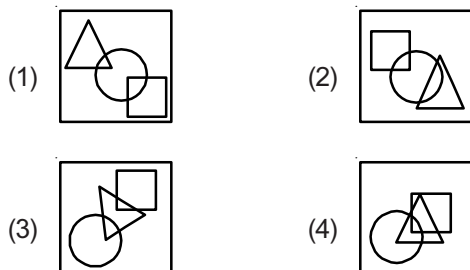**Answer (4)**

Sol. Football   Badminton Tennis

18. There are two dots placed in the Question Figure. Find out the answer figure which has the possibility of placing the dots satisfying the same conditions as in the Questions figure?
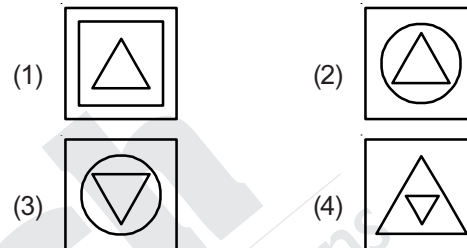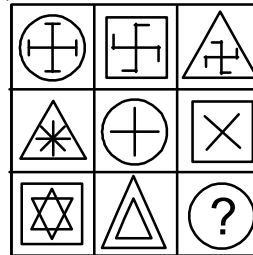
Question Figure :

Answer Figure :

(1)

(2)

(3)

(4)

Answer (4)

Sol.

 has required common region

19. Select a suitable figure from the four alternatives that would complete the given matrix.

(1)

(2)

(3)

(4)

Answer (3)

20. If a mirror is placed on the line X Y, then which of the answer figures is the correct image of the given Questions Figure ?

(1)

(2)

(3)

(4)
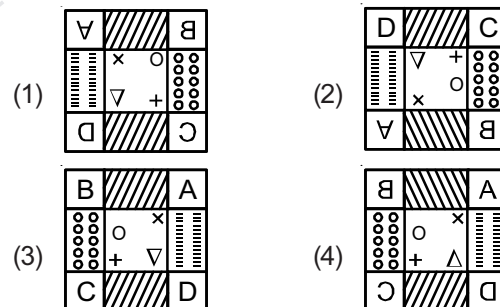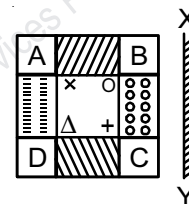
Answer (4)

21. Two positions of a dice are shown below. When number 1 is on the top, what number will be at the bottom?

(1) 2

(2) 3

(3) 5

(4) 6

Answer (2)

Sol.

	5	
2	3	4
	6	
	1	

Opening the given dice 3 and 1 are opposit.

22. How many triangles are there in the following figure?

(1)   (2)

(3)   (4)

Answer (3)

Directions : (Q.No. 23 to 25)

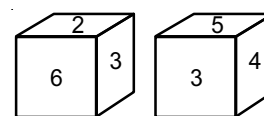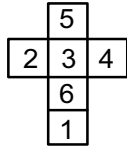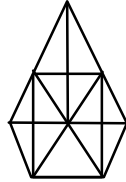In the following questions, there is a relationship between the letters / numbers / figures on the left of the sign (::). The same relationship exists to the right of the sign (::), of which one is missing. Find the missing term from the given alternatives.

23. C E H L : P L I G :: L N Q U : ?

(1) P Y U R   (2) Y U P R

(3) Y U R P   (4) Y P U R

Answer (3)

Sol. C E H L → L H E C
           +4 +4 +4 +4
                 P L I Y
        L N Q E → E Q N L
           +4 +4 +4 +4
                 Y U R P

24. F E A L : L E A F : : E A K T : ?

(1) K A T E   (2) T A K E

(3) K E T A   (4) E T A K

Answer (2)

Sol. F E A L → L E A F

E A K T → T A K E

25. 63 : 9 :: ? : 14

(1) 43   (2) 54

(3) 86   (4) 96

Answer (3)

26. 5 : 64 :: 11 : ?

(1) 121   (2) 124

(3) 144   (4) 196

Answer (4)

Sol. $(5 + 3)2 = 64$

$(11 + 3)2 = 196$

27.

(1)   (2)

(3)   (4)
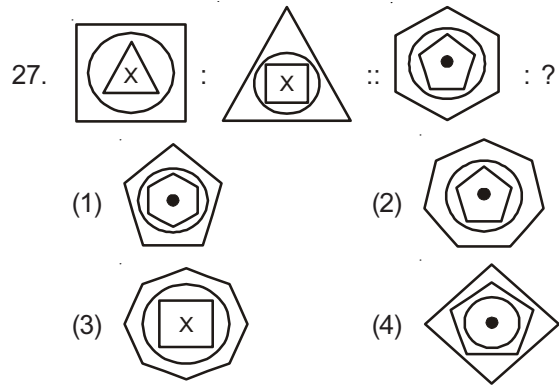
Answer (1)

Direction : (Q. No. 28 to 32)

In the following questions, some letter clusters/numbers/figures are given in a sequence. Find the missing term to replace the question mark from the given alternatives.

28. R E O C, P G M E, N I K G, ?

(1) M J J I   (2) L K I I

(3) L K J H   (4) K L I G

Answer (2)

29. B Y C X, D W E V, F U G T, ?

(1) J S H R   (2) H R J S

(3) H S R J   (4) H S I R

Answer (4)

30. 6, 11, 26, 71, 206, ?

(1) 244   (2) 496

(3) 611   (4) 632

Answer (3)

31. 81, 192, 375, ?

(1) 686   (2) 648

(3) 484   (4) 468

Answer (2)

32.

(1)   (2)

(3)   (4)

Answer (1)

33. Arrange the following words in a logical order.

    1. Leaf   2. Fruit   3. Stem
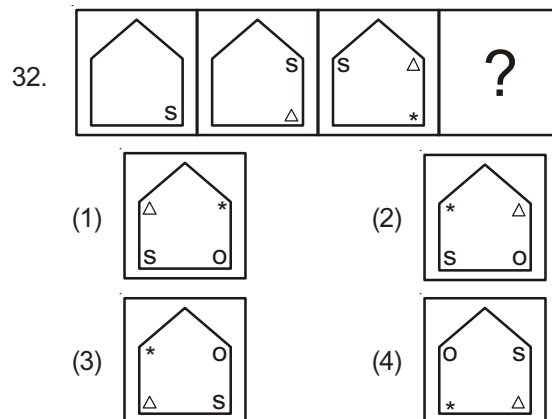   4. Root   5. Flower

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

Answer (3)

34. Which one number is wrong in the number series ?

    13, 17, 19, 23, 27, 29

    (1) 29   (2) 27
    (3) 23   (4) 19

Answer (2)

Direction : Q No. 35 to 37 are based on following information.

A group of friends is sitting in a square facing the centre. They are sitting one each at the corners and one each at the midpoints of the sides of the square. Madhvi is sitting diagonally opposite to Uma who is to Girija's right. Rajesh is next to Girija and opposite to Gyan who is on Vinod's left. Satish is not on Madhvi's right but opposite to Priya.

35. Who is opposite to Vinod ?

    (1) Girija   (2) Madhvi
    (3) Priya   (4) Satish

Answer (1)

36. Who is between Gyan and Madhvi ?

    (1) Rajesh   (2) Satish
    (3) Vinod   (4) Priya

Answer (3)

37. If Gyan and Rajesh interchange their places, who will be to the left of Gyan ?

    (1) Satish   (2) Priya
    (3) Viond   (4) Girija

Answer (2)

38. Arrange the following words as per order in the dictionary.

    1. Dissident   2. Dissolve   3. Dissent
    4. Dissolute   5. Dissolution

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

Answer (2)

39. In a race Amar was running faster than Bipin. Chetan could not run a fast as Amar but ran faster than Deepak. Bipin too could not run as fast as Chetan but ran faster than Deepak. Who will be the winner in the race ?

    (1) Deepak
    (2) Chetan
    (3) Bipin
    (4) Amar

Answer (4)

40. If Friday falls on 15th of September 2000, what will be the day of 15th of September 2001 ?

    (1) Thursday
    (2) Friday
    (3) Saturday
    (4) Sunday

Answer (3)

Direction : (Q. No. 41 to 43)

Select the one word-pair/number-pair/letter cluster which is different from the other three alternatives.

41. (1) Light : Heavy   (2) Kind : Cruel
    (3) Soft : Hard   (4) Vacant : Empty

Answer (4)

42. (1) 18 : 48   (2) 30 : 80
    (3) 40 : 110   (4) 48 : 134

Answer (1)

43. (1) D I M P R   (2) H M Q T V
    (3) Q V Z B C   (4) U Z D G I

Answer (3)

44. At present the father is older than the son by 25 years. After 13 years the father's age becomes double that of the son. What is father's age now ?

    (1) 26 years   (2) 37 years
    (3) 38 years   (4) 50 years

Answer (2)

45. In a row of boys, Vishal is seventh from the left and Kamal is eleventh from the right. When they exchange their places, Vishal is thirteenth from the left. What is the new position of Kamal from the right?

    (1) 16th   (2) 17th
    (3) 18th   (4) 19th

Answer (2)

46. In an examination some questions carry 2 marks each and some others 4 marks each. A student scored 40 marks by attempting 15 questions correct in all. How many questions carrying 2 marks did he attempt correctly.

    (1) 15   (2) 12

    (3) 8   (4) 10

Answer (4)

Direction : Q. No. 47 to 49 are based on following information.

