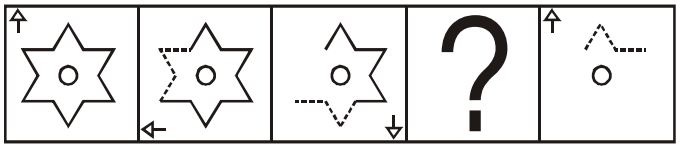
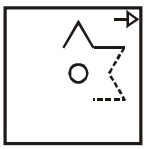
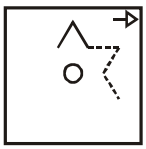
PART-I

IQ (MENTAL ABILITY)

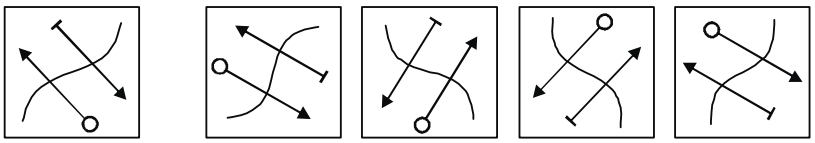
This section contains **20 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

1. The five squares contain shapes arranged in order to form a sequence. One of the square is missing. Choose which one of the four squares should take the place of the empty square.



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

2. In the following question, you are given a combination of figure followed by four alternatives (1), (2), (3), (4). Choose the alternative which most closely resembles the water-image of the given combination.



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

Direction : (Q.3 & Q.4) : Read the following information to answer the questions given below:

(i) Five boys are standing in a line facing the wall wearing red, green, yellow, white and blue dress.

(ii) The yellow-dressed boy is not standing at any end of the line

(iii) The red-dressed boy is not standing at any end of the line.

3. The boy in the middle wears which coloured-dress?

(1) Green (2) Blue

(3) Either Green or Blue (4) Cannot be determined

4. Who is to the right of yellow-dressed boy?

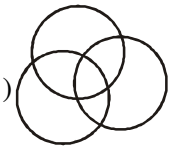
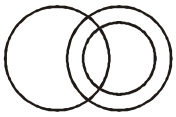
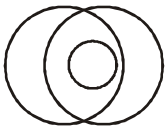
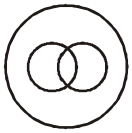
(1) Blue (2) White

(3) Green (4) Data inadequate

5. Two friends A and B start a race, and together they run for 50 mts. Then A turns right and runs 28 mts while B turns left and runs 20 mts. Then A turns right and runs 10 mts. B also turns right and runs 10 mts. How far are the two friends now from each other ?

(1) 50 mts (2) 52 mts (3) 60 mts (4) 49 mts

6. Answer the most suitable logical diagram from the given options.
Mother, Female, Widow.

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

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

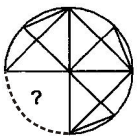
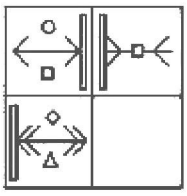


Fig. (X)

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

8. In a certain code, SIKKIM is written as THLJJL. How is TRAINING written in that code ?
(1) SQBHOHOH (2) UQBHOHOF
(3) UQBJOHHO (4) UQBJOHOH

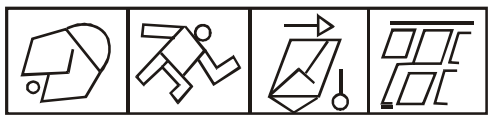
9. Which shape or pattern completes the larger square ?



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

10. Figures (X) is embeded in one of the given four figures. Trace out the correct alternatives.

(X)



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

11. B is the husband of P. Q is the only grandson of E, who is wife of D and mother-in-law of P. How is B related to D?
(1) Nephew (2) Cousin
(3) Son in law (4) Son

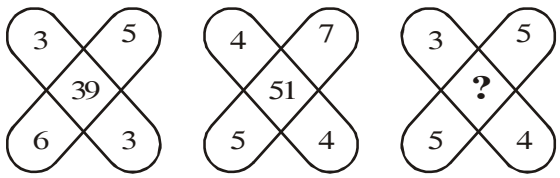
12. Study the following character sequence :

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 ?

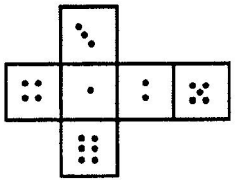
(1) D (2) a (3) U (4) Y

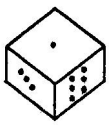
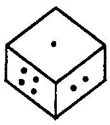
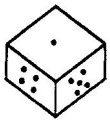
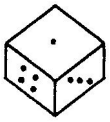
13. Which number will replace the question mark?



