PART-I

IQ (MENTAL ABILITY)

This section contains **20 multiple choice questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.
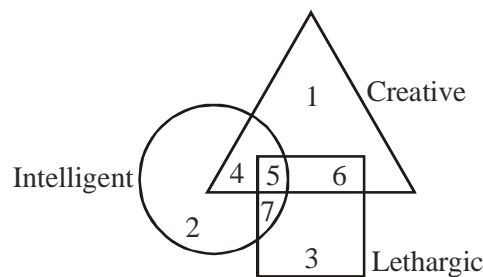
1. If '+' means '×', '−' means '÷', '×' means '−' and '÷' means '+', then what will be the value of

$16 ÷ 64 − 8 × 4 + 2 = ?$

(1) 18   (2) 14   (3) 24   (4) 16

2. Refer to the given diagram and answer the following question :

Who are intelligent and lethargic but non-creative persons ?

(1) 4   (2) 5   (3) 6   (4) 7

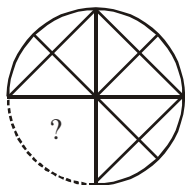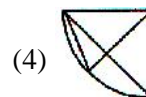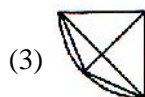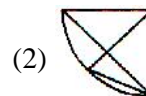**3.** Select a figure from the options which will complete Fig. (X).

Fig. (X)

(1)   (2)

(3)   (4)
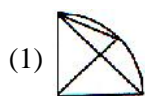
4. Find the missing number.
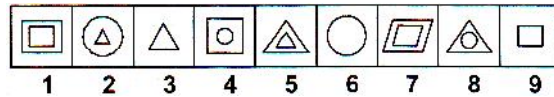

(1) 14   (2) 15   (3) 16   (4) 18

5. Study the following character sequence :

P 9 s Q T 6 S b 5 D N g z a 4 F # G U 2 M * Y

If the last ten characters are written in reverse order, what will be the 7th character to the right of 17th character from the right ?

(1) D   (2) a   (3) U   (4) Y

6. Group the given figures into three classes using each figure only once.

(1) 1,5, 7; 2, 4, 6; 3, 9, 8   (2) 1,5, 7; 2, 4, 8; 3, 6, 9

(3) 1,5, 7; 4, 9, 8; 2, 3, 6   (4) 1,5, 7; 3, 8, 9; 2, 4, 6

7. The given figure shows the net of a cube. The cube is placed on the table with face "D" on the top of the cube. Which face is at the bottom of the cube ?

(1) C   (2) A   (3) E   (4) F

8. Ankit is taller than Mohit, Garima is taller than Megha but shorter than Latika. Mohit is shorter than Megha and Megha is taller than Ankit. Who is the shortest ?

(1) Ankit   (2) Mohit   (3) Megha   (4) Latika

9. In the given number series, how many 5's are there which are preceded by a prime number but not followed by a prime number ?

3 5 9 4 2 6 3 8 5 4 3 2 5 3 6 4 8 3 4 5 3 9 2 3 7 5 3 4 7 5 6 4 6 5 3 5 8 7

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

10. Find the missing character in the number pattern given below.

(1) 117   (2) 100   (3) 78   (4) 63

11. If 'FULFNHW is the code for 'CRICKET', then 'EULGH' is the code for which word ?

(1) PRIDE   (2) BRIDE

(3) BLADE   (4) BLIND

12. A mountaineer starts from Camp A and proceeds East to Camp B which is 4 km away. From Camp B he proceeds to Camp C, 5 km to the South. From there, he returns and proceeds 12 km to Camp 'D' via Camps B and A. How far is he away from Camp A ?

(1) 3 km   (2) 6 km   (3) 5 km   (4) 12 km

13. In the matrix given below, the value of A, B and C are

9	A	12
B	10	7
8	C	11

(1) A = 13, B = 11, C = 9

(2) A = 13, B = 9, C = 11

(3) A = 9, B = 11, C = 13

(4) A = 9, B = 13, C = 11

14. Which letters in the word CYBERMETICS occupies the same position as it does in the English alphabet ?

(1) B (2) I (3) C (4) T

15. If L denotes ÷, M denotes ×, P denotes + and Q denotes –, then which of the following statements is true ?

(1) $32 P 8 L 16 Q 4 = -\dfrac{3}{2}$

(2) $6 M 18 Q 26 L 13 P 7 = \dfrac{173}{13}$

(3) $11 M 34 L 17 Q 8 L 3 = \dfrac{38}{3}$

(4) 9 P 9 L 9 Q 9 M 9 = –71

Direction (Q. 16 to Q. 18) : Study the following information and answer the questions that follow :