P,Q,R,S,T and V are relatives. 'Q' is the son of 'R' is a married couple. 'T' is the brother of 'R' is a married couple. 'T' is the brother of 'R'. 'S' is the daughter of 'P', and 'V' is the Aunt of 'Q'.

47. Who is the mother of 'Q' ?

    (1) P   (2) R

    (3) S   (4) T

Answer (1)

48. How is 'T' related to 'Q' ?

    (1) Father   (2) Brother

    (3) Son   (4) Uncle

Answer (4)

49. Who is the wife of 'T' ?

    (1) R   (2) V

    (3) S   (4) P

Answer (2)

50. From the given alternative words select the word which cannot be formed using the letters of the given word ?

                    COMMISSIONER

    (1) COMMON

    (2) MISSION

    (3) MISSLE

    (4) SIREN

Answer (3)

PART-II : LANGUAGE TEST

51. Annoy :

    (1) award   (2) please

    (3) praise   (4) applaud

Answer (2)

52. Inclined :

    (1) fair   (2) impartial

    (3) neutral   (4) biased

Answer (2)

53. confess :

    (1) concede   (2) contest

    (3) deny   (4) admit

Answer (3)

Direction : **(Q. 54 & 55)**

Select the most appropriate option toe fill in the blanks from the given alternatives.

54. I .... in a poor family of Haryana.

    (1) bear

    (2) am born

    (3) bore

    (4) was born

Answer (4)

55. Five hundred new houses .... by the end of next year

    (1) were built   (2) were being built

    (3) will be built   (4) will build

Answer (3)

Direction : **(Q. 56 & 60)**

Read the following passage carefully and answer the questions based on it. Choose the most appropriate option.

The capitalist system of society does not foster healthy relations among human beings. A few people own all the means of production and others - though nominally few have to sell their labour under conditions imposed upon them. The emphasis of capitalism being on the supreme importance of material wealth the intensity of its appeal is to the acquisitive intensity. It promotes worship of economic power with little regard to the means employed for its acquisition and the end that it serves. By its exploitation of human beings to the limits of endurance its concentration is on the largest profit rather than maximum production. Thus the division of human family is done on the basis of economic circumstance. All this is injurious to division of human dignity. And when the harrowed poor turn to the founders of religion for succour, they rather offer a subtle defence for the established order. They promise future happiness for their present suffering and

conjure up visions of paradise to redress the balance to soothe the suffering and the revolt of the tortured men. The system imposes injustice, the religion justifies it.

56. Capitalism is injurious to human relations because it divides society into two groups :

    (1) working and non-working

    (2) exploiters and exploited

    (3) religious and irreligious

    (4) buyers and sellers

Answer (2)

57. In a capitalistic system of society each man wishes:

    (1) to acquire maximum wealth

    (2) to produce maximum wealth

    (3) to have visions of paradise

    (4) to soothe the sufferings of other

Answer (1)

58. In a capitalist system :

    (1) the means justify the ends

    (2) the ends justify the means

    (3) the means endorsed by religion are strictly followed

    (4) means which lead to exploitation are strictly prohibited

Answer (2)

59. The passage indicates that the capitalist system is:

    (1) fair

    (2) ambitious

    (3) prosperous

    (4) dehumanising

Answer (4)

60. The established order is supported by religion to :

    (1) alleviate the suffering of the poor in the capitalist system

    (2) perpetuate the injustice imposed by the capitalist system

    (3) balance the suffering of the poor with hopes of future rewards

    (4) help the tortured men to seek redress

Answer (2)

Direction : (Q. 61 & 65)

Read the following poem carefully and answer the questions based on it. Choose the most appropriate option:

I lay in sorrow, in deep distress;

    My grief a proud man heard;

His looks were cold, he gave me gold,

    But not a kindly word.

My sorrow passed - I paid him back

    The gold he gave to me:

Then stood erect and spoke my thanks

    And blessed his charity.

I lay in want, and grief and pain;

    A poor man passed my way,

He bound my head, he gave me bread,

    He watched me night and day,

How shall I pay him back again

    For all he did to me ?

Oh, gold is great, but greater far

    Is heavenly sympathy.

61. How did the proud man help the poet when he was in deep distress ?

    (1) He took him home

    (2) He gave some money

    (3) He pitied the poet

    (4) He watched the poet day and night

Answer (2)

62. What was it the proud man did not give the poet ?

    (1) gold

    (2) sympathy

    (3) money

    (4) attention

Answer (2)

63. How did the poor man take care of the poet ?

    (1) The poor man bound his head which was hurt

    (2) The poor man gave him food and gold

    (3) The poor man gave him some money

    (4) The poor man gave food to the poet and took care of him day and night

Answer (4)

64. Which of the following statement is *not* true ?
    (1) The poor man thanked the heavenly sympathy of the poet
    (2) When the poet was in sorrow he was given money
    (3) The poet repaid his debt to the proud man by blessing his charity
    (4) The poet says he cannot repay the poor man for his sympathy

Answer (1)

65. Which word in the poem means "feeling of pity or sorrow for the distress of another" ?
    (1) kindness   (2) blessing
    (3) sympathy   (4) charity

Answer (3)

Direction : **(Q. 66 & 70)**

Read the following passage carefully and answer the questions based on it. Choose the most appropriate option:

It is becoming very dangerous to sit in the sun. If you have a fashionable suntan, it doesn't necessarily mean that you have lost of outdoor activities but it does mean that you are in greater danger of getting skin cancer and cataracts. The ozone layer, which protects us from the sun's dangerous ultraviolet rays, is progressively deteriorating. In February 1992, a scientific report said that people in Canada, Northern Europe and Russia were in serious danger. In 1985, the news of destruction of the ozone layer in the South Pole alarmed people in the Southern Hemisphere. In Australia, there are now three times more cases of skin cancer than in the past. In New Zealand, teachers tell school children to wear hats and not to sit in the sun. What causes the destruction of the ozone layer ? Mostly chlorofluorocarbons (CFCs), aerosol sprays, refrigerators, air conditioners, as well as industrial chemicals, send chlorofluorocarbons into the atmosphere, Governments are now trying very hard to forbid CFCs, but it will be expensive and difficult to do so. After the first ozone alarm in the Southern Hemisphere, ecologists all over the world asked governments to take strict measures immediately. Some governments did, but not soon enough. Other countries believe that they have other problems which are more important. Now stricter measures are going to be taken, but already a lot of damage has been done.

66. .... dangerous to the skin.
    (1) The ozone layer is   (2) The atmosphere is
    (3) Ultraviolet rays are   (4) The sand storm is

Answer (3)

67. CFCs are caused by ....
    (1) researchers
    (2) ecologists
    (3) aerosol sprays and industries
    (4) archaeologists

Answer (3)

68. Fashionable suntan may ....
    (1) make you look dark
    (2) cause skin cancer and cataract
    (3) make you look beautiful
    (4) not be acceptable to all

Answer (2)

69. The author is not very ....
    (1) clear   (2) hopeless
    (3) hopeful   (4) offensive

Answer (2)

70. The word 'deteriorate' in the passage means ....
    (1) to become healthy
    (2) to become worse
    (3) to become strong
    (4) to become healthy and strong

Answer (2)

Direction : **(Q. 71 & 72)**

The following five sentences come from a paragraph. The first and the last sentences are given.

Choose the right order in which the three sentences (PQR) should appear to complete the paragraph.

71. S1. The proverb goes, 'If speech is silver, silence is golden'.
    S2. ....
    S3. ....
    S4. ....
    S5. We should talk when it is must.

    P – Above all, we should know when not talk, how much to talk and what to talk.

    Q – It is an extremely precious quality to know when to talk, how much to talk and what to talk.

    R – We should therefore always remember to use our tongue sparingly.

    Choose from the options given below :
    (1) PRQ   (2) RPQ
    (3) RQP   (4) PQR

Answer (3)

72. S1. The great advantage of early rising is that one can start one's work long before others.

    S2. ....

    S3. ....

    S4. ....

    S5. Also we find time to do some exercise in the fresh moring air.

    P – The early risers can do a large amount of hard work before other men get out of bed.

    Q – The work done at that time is generally well done.

    R – In the early morning, the mind is fresh and no sounds or noises disturb our attention.

    Choose from the options given below :

    (1) PRQ (2) RPQ

    (3) RQP (4) QPR

Answer (1)

Direction : (Q. 73 & 75)

*Select the meaning of the given **idioms**.*

73. Bring to book

    (1) to punish (2) to write

    (3) to remember (4) to keep safe

Answer (1)

74. Cry for the moon

    (1) to weep on failure

    (2) to wish for something loving

    (3) to weep for a beautiful thing

    (4) to wish for something impossible

Answer (4)

75. Chalk and cheese

    (1) all white

    (2) different from each other

    (3) similar to each other

    (4) write and eat

Answer (2)

Direction : (Q. 76 & 85)

Choose the word which best fills the blank from the given four options :

76. The birth of a girl child in Indian society is an .... event.

    (1) unwelcomeness (2) unwelcome

    (3) unwelcomely (4) unwelcomingly

Answer (2)

77. We should plant a .... number to trees to reduce the environmental pollution.

    (1) great (2) big

    (3) large (4) high

Answer (3)

78. The tireless work and selfless help of the people controlled the .... within a few days.

    (1) occasion (2) event

    (3) situation (4) incident

Answer (3)

79. Three children have been .... from the school for persistent bad behavior.

    (1) removed (2) deleted

    (3) erased (4) abolished

Answer (1)

80. Tanu Bhardwaj, a young poetess, has been receiving a lot of .... publicity for her impressive poetry.

    (1) adorable (2) adverse

    (3) additive (4) averse

Answer (1)

81. The Kapil Sharma show has been .... the best comedy show of the year.

    (1) valued (2) rated

    (3) evaluated (4) viewed

Answer (2)

82. The chief guest was .... at the school gate by the principal and other staff members.

    (1) respected (2) greeted

    (3) honoured (4) welcomed

Answer (4)

83. All firsts of the baby are .... in the parents' memories.

    (1) written (2) carved

    (3) inscribed (4) etched

Answer (3)

84. Market leaders usually want to .... their market share even further, or at least to protect their current market share.