(1) 47 (2) 45 (3) 37 (4) 35

14. 1, 2, 3, 4, 5 and 6 dots are marked on the net of a die as shown. Which of these is the correct picture of this die ?



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

15. Shefali ranks 13th from the top and Seema 8th from the bottom. If the positions of Shefali and Seema are interchanged, Seema becomes 17th from the bottom then what will be position of Shefali from the top :

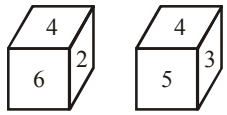
(1) 20th (2) 21st

(3) 19th (4) None of these

16. In the question given below, it consists of five figures marked A, B, C, D and E called the Problem Figures followed by for other figures marked 1, 2, 3 and 4 called the Answer Figures. Select a figure from amongst the Answer Figures which will continue the same series as established by the five Problem Figures.

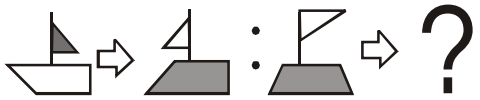
(A) (B) (C) (D) (E) (1) (2) (3) (4)

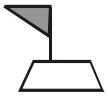
17. Two different positions of a dice are shown. Which number will appear on the face opposite to the face with number 3 ?



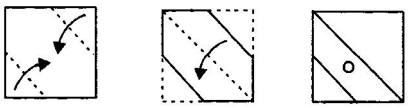
(1) 2 (2) 1 (3) 5 (4) 6

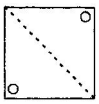
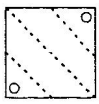
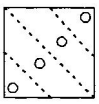
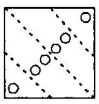
18. Which shape or pattern on the right completes the second pair in the same way as the first pair ?



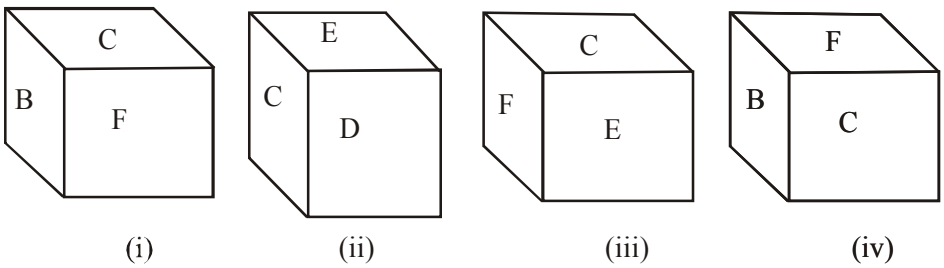
(1)  (2)  (3)  (4) 

19. A set of three figures X, Y, and Z has been given, showing a sequence in which a paper is folded and finally cut from a particular section. Select the answer figure which most closely resembles the unfolded piece of paper.



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

20. Which letter is opposite to the surface of C?



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

PART-II

SECTION-A : PHYSICS

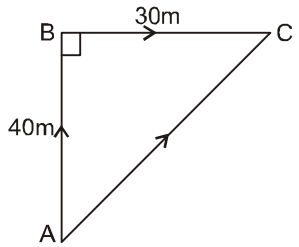
This section contains **10 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

21. A teacher drives between four different locations during a day. The table shows the distances between the locations and the time it took the teacher to drive each part of the trip. During which part was the teacher's average speed the greatest?

Distance/Time Table		
Trip	**Distance (kilometers)**	**Time (minutes)**
Home to school	12	8
School to store	16	9
Store to post office	11	15
Post office to home	14	16

(1) Home to school
(2) School to store
(3) Store to post office
(4) Post office to home

22. During a race from point A to C as shown in figure, Ram followed the path A to B then B to C but Shyam followed the direct path A to C. If time taken by Ram is 14 seconds and by Shyam is 10 seconds, then

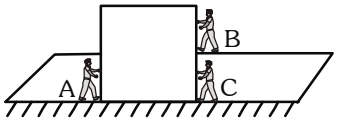


(1) average velocity of Ram and Shyam are equal
(2) average velocity of Ram is more than that of Shyam
(3) average velocity of Ram is less than that of Shyam
(4) None of the above

23. A flower pot is suspended from a beam by a rope in a fixed position. Which forces are acting on the flower pot?

(1) Gravity and magnetism
(2) Friction and magnetism
(3) Gravity and electricity
(4) Gravity and tension