There are 5 boys A, B, C, D and E in a group. A weighs twice as much as D, B weighs four and half times as much as C. C weighs half as much as D. D weighs half as much as E. E weighs less than 'B' but more than C

16. Who is lightest?

(1) A (2) B (3) C (4) D

17. Who is heaviest ?

(1) A (2) B (3) C (4) D

18. E is heavier than which of the following two boys ?

(l) A and C (2) B and C

(3) D and A (4) C and D

19. A and B are children of D. Who is the father of A ?

To answer this question which of the following statement(s) (1) & (2) is/are necessary ?

1. C is the brother of A and the son of E.

2. F is the mother of B.

(1) Only (1) (2) Only (2)

(3) Either (1) or (2) (4) Both (1) and (2)

20. 1, 1, 4, 8, 9, 27, 16, ?

(1) 32 (2) 64 (3) 81 (4) 256

PART-II

SECTION-A : PHYSICS

This section contains **15 multiple choice questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

21. A pot full of water is put to boil on the stove. Which one of the graphs below shows the correct change in temperature over time?

(1) (2) (3) (4)
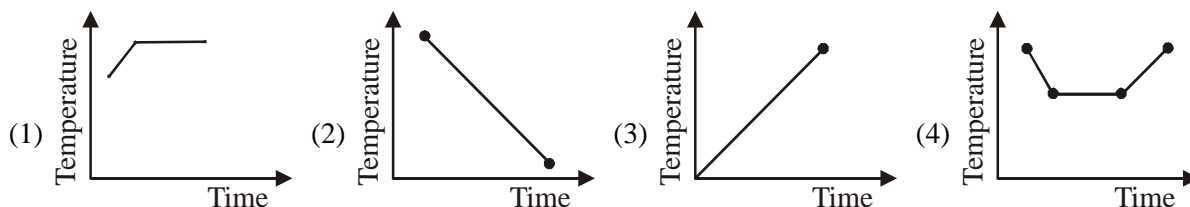
22. Amit found that a glass P was stuck inside another glass Q. What could he do to separate the two glasses?

    (1) Pour hot water into glass P and put glass Q in hot water

    (2) Pour hot water into glass P and put glass Q in cold water

    (3) Pour cold water into glass P and put glass Q in cold water

    (4) Pour cold water into glass P and put glass Q in hot water

23. Mercury is used as a thermometer substances because

    (1) It is very costly   (2) It expands less than glass

    (3) It does not wet the wall of the glass tube   (4) None of the above

24. Which of the following one is correct relation between ºC and ºF?

    (1) $ºC = (ºF - 32)\dfrac{5}{9}$ (2) $ºC = (º32 - ºF)\dfrac{9}{5}$

    (3) $ºC = \dfrac{ºF}{32} + \dfrac{5}{9}$ (4) $ºC = ºF \times 32 + \dfrac{5}{9}$

25. Air exerts pressure in

    (1) Downwards direction only   (2) Upward direction only

    (3) Sideways only   (4) All directions.

26. During the formation of rain, when water vapour changes back to liquid in the form of rain drops

    (1) Heat is absorbed   (2) Heat is released

    (3) Heat is first absorbed and then released (4) There is no exchange of heat

27. A tornado is

    (1) Uneven heating between two regions

    (2) A violent, twisting funnel of wind

    (3) Strong circulatory winds in the tropical region

    (4) None of these

28. In circular motion the

(1) Direction of motion is fixed

(2) Direction of motion changes continuously

(3) Acceleration is zero

(4) Velocity is constant

29. When a drill bores a hole in a piece of wood, it describes

(i) Rotatory motion

(ii) Translatory motion

(iii) Curvillinear motion

(iv) Oscillatory motion

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

30. Ahmad looked up at the night sky and observed the things he could see. From the things he could see, he made a list of the sources of light in night sky. What should he write down on his list ?

(i) Moon   (ii) Stars   (iii) Cloud

(1) (i) only   (2) (iii) only   (3) (i) & (ii)   (4) (ii) & (iii)

31. Which of the following statements is false?

(1) Shadows cannot be formed when an object allows some light to pass through it

(2) Shadows are always formed on the opposite side of the light sources

(3) A shadow has a similar shape to the object that forms the shadow

(4) An object can form as many shadows as there are light sources around it.