    (1) establish (2) increase

    (3) dominate (4) decrease

Answer (2)

85. Children grow up and eventually start leading their individual life 'a life that .... to them'.

    (1) refers   (2) belongs

    (3) relates   (4) concerns

Answer (2)

Direction : (Q. 86 & 88)

Fill in the blank choosing the most appropriate option (giving the similar meaning as shown in the options) from the given phrases :

86. The police are .... the robbery of a famous painting.

    (1) finding in   (2) finding out

    (3) looking on   (4) looking into

Answer (4)

87. You have missed many lessons, so now you will have to .... the other students.

    (1) catch up with

    (2) hurry up

    (3) learn with

    (4) mix with

Answer (1)

88. My brother's wedding was originally scheduled for May 14, but it has been ....until November 24.

    (1) put up

    (2) put off

    (3) put away

    (4) put to

Answer (2)

Direction : (Q. 89 & 90)

Read the following questions have the second sentence missing. Choose the appropriate sentence from the given option to complete it.

89. i.   Margaret travelled about with some of the missionaries of the Ramakrishna Mission and saw different parts of India.

    ii. ....

    iii. She learnt the ways and manners of Indians.

    (1) This was something Margaret did.

    (2) This is simply impossible for us to think of.

    (3) She must have been some genius.

    (4) She visited different holy places in India.

Answer (4)

90. i.   It has been observed that there is surge in crimes involving computers.

    ii. ....

    iii. Computer crimes are fast and growing because the evolution of technology is fast, but the evolution of law is slow.

    (1) People commit computer crimes because of easy availability of computers

    (2) People commit computer crimes because of society's declining ethical standards more than any economic need.

    (3) People commit computer crimes because controls can't be implemented.

    (4) People commit computer crimes because it is not a national problem.

Answer (2)

Direction : (Q. 91 & 100)

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.

An important task (91) ...... the youth can successfully undertake is to eliminate the curse of dowry. Dowry is responsible for a large number of deaths of innocent married girls and harassment (92) .... the parents of the marriageable daughters. The birth of (93) .... daughter in Indian society is an unwelcome event. It generates gloom and despair (94) .... the parents simply because of the large dowry which will be required for marrying the girl. The youth, (95) .... boys and girls, can take a pledge not to give and accept dowry. Also they (96) .... force their parents to stop this undesirable practice. This problem directly concerns the youth (97) .... Therefore they can easily fight it and (98) .... lives from being lost. The youth in the cities can get in touch with the youth in the rural areas (99) .... educate them with a view of creating a mass movement for the abolition of dowry. Where legal sanctions against dowry (100) ......, this social movement by the youth will prove effective.

91. (1) this   (2) that

    (3) who   (4) what

Answer (2)

92. (1) to   (2) by

    (3) for   (4) of

Answer (4)

93. (1) any   (2) the

    (3) a   (4) each

Answer (3)

94. (1) with   (2) to

     (3) among   (4) for

Answer (3)

95. (1) every   (2) both

     (3) all   (4) no

Answer (2)

96. (1) will   (2) can

     (3) might   (4) ought

Answer (2)

97. (1) themselves   (2) himself

     (3) herself   (4) itself

Answer (1)

98. (1) can save   (2) saved

     (3) save   (4) saves

Answer (3)

99. (1) yet   (2) and

     (3) although   (4) but

Answer (2)

100. (1) will nearly fail

     (2) had nearly failed

     (3) nearly failed

     (4) have nearly failed

Answer (4)

PART-III : SCHOLASTIC APTITUDE TEST (SAT)

101. Which one of the following is made of only one type of macromolecule?

     (1) Virus

     (2) Plasmid

     (3) Nucleosome

     (4) Ribosome

Answer (2)

Sol. Plasmid is extra-chromosomal circular molecule made up of only one macromolecule i.e DNA (deoxyribonucleic acid)

102. Among carbohydrates, lipids, proteins and ATP, the relative energy yield in kcal/g is best represented by:

     (1) Lipids > Carbohydrates > ATP

     (2) ATP > Lipids > Proteins

     (3) Lipids > ATP > Carbohydrates

     (4) Lipids > Proteins > ATP

Answer (1 & 4)

103. The subunits of ribosomes in cells of nephron of mouse are :

     (1) 50S & 30S

     (2) 40S & 23S

     (3) 70S & 16S

     (4) 60S & 40S

Answer (4)

Sol. Mouse is a eukaryote and eukaryotic cells consist of 80S ribosomes having subunit 60S and 40S.

104. Involuntary muscles are *not* found in :

     (1) Iris   (2) bronchi of lung

     (3) tongue   (4) heart

Answer (3)

Sol. Voluntary muscles are present in tongue

105. Different microorganisms taking part in nitrogen cycle are :

     (i) Rhizobium in roots

     (ii) Ammonifying bacteria

     (iii) Nitrifying bacteria

     (iv) Denitrifying bacteria

     Which of them strictly work under anaerobic conditions?

     (1) Only iv   (2) i & iv

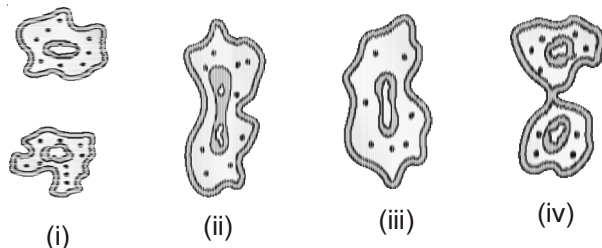   (3) i, ii & iii   (4) ii & iv

Answer (1)

Sol. Rhizobium's enzyme nitrogenase is sensitive to oxygen, thus, Rhizobium is anaerobic while performing nitrogen fixation.

⇒ Ammonifying bacteria (eg. *Bacillus*) perform decomposition under aerobic conditions

⇒ Nitrifying bactreria (eg. Nitrosomonas) are aerobic in nature.

⇒ Denitrifying bacteria perform denitrification under anaerobic conditions.

106. The following picture were drawn by a student to show different stage of binary fission :

(i)   (ii)   (iii)   (iv)

The correct sequence of these figures is :

(1) iii, ii, iv, i
(2) iii, iv, ii, i
(3) ii, iii, ii, i
(4) iv, iii, ii, i

Answer (1)

107. Which of the following is not strictly considered as a part of neuron?

(1) Dendrite
(2) Myelin sheath
(3) Axon
(4) Cell body

Answer (2)

Sol. Myelin sheath is a covering of neuron and is not considered as its type, it is secreted by schwann cell that is a part of Neuroglial cell and not neuron.

108. Which of the following statement about autotrophs is *incorrect* ?

(1) They synthesize carbohydrates from carbon dioxide and water.
(2) They store carbohydrate in the form of starch.
(3) They convert water & CO_2 into carbohydrate only in the absence of light.
(4) They constitute first trophic level in the food chain.

Answer (3)

Sol. Light reaction of photosynthesis in autotrophs is directly dependent on light and dark reaction of photosynthesis is indirectly dependent on light.

109. Correct pathway of blood in circulatory system is :

(1) atria → ventricles → artery → veins
(2) ventricles → atria → veins → arteries
(3) ventricles → veins → atria → arteries
(4) atria → arteries → ventricles → veins

Answer (1)

110. Which of the following is essential for formation of thyroxine hormone in the thyroid gland?

(1) Sodium
(2) Chloride
(3) Potassium
(4) Iodine

Answer (4)

Sol. Iodine is essential for the formation of thyroxine hormones along with tyrosine amino acid. i.e, Tri-iodothyronine (T_3) and tetra-iodothyronine (T_4)

111. In a given food chain if frog has 100 J of energy then the energy available with plants and snake respectively will be :

Plants → insect → Frog → Snake

(1) 1000 J and 10 J
(2) 10000 J and 10 J
(3) 10 J and 1000 J
(4) 1000 J and 100 J

Answer (2)

Sol. Flow of energy in food chain is according to 10% law :

Plants	→	Insects	→	Frog	→	Snake
10000 J		1000 J		100 J		10 J

112. Characters that are transmitted from parents to offspring during reproduction show :

(1) Only similarities with parents
(2) Only variations with parents
(3) Both similarities and variation with parents
(4) Neither similarities not variations with parents

Answer (3)

Sol. Sexual reproduction produces offsprings with characters similar to parents as well as bring variations due to recombination during gametogenesis.

113. Rajiv was absent in class due to muscle pain which he claims to excess of physical exercise he has done yesterday. The pain is due to :

(1) Formation of Pyruvic Acid
(2) Formation of Acetic Acid
(3) Formation of Lactic Acid
(4) Formation of Hydrochloric Acid

Answer (3)

Sol. During strenous/vigorous physical exercise the demand of energy increase and our skeletal muscles starts performing considerable anaerobic respiration which results in considerable accumulation of lactic acid in muscle cells and cause pain & fatigue.