24. Three persons A, B and C are pushing a heavy box as shown in the given figure.

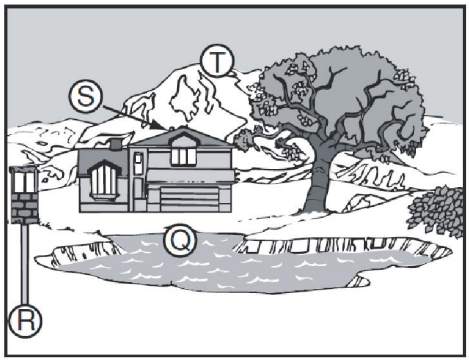


A applies twice the force compared to that applied by B, while B is applying twice the force compared to that applied by C. If B is applying a force of 30 N, then find the resultant force on the box?

(1) 15 N towards right (2) 15 N towards left

(3) 30 N towards right (4) 30 N towards left

25. At which point is there the LEAST amount of air pressure?



(1) Q (2) R (3) S (4) T

26. A box weighing 360 N rests on the ground. The bottom of the box measures 0.30 m by 0.20 m. How much pressure does the box exert on the ground?

(1) 6.0×10^3 Pa (2) 5.0×10^3 Pa

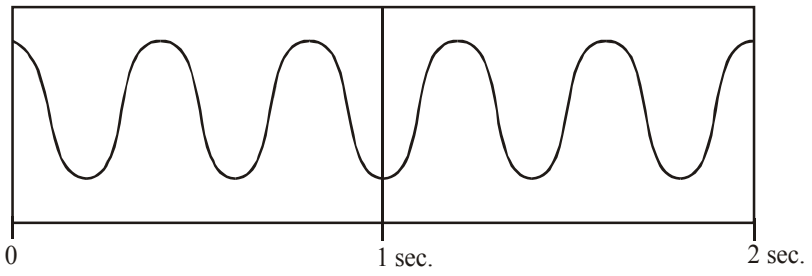
(3) 4.0×10^3 Pa (4) 3.2×10^3 Pa

27. The frequency of a sound in a 8 m long metal rod is 250 Hz. There are two complete sound waves in the rod. The speed of sound in this metal is

(1) 250 m/s (2) 500 m/s

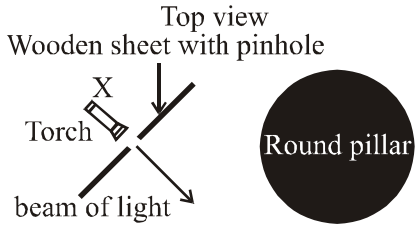
(3) 750 m/s (4) 1000 m/s

28. Use the diagram below to calculate the frequency of the soundwave.



(1) 0.4 Hz (2) 1 Hz (3) 2 Hz (4) 2.5 Hz

29. The picture is of beam of light from a lighted torch shining on one side of a round pillar as seen from above.



What is the minimum number of mirrors needed to make the beam of light starting from the torch, head at point 'X', go around the pillar from one side and come back to the point 'X' from the other side ?

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

30. Performers often use makeup mirrors when they apply costume makeup. The makeup mirror magnifies the image so that people can see small areas of their faces more closely. Which of the following mirrors would most likely produce such a magnified image?

(1) A concave mirror (2) A convex mirror

(3) A plane mirror (4) A diverging mirror

SECTION-B : CHEMISTRY

This section contains **10 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

31. Acid rain makes the water streams toxic because

(1) It rains heavily.

(2) It eliminates minerals from water.

(3) It causes water to stagnate on earth.

(4) It dissolves metals from soil and then releases into water streams.

32. What will happen when red litmus paper is introduced into a solution of sodium sulphate?

(1) Red litmus paper turns blue

(2) No effect on red litmus paper

(3) Red litmus paper turns green

(4) (1) and (3) both depending upon dilution with water

33. Glucose $\xrightarrow{\text{yeast(enzyme)}}$ ethyl alcohol + CO_2 (gas)

The above process is

(1) fermentation (2) chemical change

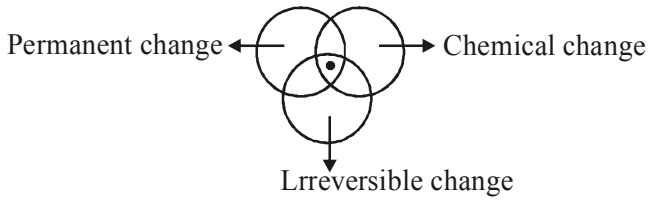
(3) physical change (4) both (1) and (2)