32. In which of the following circuits will the bulb glow?

33. In the given diagram, compasses are used to plot the magnetic field around a bar magnet with poles marked N(North) and S(South). Which of the following diagrams correctly shows the expected field pattern?
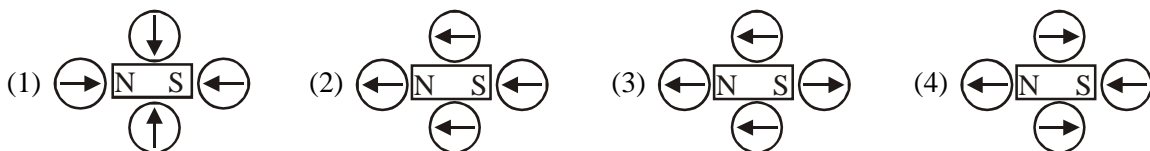
34. Four different nails (i), (ii), (iii) & (iv) were stroked with a magnet. Which of them will become magnets?

(i) Iron nail

(ii) Steel nail

(iii) Copper nail

(iv) Aluminium nail

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

35. Look at the classification table below.
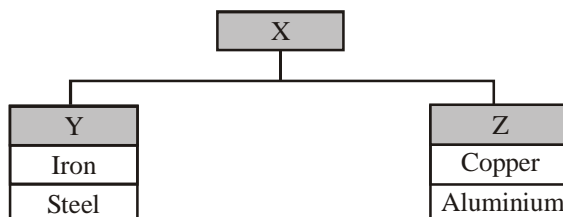
Which of the following correctly describes X, Y and Z ?

	X	**Y**	**Z**
(A)	Metals	can sink	can float
(B)	Metals	Can be magnetised	cannot be magnetised
(C)	Metals	cannot be attracted by magnet	can be attracted by magnets
(D)	Metals	can allow electricity to pass through	cannot allow electricity to pass through

(1) (A)   (2) (B)   (3) (C)   (4) (D)

SECTION-B : CHEMISTRY

This section contains **15 multiple choice questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

36. Read the given statements and select the correct option.

Statement 1 : Acids are sour in taste while bases are bitter in taste.

Statement 2 : Baking soda does not taste sour

(1) Both statements 1 & 2 are true and statement 2 is the correct explanation of statement 1.

(2) Both statements 1 & 2 are true but statement 2 is not the correct explanation of statement 1.

(3) Statement 1 is true and statement 2 is false

(4) Both statements 1 and 2 are false

37. Acid rain can cause damage to buildings, soil and plants. What do you think the acids come from?

(1) Calcium oxide and carbon dioxide dissolve in rain water to produce acids..

(2) Carbon dioxide and sulphur dioxide dissolve in rain water to produce acids.

(3) Sulphuric acid and carbon monoxide dissolve in rain water to produce acids.

(4) Chlorine and fluorine gases dissolve in rain water to produce acids.

38. Read the given statements and select the correct option.

Statement 1 : Water is neutral.

Statement 2 : Water turns red litmus blue

(1) Both statements 1 & 2 are true and statement 2 is the correct explanation of statement 1.

(2) Both statements 1 & 2 are true but statement 2 is not the correct explanation of statement 1.

(3) Statement 1 is true and statement 2 is false.

(4) Both Statements (1) & (2) are false.

39. Classification is useful because

(1) It makes things look neat and tidy.

(2) It makes studying the properties of things much easier.

(3) It help us in the kitchen.

(4) It help us in the school library.

40. Which property is common to all matter?

(1) Matter takes up space and has no mass.

(2) Matter can be seen and has some mass.

(3) Matter takes up space and has mass.

(4) Matter takes up space and may of may not have mass.

41. The charge and mass of the proton present in the nucleus of helium atom are respectively

(1) + 2, 4 u   (2) + 1, 1 u   (3) +2, 1 u   (4) +2, 2 u

42. Which of the following is not matter?

(1) water   (2) air   (3) sound   (4) fruit

43. Which of the following is the second most abundant metal in the earth's crust?

(1) Copper   (2) Aluminium   (3) Iron   (4) Zinc

44. A mixture of oil and water is an example of _____ .

(1) Compound   (2) Two elements   (3) Mixture   (4) True solution

45. Isobars do not differ in the number of

(1) protons   (2) electrons   (3) neutrons   (4) nucleons

46. Bond which exist between two non metals is

(1) Ionic bond   (2) Covalent bond   (3) Metallic bond   (4) None of these

47. Which of these is not an animal fibre?

(1) Wool   (2) Silk   (3) Jute   (4) Angora

48. Complete the correlation :

Silk worm : Cocoon, Wool : _____

(1) Hair of rabbit   (2) Cotton plant   (3) Skin of sheep   (4) Jute of hemp

49. Weak bases are

(1) Sparingly soluble in water   (2) Insoluble in water

(3) Both (1) & (2)   (4) None of these

50. The sharp pain caused by the sting of brown ants, nettles leaves and bees is due to

(1) Acetic acid   (2) Tartaric acid   (3) Ascorbic acid   (4) Formic acid

SECTION-C : BIOLOGY

This section contains **15 multiple choice questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