114. Which of the following constitutes a good food chain?

(1) Grass, Wheat, Mango
(2) Grass, Goat, Lion
(3) Goat, Cow, Elephant
(4) Grass, Fish, Goat

Answer (2)

115. Which has more number of particles?

(1) 46 g of Na atom

(2) 8 g of O_2 molecules

(3) 0.1 mole of carbon atom

(4) 28 g of N_2 molecules

Answer (1)

Sol. (1) Number of particles in 46 g Na :

$$moles = \frac{46}{23} = 2$$

No. of atoms = $2 \times 6.02 \times 10^{23}$

or $2N_A$ (Maximum)

(2) No of O_2 molecules = $= \frac{8}{32} \times N_A = \frac{N_A}{4}$

(3) No of Carbon atoms = $0.1 \, N_A$

(4) No of N_2 molecules = $\frac{28}{28} N_A = N_A$

116. Choose the correct option about cheese :

(1) Cheese is an example of emulsion in which dispersed phase is a liquid and dispersing medium is solid.

(2) Example of gel in which dispersed phase is solid and dispersing medium is liquid.

(3) Example of emulsion in which dispersed phase is solid and dispersing medium is liquid.

(4) Example of gel in which dispersed phase is liquid and dispersing medium is solid.

Answer (4)

Sol. Dispersing medium = Solid

Dispersed phase = Liquid

117. If the aluminium salt of anion 'X' is Al_2X_3 the formula of magnesium salt of 'X' will be :

(1) Mg_2X

(2) MgX_2

(3) MgX

(4) Mg_2X_3

Answer (3)

Sol. Formula of X with Al^{3+} is Al_2X_3

So its valency is –2

& its formula with Mg^{2+} is $MgX \Leftarrow Mg^{2+} \, X^{2-}$

118. On reacting a compound of calcium (x) with water compound (y) is obtained. (y) on boiling with NH_4Cl a gas (z) is obtained. x, y & z respectively are :
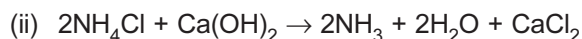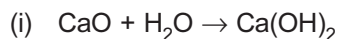
(1) $CaCO_3$, CaO, NH_3 (2) $CaCO_3$, CaO, Cl_2

(3) CaO, $CaCl_2$, Cl_2 (4) CaO, $Ca(OH)_2$, NH_3

Answer (4)

Sol. x = CaO

y = $Ca(OH)_2$

z = NH_3
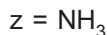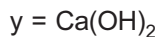
CaO reacts with water to form $Ca(OH)_2$ and heating it with NH_4Cl release NH_3 gas.

(i) $CaO + H_2O \rightarrow Ca(OH)_2$

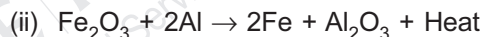(ii) $2NH_4Cl + Ca(OH)_2 \rightarrow 2NH_3 + 2H_2O + CaCl_2$

119. A metal x is placed below Al and above Pb. The extraction of metal is done by reacting carbon with its oxide. Metal oxide is used to join cracks of machine parts and rail lines by reacting it with Al. The metal is

(1) Zn

(2) Cu

(3) Fe

(4) Mg

Answer (3)

Sol. (i) $Fe_2O_3 + C \rightarrow Fe + CO_2$

Thermite process

(ii) $Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3 + Heat$

$\downarrow$

molten

$\downarrow$

used to join the railway tracks

120. A colourless gas with choking smell is evolved when Cu turning are heated with Conc. H_2SO_4. The gas is

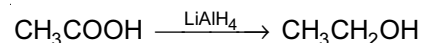(1) SO_2

(2) SO_3

(3) H_2S

(4) S

Answer (1)

Sol. $Cu + 2H_2SO_4 \rightarrow CuSO_4 + SO_{2(g)} + 2H_2O$

121. Acetic acid is reduced with $LiAlH_4$ to give :

(1) CH_3CH_2OH

(2) CH_3CHO

(3) CH_3OH

(4) CH_3CH_3

Answer (1)

Sol. $LiAlH_4$ can reduce acid or aldehyde upto alcohol stage

$$CH_3COOH \xrightarrow{LiAlH_4} CH_3CH_2OH$$

Reduction reaction.

122. Read the statements about carbon and choose correct option :

(A) It has small atomic size.

(B) Its melting & boiling point is low as compared to other members of group.

(C) It shows elctropositive character.

(D) It shows maximum tendency of catenation.

(1) A, B are correct

(2) B, D are correct

(3) A, C and D are correct

(4) A & D are correct

Answer (4)

Sol. Carbon has small atomic size

It shows maximum tendency of catenation

123. Which of the following metal is not placed in eight group of Mendeleev periodic table?

(1) Fe (2) Na

(3) Pt (4) Ni

Answer (2)

Sol. In 8th group of Mendeleev Periodic Table

Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt but not Na

124. Baking powder is a mixture of :

(1) Sodium carbonate & Sodium hydrogen carbonate

(2) Sodium carbonate & Acetic acid

(3) Sodium hydrogen carbonate & methanoic acid

(4) Sodium hydrogen carbonate & tarteric acid

Answer (4)

Sol. Baking Powder : Baking soda + tartaric acid
$NaHCO_3$
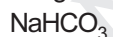
Sodium bicarbonate

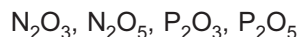**125.** Which of the following elements form acidic oxide?

(A) Element with atomic no. 7

(B) Element with atomic no. 3

(C) Element with atomic no. 15

(D) Element with atomic no. 19

(1) A & B (2) A & C

(3) B & D (4) Only A

Answer (2)

Sol. Element with atomic no. 7 (N) and 15 (P) forms acidic oxides

While atomic no. 3 (Li), 19 (K) are metals and do not form acidic oxides.

The acidic anides of N & P are

N_2O_3, N_2O_5, P_2O_3, P_2O_5

126. $KMnO_4$ is a strong oxidising agent in acidic medium. To provide acidic medium H_2SO_4 is used instead of HCl because :

(1) H_2SO_4 is stronger acid than HCl

(2) H_2SO_4 is a dibasic acid

(3) HCl is oxidised by $KMnO_4$ to Cl_2

(4) Only H_2SO_4 is completely ionized

Answer (3)

Sol. $KMnO_4$ is strong oxidising agent & can oxidise the Cl^- ions

$$MnO_4^- + Cl^- \xrightarrow{\ H^+\ } Mn^{2+} + Cl_2$$
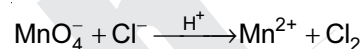
127. Consider the two statements below one labelled as Assertion (A) and other as Reason (R). Examine these two statements carefully and decide if Assertion (A) and Reason (R) is a correct explanation of (A) select your answer using the code given below :
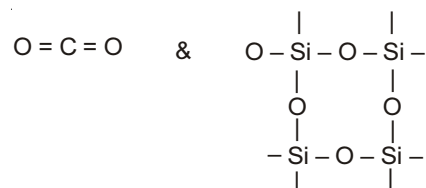
Assertion (A) : CO_2 is a gas but SiO_2 is a solid at room temperature.

Reason (R) : CO_2 contain C = O bonds but SiO_2 does not contain Si = O bonds.

(1) Both A & R are true and R is a correct explanation of A

(2) Both A & R are true but R is not correct explanation of A

(3) A is true R is false

(4) A is false R is true

Answer (2)

Sol. Both are correct because the statements are

O = C = O &
$$
\begin{array}{c}
\quad\ |\qquad\ | \\
O-Si-O-Si- \\
\quad\ |\qquad\ | \\
\quad\ O\qquad\ O \\
\quad\ |\qquad\ | \\
-Si-O-Si- \\
\quad\ |\qquad\ |
\end{array}
$$

128. Trippling the speed of a motor car multiplies the distance needed for stopping it by:

(1) 3 (2) 6

(3) 9 (4) 12

Answer (3)

Sol. Stopping distance, $s = \dfrac{v^2}{2a}$

If $v' = 3v$

Then stopping distance, $s' = \dfrac{(3v)^2}{2a}$

$$= 9\left(\dfrac{v^2}{2a}\right)$$

$$= 9\ s$$

129. Two bodies of masses m_a and m_b are dropped from different heights *'a'* and *'b'* The ratio of time taken by them to reach the ground is :

(1) $\sqrt{a} : \sqrt{b}$ 　　　(2) $a : b$

(3) $\dfrac{1}{a} : \dfrac{1}{b}$ 　　　(4) $m_a : m_b$

Answer (1)

Sol. Time taken by $m_a = t_a = \sqrt{\dfrac{2a}{g}}$

Time taken by $m_b = t_b = \sqrt{\dfrac{2b}{g}}$

$\therefore \quad \dfrac{t_a}{t_b} = \dfrac{\sqrt{a}}{\sqrt{b}}$

130. A person throws ball with a velocity *'v'* from top of a building in vertically upward direction. The ball reaches the ground with a speed of *'3v'*. The height of the building is:

(1) $\dfrac{4v^2}{g}$ 　　　(2) $\dfrac{3v^2}{g}$

(3) $\dfrac{6v^2}{g}$ 　　　(4) $\dfrac{9v^2}{g}$

Answer (1)

Sol. Initial speed = v

Final speed = $3v$

Applying 3rd equation of motion

$$(3v)^2 = v^2 + 2gh$$

$$9v^2 - v^2 = 2gh \implies h = \dfrac{8v^2}{2g} = \dfrac{4v^2}{g}$$

131. A bottle full of water containing an air bubble is rotated in horizontal circle by a string tied to the neck of the bottle. Then air bubble will:

(1) be collected at bottom

(2) remain unaffected

(3) be collected at the wall of bottle

(4) be collected at the neck

Answer (4)

Sol. Be collected at the neck because air bubble is lighter than water and due to centrifugal force water will be collected at the bottom.