34. When vinegar is mixed with baking soda in a test tube, the bubbles of a gas coming out with a hissing sound on hearing the test tube. The gas is

(1) Hydrogen gas (2) Carbon dioxide gas

(3) Nitrogen gas (4) Oxygen gas

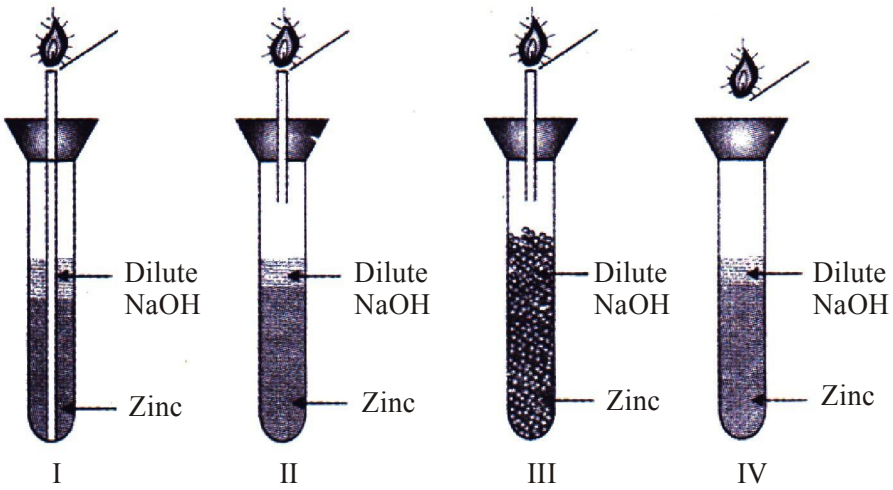
35. Study the venn diagram



Centre point represents

(1) Melting of ice (2) Boiling of water (3) Rusting (4) Condensation

36. Which one of the following set-ups is the most appropriate for the evolution of hydrogen gas and its identification ?



(1) I (2) II (3) III (4) IV

37. Water gas is a mixture of

(1) Hydrogen and oxygen (2) Hydrogen and carbon monoxide

(3) Carbon monoxide and steam (4) Steam and carbon dioxide

38. In pressure-kerosene stove,

(i) *We pump kerosene and convert it into vapours.*

(ii) *The vapours are then ignited.*

Which of the following is true about the above statements ?

(1) (i) is a chemical change; (ii) is a physical change

(2) (i) is a physical change; (ii) is a chemical change

(3) (i) and (ii) both are physical changes

(4) (i) and (ii) both are chemical changes

Direction : Observe the given flowchart carefully and answer **(Q.39 & Q.40)**

$$Mg + O_2 \xrightarrow{\text{Heat}} \underset{(\text{white ash})}{X} \xrightarrow{H_2O} Y \xrightarrow[\text{solution}]{\text{Red litmus}} Z(\text{Change in colour})$$

39. What is X ?

(1) MgO (2) MgO_2 (3) Mg_2O (4) MgO_3

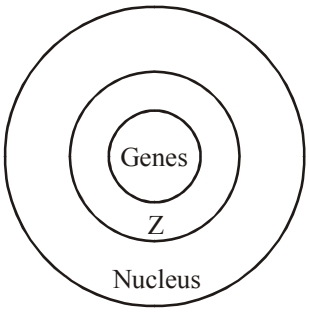
40. What is Y ?

(1) MgOH (2) Mg_2OH (3) $Mg(OH)_2$ (4) None of these

SECTION-C : BIOLOGY

This section contains **20 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

41. The diagram below represents the organization of genetic information within a cell nucleus. The circle labelled Z most likely represents



(1) amino acids (2) chromosomes (3) vacuoles (4) nucleolus

42. The Sabin vaccine is a liquid containing weakened polio viruses. Vaccinated individuals become protected against polio because the weakened viruses

(1) prevent further viral invasion (2) induce an inflammatory response

(3) promote production of antibodies (4) are too weak to cause illness

43. Which statement describing the cells in a body system is correct?

(1) Each cell in the system is identical to the other cells in the system, and each cell works independently of the other cells.

(2) Some cells in the system might be different from the other cells in the system, but all cells are coordinated and work together.

(3) Each cell in the system is different from the other cells in the system, and each cell works independently of the other cells.