51. Study the experiment shown below and select the correct option regarding the observations.
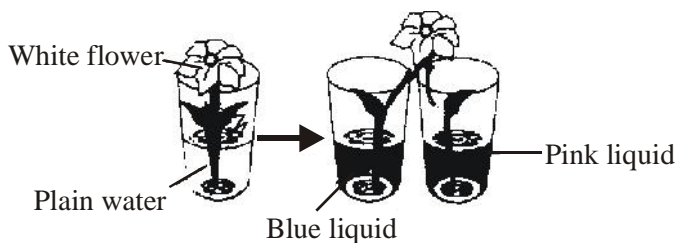
(1) The flower will remain white

(2) The flower will turn blue

(3) One half of the flower will turn pink and the other half will turn blue

(4) The flower will turn pink

52. The given figure shows a bone with a part labelled as 'X'. Select the incorrect statement regarding 'X'.
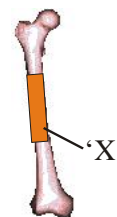
(1) Blood cells are formed in 'X'

(2) 'X' is the flexible tissue in the hollow interior of bones

(3) Leukemia is a type of cancer of the blood that generally start in 'X'

(4) All of the above

53. Identify the figures (W - Z) and select the incorrect statement.

(1) W is a modified tuberous root which serves as a storage organ

(2) Edible part of X is same as edible part of potato

(3) Y is a fruit which is eaten as a vegetable

(4) Edible part of Z is same as in broccoli.

54. Match column I with column II and select the correct option from the codes given below.

Column I	Column II
(a) Ovary	(i) Lowermost swollen part of pistil
(b) Filament	(ii) Slender stalk of the stamen
(c) Style	(iii) Small bead like structure
(d) Ovule	(iv) knob like structure on the top of stamen
(e) Anther	(v) Elongated tube connecting ovary and stigma

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

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

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

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

55. Which of the following is the stomach part in which herbivores store? The grass which is swallowed quickly

(1) Lumen   (2) Pyloric   (3) Rumen   (4) Ileum

56. Which of the following kills the organisms in the soil?

(1) metallic substances   (2) Earthern pots

(3) Polythene bags and plastics   (4) Glass ware

57. The Eggs of silkworm are stored in

(1) Wooden Box   (2) Metal Box   (3) Strips of cloth   (4) Plastic Box

58. _____ & _____ soils are suitable for growing cereals like wheat and gram.

(1) Clayey and Loamy   (2) Sandy and Clayey   (3) Sandy and Loamy   (4) Silt and Sandy

59. Match the following

(a) Incisors   (i) Grinding teeth

(b) Canines   (ii) Cracking teeth

(c) Premolars   (iii) Cutting teeth

(d) Molars   (iv) Tearing teeth

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

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

60. Match the following with correct answers:

(a) Toucan bird   (i) Modified teeth

(b) Siberian bird   (ii) Silver white mane

(c) Tusks of elephant   (iii) Long beak

(d) Macaque   (iv) Migrate to India during winter

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

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

61. Plants give out water through the pores present under their leaves. The plants living in deserts need to reduce the loss of water because water is very scarce in deserts. Which of the following is an adaptation developed by the desert plants to manage the above situation?

(1) They have lots of branches and leaves   (2) They do not shed leaves in the summer

(3) They develop roots which come above the ground

(4) Their leaves are modified into spines

62. Lenticels are found in

(1) the stem in which secondary growth has taken place

(2) the root where secondary growth has occurred

(3) the roots as well as the stem where secondary growth has occurred

(4) none of the above

63. What mineral is needed for a plant to make Protein?

(1) Potassium   (2) Phosphate   (3) calcium   (4) Nitrate

64. Which of the following provides cushioning between bones?

(1) Tendons   (2) Cartilages   (3) Ligaments   (4) Flexor Muscles

65. Which of the following statements are true?

(1) In Protozoans, & animals no specific excretory organs are present

(2) In Echinoderms and cnidarians, no specific excretory organs are present

(3) In cnidarians & insects no specific excretory organs are present

(4) In protozoans and flat worms no specific excretory organs are present

SECTION-D : MATHEMATICS

This section contains **15 multiple choice questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