132. Three voltmeters all having different resistances are joined as shown. When some potential difference is applied across *A* and *B* then readings in voltmeter are V_1, V_2 and V_3 :
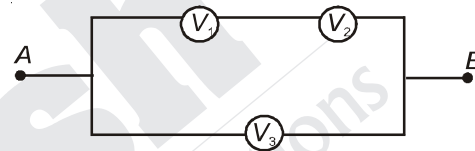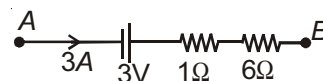

(1) $V_1 = V_2$

(2) $V_1 < V_2$

(3) $V_1 + V_2 = V_3$

(4) $V_1 + V_2 > V_3$

Answer (3)

Sol. $v_1 + v_2 = v_3$

Due to parallel combination of $[v_1, v_2]$ and v_3

133. What is potential difference across *AB*?

(1) 24 V 　　　(2) 0 V

(3) 6 V 　　　(4) 18 V

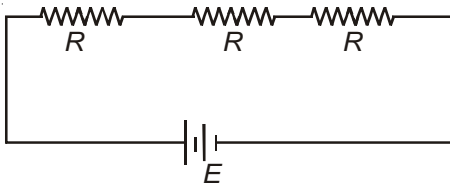**Answer (4)**

Sol. $V_{AB} = -E + IR$

$$= -3 + 3\ (6 + 1)$$

$$= 18\ V$$

134. Three equal resistors connected in series across a source of emf dissipate 10 watt. If the same resistors are connected in parallel across the same emf, the power dissipated will be :

(1) 10 watt 　　　(2) 30 watt
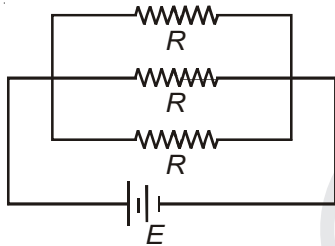
(3) $\dfrac{10}{3}$ watt 　　　(4) 90 watt

Answer (4)

Sol.

Power dissipated = 10 W

$\dfrac{E^2}{3R} = 10$ W $[\because$ Req. = $3R]$

$\dfrac{E^2}{R} = 30$ W

Power dissipated $= \dfrac{E^2}{R/3}$ $[\because$ Req. = $\dfrac{R}{3}]$

$= \dfrac{3E^2}{R}$

$\Rightarrow$ $P = 3 \times 30 = 90$ W

135. A long wire carries a steady current. It is then bent into a circle of one turn and magnetic field at the centre of coil is B. Then it is bent into n-turns Magnetic field at centre of coil will be :

(1) $2n^2B$ (2) $2nB$

(3) n^2B (4) nB

Answer (3)

Sol. Magnetic field at the centre of a coil of one turn is

$B = \dfrac{\mu_0 I}{2R}$

If the coil is bent into n-turns, then $B' = \dfrac{\mu_0 n I}{2r}$

Now,

Lenght of the wire, $L = 2\pi R$
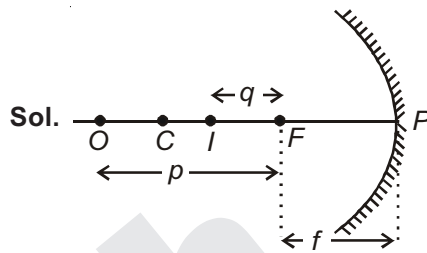
When it is bent to n-turns, then $L = 2\pi r \times n$

$2\pi R = 2\pi r \times n$ $\Rightarrow$ $r = \dfrac{R}{n}$

$\therefore$ $B' = \dfrac{\mu_0 n^2 I}{2R} = n^2\left(\dfrac{\mu_0 I}{2R}\right) = n^2 B$

136. If 'p' and 'q' are distance of object and image from principal focus of a concave mirror then what is the relation between 'p', 'q' and 'f' ?

(1) $pq = \sqrt{f}$ (2) $pq = f$

(3) $pq = f^2$ (4) $pq = \dfrac{1}{f}$

Answer (3)

Sol.

$u = -(p + f)$

$v = -(q + f)$

Applying mirror formula, we get

$-\dfrac{1}{f} = -\dfrac{1}{(q+f)} + \dfrac{1}{-(p+f)}$

$\dfrac{1}{f} = \dfrac{1}{q+f} + \dfrac{1}{p+f}$

$\dfrac{1}{f} = \dfrac{p+f+q+f}{(q+f)(p+f)}$

$\Rightarrow$ $pq + (p + q)f + f^2 = (p + q)f + 2f^2$

$pq = f^2$

137. When the object is at distances u_1 and u_2 from a lens, a real and virtual images are formed respectively having the same magnification. The focal length of lens is :

(1) $u_1 + \dfrac{u_2}{2}$

(2) $\dfrac{u_1 - u_2}{2}$

(3) $\dfrac{u_1 + u_2}{2}$

(4) $u_1 + u_2$

Answer (3)

Sol. When real image is formed, object distance = $-u_1$

Let focal length = f

$$m = -\frac{f}{f - u_1}$$

When the image is virtual, object distance = $-u_2$

$$m = \frac{f}{f - u_2}$$

Now,

$$-\frac{f}{f - u_1} = \frac{f}{f - u_2}$$

$$\Rightarrow -f + u_2 = f - u_1 \qquad \Rightarrow f = \frac{u_1 + u_2}{2}$$

138. A pump motor is used to deliver water at a certain rate from a given pipe. To obtain twice as much water from the same pipe in same time, power of motor has to be increased:

    (1) 16 times (2) 4 times

    (3) 8 times (4) 2 times

Answer (3)

Sol. Let density of water = ρ

Cross - sectional area of the pipe = A

velocity of water in pipe = v

Then, power delivered, $P = \frac{1}{2}\rho A v^3$

To obtain twice as much water from the same pipe in same time, rate of flow of water should be doubled

∴ Power delivered, $P' = \frac{1}{2}\rho A (2v)^3$

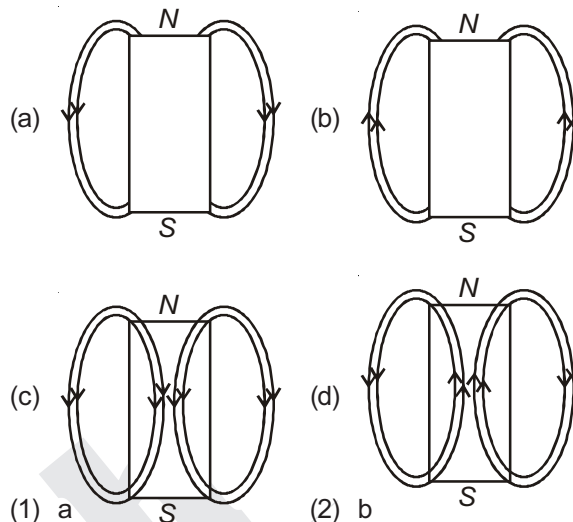$$= 8\left(\frac{1}{2}\rho A v^3\right)$$

$$= 8 P$$

139. Ultrasonic, infrasonic and audiowaves travel through a medium with speeds V_1, V_2 and V_3 respectively. Then :

    (1) V_1, V_2 and V_3 are nearly equal

    (2) $V_1 \geq V_3 \geq V_2$

    (3) $V_1 \leq V_3 \leq V_2$

    (4) $V_3 \ll V_1$ and $V_1 \approx V_2$

Answer (1)

Sol. v_1, v_2 and v_3 are nearly equal since medium is same.

140. The magnetic field lines due to a bar magnet are correctly shown in :

    (1) a (2) b

    (3) c (4) d

Answer (4)

Sol. Inside the bar magnet, magnetic field lines are from South to North pole and outside North to South pole.

141. Non Co-operation movement was withdrawn due to :

    (1) Jallian Wala Bagh Masscare

    (2) Chauri-Chaura incident

    (3) Rowlatt Act introduced

    (4) Nehru Reports Rejection

Answer (2)

142. The term 'Liberalism' is derived from the 'Latin' word 'Liber' meaning :

    (1) Democratic (2) Capitalist

    (3) Socialist (4) Free

Answer (4)

143. The French Revolution occured in which following year?

    (1) 1788 (2) 1789

    (3) 1790 (4) 1791

Answer (2)

144. Who was the chief architect of the unification of Germany?

    (1) Chief Minister William - I

    (2) King William - II

    (3) Chief Minister Ottovon Bismarck

    (4) King Kaiser

Answer (3)

145. Who among the following was described as the most dangerous enemy of social order by Duke Metternich?

(1) Louis Philippe
(2) Karol Kurpinski
(3) Johan Gottfried
(4) Guiseppe Mazzini

Answer (4)

146. The elites in Vietnam were powerfully influenced by which following culture?

(1) Indian
(2) American
(3) European
(4) Chinese

Answer (4)

147. Who was the founder of Hoa Hao movement?

(1) Huynh Phu So
(2) Phan Boi Chau
(3) Phan Chu Trinh
(4) The official of Imperial court

Answer (1)

148. In January 1930 Gandhi ji wrote a letter stating (asking) 'Eleven Demands' to whom?

(1) Lord Irwin
(2) Lord Curzon
(3) Lord Ripon
(4) Lord Lytton

Answer (1)

149. Who was the First President of Indian National Congress?

(1) Dada Bhai Naroji
(2) Surendranath Banerjee
(3) W.C. Bonnerjee
(4) Gopal Krishna Gokhale

Answer (3)

150. What was the theme of the movie 'Green Beret'?

(1) To Glorify War
(2) To Glorify Peace
(3) To Glorify Socialism
(4) To Glorify Capitalism

Answer (1)

151. Who is the writer of 'Vande Mataram'?

(1) Rabindranath Tagore
(2) Subhash Chandra Bose
(3) Raja Ravi Verma
(4) Bankim Chandra Chatterjee (Chattopadhyay)

Answer (4)

152. "Trade Unions' first started in which of the following country?

(1) England
(2) America
(3) France
(4) Russia

Answer (1)

153. Under which of the following type of resource can tidal energy be put?

(1) Replenishable
(2) Human made
(3) Abiotic
(4) Non-recyclable

Answer (1)

154. In which of the following state is laterite soil found?

(1) Jammu and Kashmir
(2) Kerala
(3) Uttarakhand
(4) Jharkhand

Answer (2)

155. Which of the following describes a system of agriculture where a single crop is grown on a large area?

(1) Shifting Agriculture
(2) Plantation Agriculture
(3) Horticulture
(4) Intensive Agriculture

Answer (2)

156. Which two of the following extreme locations are connected by the east-west corridor?

(1) Mumbai and Nagpur
(2) Mumbai and Kolkata
(3) Silcher and Porbandar
(4) Nagpur and Siliguri

Answer (3)

157. Which of the following ports is the deepest land-locked and well protected port along the east-coast?

(1) Chennai
(2) Tuticorin
(3) Paradip
(4) Visakhapatnam

Answer (4)

158. Which one of the following agencies market steel for the public sector plants?

(1) HAIL
(2) SAIL
(3) TATA STEEL
(4) MNCC

Answer (2)

159. Which of the following mineral found in monazite sands?

(1) Mineral oil
(2) Uranium
(3) Thorium
(4) Coal

Answer (3)

160. Which one of the following statement is *not* true?

    (1) Mica can be clear, black, green, red, yellow or brown.

    (2) Limestone is found associated with composed of calcium carbonates or calcium and magnesium carbonates.

    (3) Aluminium has good conductivity and great malleability.

    (4) Generally minerals are not found in 'ore'.

Answer (4)

161. Match the following :

1.	salt water lake in India	(i)	Barren island
2.	active volcano in India	(ii)	Pitli island
3.	Island which is uninhabited	(iii)	Majuli
4.	A rive island situated in river Brahmaputra	(iv)	Chilka

    (1) 1-iv, 2-ii, 3-i, 4-iii   (2) 1-iv, 2-i, 3-ii, 4-iii

    (3) 1-iii, 2-ii, 3-iv, 4-i   (4) 1-ii, 2-i, 3-iii, 4-iv

Answer (2)

162. Himalayas have been divided on the basis of regions from west to east. Which is known as :

1.	The part of Himalayas lying between Indus and Sutluj	(i)	Kumaon Himalayas
2.	The part of Himalayas lying between Sutluj and Kali	(ii)	Punjab Himalayas
3.	The part lying between Tista and Dihang	(iii)	Nepal Himalayas
4.	The part lying between Kali and Tista	(iv)	Assam Himalayas

    (1) 1-i, 2-ii, 3-iii, 4-iv

    (2) 1-iv, 2-iii, 3-ii, 4-i

    (3) 1-ii, 2-i, 3-iv, 4-iii

    (4) 1-iii, 2-ii, 3-i, 4-iv

Answer (3)

163. Match list 1 (River) and list 2 (Dam) and select the *correct* answer using the code given below :

List 1 (River)		List 2 (Dam)	
1.	Mahanadi	(i)	Nagarjun
2.	Krishna	(ii)	Mettur
3.	Sutluj	(iii)	Hirakud
4.	Kaveri	(iv)	Bhakhra Nangal

    (1) 1-i, 2-ii, 3-iv, 4-iii   (2) 1-ii, 2-iii, 3-iv, 4-i

    (3) 1-iv, 2-ii, 3-i, 4-iii   (4) 1-iii, 2-i, 3-iv, 4-ii

Answer (4)

164. Match the following animals with their category of existence and select the *correct* answer using the code given below :

Animals		Category of existence	
1.	Black Buck	(i)	Extinct
2.	Asiatic Elephant	(ii)	Endangered
3.	Andman wild pig	(iii)	Vulnerable
4.	Pink Head Duck	(iv)	Endemic

    (1) 1-ii, 2-iii, 3-iv, 4-i   (2) 1-i, 2-ii, 3-iii, 4-iv

    (3) 1-iv, 2-iii, 3-ii, 4-i   (4) 1-iii, 2-ii, 3-i, 4-iv

Answer (1)

165. Which of the following book is written by Kautilya ?

    (1) Politics   (2) Civil Government

    (3) Arthashastra   (4) The Prince

Answer (3)

166. Which of the following state does *not* have coalition government?

    (1) Bihar

    (2) Jammu-Kashmir

    (3) Goa

    (4) Orissa

Answer (4)

167. Which of the following nation has parliamentary government but is *not* republic ?

    (1) India

    (2) U.K.

    (3) China

    (4) Nepal

Answer (2)

168. Personalities of which of the following group do **not** match in their positions ?

    (1) Pt. Jawaharlal Nehru, V.P. Singh and Dr. S. Radhakrishnan

    (2) Dr. Rajendra Prasad, Dr. V.V. Giri and Dr. Fakhruddin Ali Ahmed

    (3) Lal Bahadur Shastri, Narsimha Rao and Manmohan Singh

    (4) Lala Lajpat Rai, Bal Gangadhar Tilak and Bipin Chandra Pal

Answer (1)

169. Which article of Indian Constitution abolishes untouchablity

    (1) Art. 19   (2) Art. 17

    (3) Art. 21   (4) Art. 23

Answer (2)

170. Which of the following statements are **correct** ?

    i.   India is secular

    ii. India has direct democracy

    iii. India has adopted the proportional representation.

    iv. India is founder member of U.N.

    (1) i, iv, iii   (2) i, iv

    (3) i, ii, iv   (4) i, ii, iii

Answer (2)

171. Which article is related with uniform civil code ?

    (1) Art. 44   (2) Art. 45

    (3) Art. 14   (4) Art. 370

Answer (1)

172. Choose the **odd** group from the following :

    (1) Lal, Bal, Pal

    (2) Whether, Climate, Environment

    (3) Heart, Kidney, Dengue

    (4) BJP, Congress, RJD

Answer (3)

173. I had booked a ticket in Rajdhani Superfast train. The train was delayed for long hours without any reason. In this situation :

    (1) I can not approach consumer court as train delays can happen sometime.

    (2) I can file a complaint in railway office as claim refund of ticket amount.

    (3) I can approach consumer court for deficiency in service and claim refund of superfast charges as damage.

    (4) I can cancel my ticket without paying cancellation charges to railways.

Answer (3)

174. Assume that national income of a country is Rs. 5,00,000 crore in any accounting year and they have received foreign aid of Rs. 1,000 crore in the year. In this situation, national income of that country would:

    (1) Increases by Rs. 1,000 crore

    (2) Decreases by Rs. 1,000 crore

    (3) Remain same

    (4) Increase by half of the foreign aid

Answer (3)

175. After implementation of GST in the country, a shopkeeper has given a work of their book-keeping/accounts, to my cousin. Such kind of activities can be included in :

    (1) Primary Sector

    (2) Secondary Sector

    (3) Tertiary Sector

    (4) GST Sector

Answer (3)

176. Match term of column **1** with column **2** :

Column 1	Column 2
(a) Land	(i) Engineer
(b) Labour	(ii) Mines
(c) Capital	(iii) Machines
(d) Money	(iv) Purchasing Power

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

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

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

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

Answer (2)

177. Why despite less calories requirement urban areas have a higher poverty line ?

    (1) because of higher prices of many essential commodities in urban areas

    (2) urban people eat more in hotels

    (3) causes of poverty are different in urban areas

    (4) urban people incur more medical expenses

Answer (1)

178. If a farmer works at his field of 5 acre and produces total 150 quintals of wheat in a year. His son grown up and joined the farming with his father. Which of the following shows the disguised unemployment, if:

    (1) production of wheat increase by 50 quintals

    (2) production of wheat remain constant

    (3) production of wheat increase by 20 quintals

    (4) productin of wheat increase by 100 quintal

Answer (2)

179. Which of the following statement is *incorrect* regarding commercial banking ?

    (1) It deals with money. It accepts deposits and advance loans.

    (2) It deals with credit and has power to create credit.

    (3) It deals with the general public.

    (4) It is not a Commercial Institutions whose aim is to earn profit.

Answer (4)

180. Human Development Index compares countries based on which of the following levels of the people?

    (i) Education level

    (ii) Pollution level

    (iii) Health Status

    (iv) Buildings

    (v) Per capita income

    (1) (i), (ii), (iii)   (2) (i), (iii), (v)

    (3) (ii), (iv), (v)   (4) (i), (ii), (v)

Answer (2)

181. A number when divided by 5, 3 and 2 leaves remainders 4, 2 and 1 respectively. Out of all three digit numbers, find the total such numbers :

    (1) 28   (2) 29

    (3) 30   (4) 31

Answer (3)

Sol. Here x = 5K$_1$ + 4, x = 3K$_2$ + 2, x = 2K$_1$ + 1

These numbers forms 3 AP. Whose common differences is LCM (5, 3, 2) i.e. 30.