66. If $\dfrac{2A+2}{2} = \dfrac{4B+4}{4} = \dfrac{6C+8}{8} = 16$ then A + B + C + 10 is a

(1) Composite number

(2) Prime number

(3) Even prime number

(4) Odd number

67. If $x = 1 + \dfrac{1}{1 + \dfrac{1}{1 + \dfrac{1}{1 + \dfrac{1}{2}}}}$, then the value of $2x + \dfrac{7}{4}$ is

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

Comprehension for (Q. 68) :

If X = 5.55, Y = 0.0024 and Z = 6.005

68. Fractional value of X +Y is

(1) $\dfrac{55024}{10000}$ (2) $\dfrac{50524}{10000}$ (3) $\dfrac{55524}{10000}$ (4) $\dfrac{50024}{10000}$

69. If $\dfrac{a+b+c}{a^{-1}b^{-1} + b^{-1}c^{-1} + c^{-1}a^{-1}}$ is simplified, then the answer is

(1) a + b c   (2) abc   (3) 2abc   (4) 2(a+b+c)

70. If $(4)^{a+5} (16)^{2a} (32)^4 = (16)^{3a}$, then a = _____ .

(1) 15   (2) 30   (3) 24   (4) 20

71. If $2y + \dfrac{1}{2y} = \ell$ & $2y - \dfrac{1}{2y} = m$, then $\ell^2 - m^2 =$ _____ .

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

72. The angle A of a triangle ABC is equal to the sum of the other two angles. Also the ratio of the angle B to the angle C is 2 : 3, then three angles are

(1) 90º,36º,54º   (2) 95º,49º,36º   (3) 95º,31º,54º   (4) 90º,60º,30º

73. In the given figure ∠COE and ∠BOD are right angles. If the measure of ∠BOC is four times the measure of ∠COD, which is the measure of ∠AOB?

(1) 16º   (2) 17º   (3) 18º   (4) 19º
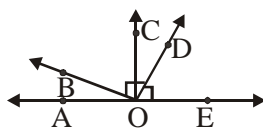
74. At National Public School, 200 students were asked to name a career they would like to pursue. The results are shown in the table below.

Career	Number of Students
Actor/Actress	30
Athlete	40
Business	–
Executive	70
Pilot	20
Politician	10
Musician	22
Teacher	8

Which of the following statements is supported by the data in the table?

(1) More than 25% of the students would like to pursue a career in acting or music.

(2) The least number of students choose teaching because of the college preparation required.

(3) The mode of the data is 30.

(4) Exactly 10% of the student would like to pursue a carrer in politics.

75. A circular grass plot 40m in radius is surrounded by a path. If the area of the grass plot is twice the area of the path, the width of the path in meters would be

(1) $40\left(1+\sqrt{\dfrac{2}{3}}\right)$ (2) $40\left(1-\sqrt{\dfrac{2}{3}}\right)$ (3) $40\left(\sqrt{\dfrac{3}{2}}-1\right)$ (4) $40\left(\sqrt{\dfrac{3}{2}}+1\right)$

76. How many faces does the given solid have?
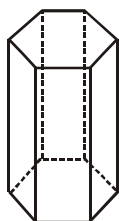
(1) 8 (2) 10 (3) 12 (4) 14

77. When a train started from station A, there were certain number of passengers in it. On the next station, $\dfrac{1}{11}$ of these passengers got down and 20% of these got down passengers got into the train. Now if the number of passengers on the train is 510, how many passengers were there at station A initially?

(1) 600 (2) 580 (3) 560 (4) 550

78. S_1, S_2, S_3 are three sums of money such that S_2 is the simple interest on S_1 and S_3 is the simple interest on S_2 for the same rate and same period. Then

(1) $S_1^2 = S_2 S_3$ (2) $S_3^2 = S_1 S_2$ (3) $S_2^2 = S_1 S_3$ (4) $S_1 S_2 S_3 = 1$

79. If $\dfrac{4^5 + 4^5 + 4^5 + 4^5}{2^5 + 2^5} \times \dfrac{6^5 + 6^5 + 6^5 + 6^5 + 6^5 + 6^5}{3^5 + 3^5 + 3^5} = 8^n$ then, n is

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

80. At the end of the year 2002, Ram was half old as his grandpa. The sum of the years in which they were born is 3854. Age of Ram at the end of year 2003 is

(1) 50 (2) 35 (3) 51 (4) 36

SPACE FOR ROUGH WORK