First common term is 119 (By observation)

then common AP will be

$119, 149, 179, -------- (a_n)$

$a_n \leq 999$

$a + (n-1)d \leq 999$

$119 + (n-1)30 \leq 999$

n = 30

Hence total such numbers = 30

182. If cosec θ – cot θ = p, then the value of $\dfrac{p^2 - 1}{p^2 + 1}$ is =

    (1) cos θ   (2) –cos θ

    (3) sin θ   (4) –sin θ

Answer (2)

Sol. $\cos ec\,\theta - \cot \theta = p$

$\cos ec\,\theta + \cot \theta = \dfrac{1}{p}$

$2\cos ec\,\theta = \dfrac{1 + p^2}{p}$ $2\cot \theta = \dfrac{1 - p^2}{p}$

$\cos ec\,\theta = \dfrac{1 + p^2}{2p}$ $\cot \theta = \dfrac{1 - p^2}{2p}$

$\dfrac{p^2 - 1}{p^2 + 1} = -\cos \theta$

183. If the sum of the first *m* terms of an AP is *n* and sum of its first *n* terms is *m*, then the sum of the its first (*m* + *n*) terms is :

    (1) $-(m + n)$ (2) $m + n$

    (3) $-m + n$ (4) $m - n$

Answer (1)

Sol. S$_m$ = n

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

$= 2am + \left(m^2 - m\right)d = 2n$ ....(1)

Similarly

$2an + \left(n^2 - n\right)d = 2m$ ....(2)

(1) – (2)

$\Rightarrow$ 2a(m – n) + (m^2 – m – n^2 + n)d = –2(m – n)

$\Rightarrow 2a(m-n)+(m-n)(m-n)-(m-n)d=2(m-n)$

$\Rightarrow 2a(m-n)+(m-n)(m+n-1)d=-2(m-n)$

$2a+(m+n-1)d=-2$

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

$=\dfrac{m+n}{2}\times(-2)$

$=-(m+n)$

184. If quadratic equation $x^2+px+k=0$ has equal roots and -4 is a root of the quadratic equation $x^2+px-4=0$, then the value of k is :

(1) $\dfrac{3}{2}$

(2) $\dfrac{-3}{2}$

(3) $\dfrac{-9}{4}$

(4) $\dfrac{9}{4}$

Answer (4)

Sol. $x^2+px-4=0$ has root -4

So $(-4)^2+p(-4)-4=0\Rightarrow p=3$

$x^2+3x+k=0$ has equal roots

D = 0

$3^2-4k=0$

$k=\dfrac{9}{4}$

185. A peacock sitting on the top of a tree observes n serpent on the ground making an angle of depression 30º. If the peacock with a speed of 300 m per minute catches the serpent in 12 seconds, then the height of the tree is :

(1) 30 m

(2) $30\sqrt{3}$ m

(3) $\dfrac{30}{\sqrt{3}}$ m

(4) 15 m

Answer (1)

Sol. Speed = 300m/minute

$=\dfrac{300}{60}m/s$

= 5 m/s

Distance AC = 12 x 5 = 60 m

$\dfrac{AB}{AC}=Sin30^{o}$
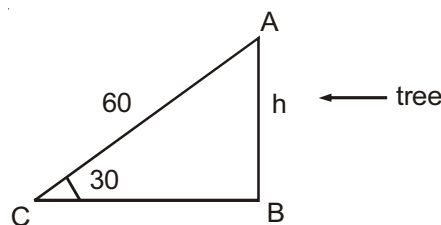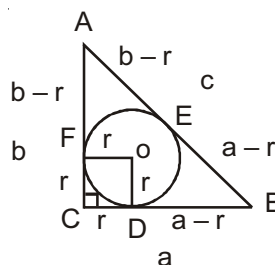
$h=AC\times\dfrac{1}{2}=30m$

186. a, b and c are the sides of a right angled triangle and a circle of radius r touches the sides of the triangle. If c is the hypotenuse of the triangle, then the value of r is :

(1) $\dfrac{a+b+c}{3}$

(2) $\dfrac{a+b-c}{3}$

(3) $\dfrac{a+b+c}{2}$

(4) $\dfrac{a+b-c}{2}$

Answer (4)

Sol. OFCD is a square

FC = CD = r

AF = AE = b − r

BD = BE = a − r

AB = C = AE + BE

c = b − r + a − r

2r = a + b − c

$r=\dfrac{a+b-c}{2}$

187. If one zero of the quadratic polynomial $ax^2 + 15x + 6$ is reciprocal of the other, then the zeros of the polynomial are :

(1) 2 and $\dfrac{1}{2}$ (2) -2 and $\dfrac{-1}{2}$

(3) 3 and $\dfrac{1}{3}$ (4) -3 and $\dfrac{-1}{3}$

Answer (2)

Sol. $ax^2 + 15x + 6$

Let zeros are $\alpha \, \& \, \dfrac{1}{\alpha}$

$\alpha \times \dfrac{1}{\alpha} = \dfrac{6}{a} \Rightarrow a = 6$

Now zeros of $6x^2 + 15x + 6 = 0$

$x = -2 \, \& \, \dfrac{-1}{2}$

188. The mean of certain number of observations is 46. If four observation whose mean is 52 are removed, the mean becomes 44.5. The original number of observation is :

(1) 35   (2) 20
(3) 15   (4) 12

Answer (2)

Sol. $\dfrac{x_1 + x_2 + ---x_n}{n} = 46 \Rightarrow x_1 + x_2 + ---x_n = 46n - (I)$

$\dfrac{x_1 + x_2 + x_3 + x_4}{4} = 52 \Rightarrow x_1 + x_2 + x_3 x_4 = 208 - (II)$

$\dfrac{x_5 + x_6 + --x_n}{n-4} = 44.5 \Rightarrow x_5 + x_6 + ---x_n =$
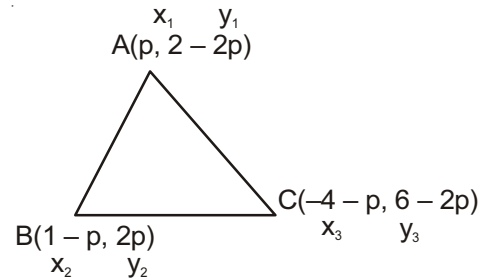
$44.5(n-4) - (III)$

from (I), (II) and (III)

$208 + 44.5(n-4) = 46n \Rightarrow n = 20$

189. The area of a triangle with vertices $(p, 2-2p)$, $(-4-p, 6-2p)$ is 70sq, units. Then, the numbers of possible integral values of p is :

(1) 0   (2) 1
(3) 2   (4) 3

Answer (2)

Sol.

A(p, 2 – 2p) x_1 y_1
B(1 – p, 2p) x_2 y_2
C(–4 – p, 6 – 2p) x_3 y_3

$\dfrac{1}{2}\left| x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2) \right| = 70$

$\dfrac{1}{2} |p(2p - 6 + 2p) + (1-p)(6-2p-2+2p)$

$+ (-4-p)(2-2p-2p)| = 70$

$\dfrac{1}{2}\left| p(4p-6) + (1-p)(4) + (-4-p)(2-4p) \right| = 70$

$\dfrac{1}{2}\left| 4p^2 - 6p + 4 - 4p - 8 + 16p - 2p + 4p^2 \right| = 70$

$\dfrac{1}{2}\left| 8p^2 + 4p - 4 \right| = 70$

$\left| 4p^2 + 2p - 2 \right| = 70$

$\left| 2p^2 + p - 1 \right| = 35$

$2p^2 + p - 1 = 35$ Or $2p^2 + p - 1 = -35$

$2p^2 + p - 36 = 0$ $2p^2 + p + 34 = 0$

$2p^2 + 9p - 8p - 36 = 0$ $D = 1 - 4(2)(34)$

$p(2p + 9) - 4(2p + 9) = 0$ $D = -271$

$(2p + 9)(p - 4) = 0$ No real roots.

$p = -\dfrac{9}{2} \text{ or } p = 4$

No. of Integral values of $p = 1$

190. In a triangle ABC, points D is E are on sides AB and AC respectively such that BCED is trapezium. IF AE : EC = 3 : 2, then the ratio of area of ΔADE and trapezium BCED is :
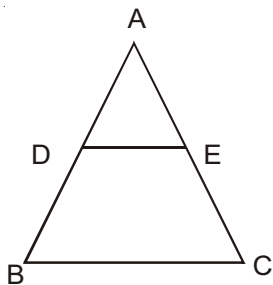
(1) 9 : 16
(2) 9 : 4
(3) 9 : 25
(4) 16 : 25

Answer (1)

Sol. ∵ $BCED$ is a trapezium

∵ $DE \| BC \Rightarrow \Delta ADE \sim \Delta ABC$

$$\frac{ar(ADE)}{ar(ABC)} = \frac{AE^2}{AC^2}$$

$$\frac{ar(ADE)}{ar(ABC)} = \left(\frac{3}{5}\right)^2 \Rightarrow$$

$ar(ADE) = 9k, ar(ABC) = 25k,$

$ar(BCED) = 16k$

$$\therefore \frac{ar(ADE)}{ar(BCED)} = \frac{9k}{16k} = \frac{9}{16}$$

191. The value of λ satisfying of the relation y = λx + 5, where x and y are the solution of pair of equations x + 2y = 10 and 3x + 4y = 360 is

(1) $\dfrac{1}{4}$

(2) $\dfrac{-1}{4}$

(3) $\dfrac{1}{2}$

(4) $\dfrac{-1}{2}$

Answer (4)

Sol. y = λx + 5

x + 2y = 10 ——— (1)

3x + 4y = 360 ——— (2)

solving (1) & (2)

2y = − 330

y = − 165

x − 330 = 10

x = 340

y = λ x + 5

−165 = λ (340) + 5

−165 - 5 = λ 340

− 170 = λ 340

λ = $\dfrac{-1}{2}$

192. Three spheres of radii 6 cm, x cm and y cm are melted to form a single sphere of radius 12 cm. If xy is equal to 80, then the value of x + y is :

(1) 21

(2) 18

(3) 24

(4) 42

Answer (2)

Sol. $\dfrac{4}{3}\pi\, 6^3 + \dfrac{4}{3}\pi\, x^3 + \dfrac{4}{3}\pi\, y^3 = \dfrac{4}{3}\pi\, [12]^3$

$6^3 + x^3 + y^3 = 12^3$

$x^3 + y^3 = 12^3 - 6^3$

$(x+y)(x^2 + y^2 - xy) = 1728 - 216$

$(x+y)[(x+y)^2 - 3xy] = 1512$

$(x+y)[(x+y)^2 - 3 \times 80] = 1512$

$(x+y)[(x+y)^2 - 240] = 1512$

let x + y = λ

$\lambda^3 - 240\lambda - 1512 = 0$

λ = 18

193. If cosθ + sinθ = p and secθ + cosecθ = V, then the value of V is

(1) $\dfrac{p^2}{2p-1}$

(2) $\dfrac{2p-1}{p^2}$

(3) $\dfrac{2p}{p^2-1}$

(4) $\dfrac{p^2-1}{2p}$

Answer (3)

Sol. cosθ + sinθ = p   ...(1)

secθ + cosecθ = V

$\dfrac{1}{\cos\theta} + \dfrac{1}{\sin\theta} = V$

$\dfrac{\sin\theta + \cos\theta}{\sin\theta\cos\theta} = V$

$\dfrac{p}{\sin\theta\cos\theta} = V$ ...(2)

by eq. (1)

$\sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta = p^2$

$1 + 2\sin\theta\cos\theta = p^2$

$\sin\theta\cos\theta = \dfrac{p^2-1}{2}$

putting sinθcosθ in eq. (2)

$V = \dfrac{p}{\dfrac{p^2-1}{2}}$

$V = \dfrac{2p}{p^2-1}$

194. Angles A, B, C and D of a cyclic quadrilateral ABCD are in the ratio 3 : 3 : 2 : 2 respectively. If AB = 5 cm, BC = 3.5 cm and CD = 8 cm, then the length of AD is :

(1) 5 cm   (2) 3.5 cm

(3) 8 cm   (4) 4 cm

Answer (2)

Sol. Let the angle of quadrilateral ABCD be

3x, 3x, 2x, 2x respectively
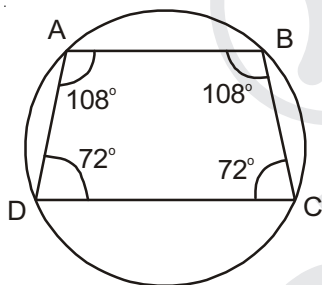
$\therefore$ 3x + 3x + 2x + 2x = 360º

10x = 360º

x = 36º

$\angle$A = 108º, $\angle$B = 108º,

$\angle$C = 72º, $\angle$D = 72º,

Which is an isosceles trapezium with ABIICD

$\therefore$ AD = BC

$\therefore$ AD = BC = 3.5 cm

195. The median of certain observations 17, 18, 23, 27, x − 3, x + 5, 45, 49, 74 and 85, arranged in an ascending order is 35. Later on, it was found that one observation 72 was misread as 27 by mistake. The correct median of the data is :

(1) 36   (2) 38

(3) 42   (4) 47

Answer (3)

Sol. Data in ascending order

17, 18, 23, 27, x–3, x+5, 45, 49, 74, 85

median = 35

$$\frac{x - 3 + x + 5}{2} = 35$$

$$\frac{2x + 2}{2} = 35$$

x + 1 = 35

x = 34

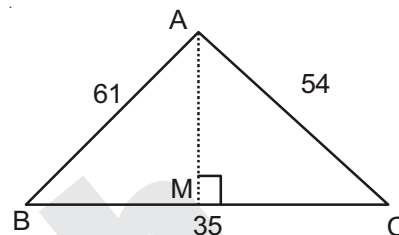17, 18, 23, 27, 31, 39, 45, 49, 74, 85

corrected data

17, 18, 23, 31, 39, 45, 49, 72, 74, 85

$$\therefore \text{Median} = \frac{39 + 45}{2} = \frac{84}{2} = 42$$

196. The sides of triangle are 61 cm, 54 cm and 35 cm respectively. The length of its longest altitude is :

(1) $10\sqrt{5}$ cm   (2) $16\sqrt{5}$ cm

(3) $24\sqrt{5}$ cm   (4) $28\sqrt{5}$ cm

Answer (3)

Sol.

Longest altitude must be along smallest side.

$$\therefore \frac{1}{2} AM \times BC = \sqrt{s(s-a)(s-b)(s-c)}$$

$$s = \frac{61 + 35 + 54}{2}$$

$$s = \frac{150}{2} = 75$$

$$\frac{1}{2} AM \times 35 = \sqrt{75(75 - 35)(75 - 54)(75 - 61)}$$

$$= \sqrt{75 \times 40 \times 21 \times 14}$$

$$= \sqrt{25 \times 3 \times 2 \times 2 \times 2 \times 5 \times 3 \times 7 \times 2 \times 7}$$

$$\frac{1}{2} AM \times 35 = 7 \times 2 \times 2 \times 3 \times 5 \sqrt{5}$$
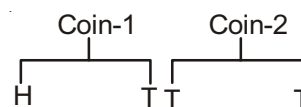
$$AM = 24\sqrt{5}$$

197. A bag contains two coins. One of them is a regular coin whereas the other has tails on both sides. From this bag, a coin is picked at random and tossed. Then, the probability of getting a head is :

(1) 0   (2) $\frac{1}{4}$

(3) $\frac{1}{2}$ (4) $\frac{3}{4}$

Answer (2)

Sol.

$$\therefore P(H) = \frac{1}{4}$$

198. a and b are roots of a quadratic equation $x^2 + 5x + d = 0$, while a and c are the roots of the quadratic equation $x^2 + 6x + 2d = 0$. If there is only one common root in the two equations, then value of d is :

    (1) –2

    (2) –4

    (3) 2

    (4) 4

Answer (4)

Sol. a & b are roots of eq.

$x^2 + 5x + d = 0$ ———— (1)

a & c are roots of eq.

$x^2 + 6x + 2d = 0$ ———— (2)

common roots is given by

$(x^2 + 6x + 2d) - (x^2 + 5x + d) = 0$

$x + d = 0$

$x = -d$

putting $x = -d$ in eq. (1)

$d^2 - 5d + d = 0$

$d^2 - 4d = 0$

$d(d - 4) = 0$

$d = 0, d = 4$

putting $x = -d$ in eq. (2)

$d^2 - 6d + 2d = 0$

$d^2 - 4d = 0$

$d = 0, d = 4$

∴ d = 4 or 0   (d cannot be 0 because both roots

∴ d = 4   will become equal)

199. The mean, mode and the median of the observation 7,7,5,7 and x are the same. Then the observation x is :

    (1) 10

    (2) 9

    (3) 8

    (4) 7

Answer (2)

Sol. mean, mode, median of the observation is

7,7,5,7 & x are same

∴ mode = 7

median = 7

for mean

$\dfrac{7 + 7 + 5 + 7 + x}{5} = 7$

$26 + x = 35$

$x = 35 - 26$
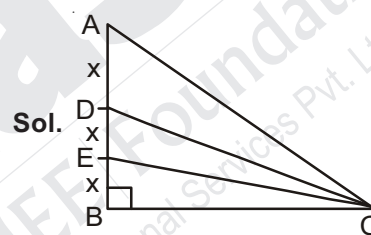
$x = 9$

200. ABC is a right angled triangle, right angled at B. If D and E are points on side AB such that AD = DE = EB, then the value of $\dfrac{AC^2 - EC^2}{DC^2 - BC^2}$ is :

    (1) $\dfrac{3}{1}$

    (2) $\dfrac{5}{2}$

    (3) $\dfrac{9}{4}$

    (4) $\dfrac{2}{1}$

Answer (4)

Sol.

$AC^2 = AB^2 + BC^2$

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

$AC^2 = 9x^2 + BC^2$ ————— (1)

$DC^2 = 4x^2 + BC^2$

$DC^2 - BC^2 = 4x^2$ ————— (2)

$EC^2 = x^2 + BC^2$ ————— (3)

∴ $AC^2 - EC^2 = 8x^2$ ————— (4)

∴ by (4) ÷ (2)

$\dfrac{AC^2 - EC^2}{DC^2 - BC^2} = \dfrac{8x^2}{4x^2} = \dfrac{2}{1}$

❑   ❑   ❑