(4) All cells in the system are identical to each other and work together.

44. In order to decide which antibiotic to prescribe to a patient, a doctor would most likely

(1) send the patient to get an X ray.

(2) select the least expensive antibiotic available.

(3) select the most expensive antibiotic available.

(4) identify the type of bacteria causing the problem.

45. If the analogy of a city is applied to a eukaryotic cell then which of the following statement will most likely be correct?

(1) Nucleus as a library and ribosome as a slaughter house

(2) Nucleus as a kitchen and mitochondria as powerhouse

(3) Mitochondria as powerhouse and Golgi body as a cargo sorting facility

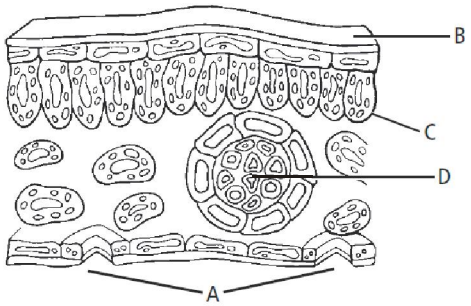
(4) Mitochondria as powerhouse and nucleus as a slaughter house

46. Peristaltic movements help in the

(1) Passage of food (2) Chemical digestion of food

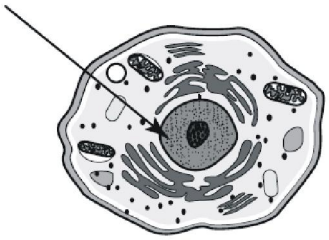
(3) Absorption of food (4) Assimilation of food

47. Where does most photosynthesis take place in a leaf ?



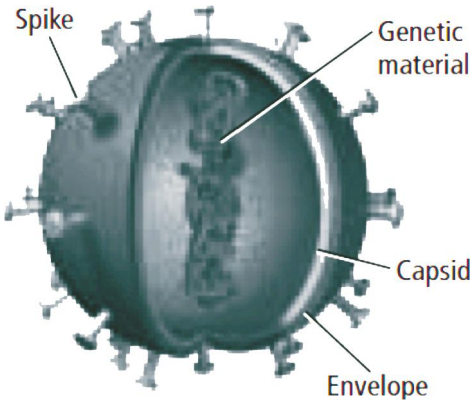
(1) at A
(2) at B
(3) at C
(4) at D

48. What is the BEST description of the cell structure indicated by the arrow in the figure below ?



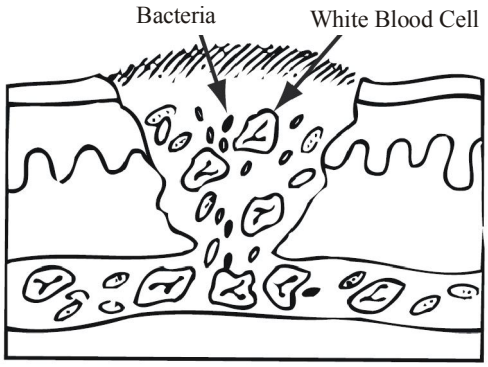
(1) Water reserve
(2) Fuelling station
(3) Command center
(4) Internal skeleton

49. What is the characteristic of the figure shown below?



(1) It is classified by the type of its nucleic acid.
(2) It can replicate on its own.
(3) It has organelles and makes proteins.
(4) It is classified as a cell.

50. The picture given below shows a human white blood cell attacking bacteria. If the white blood cell recognizes the bacteria, the person was most likely previously injected with a(n)



(1) Aerobe (2) Antibiotic (3) Toxin (4) Vaccine

51. The alkaline fluid made by the pancreas counteracts

(1) water in chyme (2) acidic solutions from gastric glands in the stomach

(3) pepsin from the stomach (4) bile from the liver

52. Microbes that enter the body and cause disease are characterized as

(1) pathogenic (2) commensal

(3) symbiotic (4) dependent

53. The atmosphere is 78% nitrogen, and yet people add nitrogen-rich fertilizers to the soil to make plants grow better.Why can't plants get all the nitrogen they need from the atmosphere?

(1) Atmospheric nitrogen is too light for plants to use.

(2) Plants cannot absorb materials from the atmosphere.

(3) Atmospheric nitrogen is not in a chemical form that plants can use.

(4) Materials in the atmosphere have already been used and cannot be used again.

54. Site of respiration in bacteria is

(1) lysosome (2) mesosome

(3) ribosome (4) mitochondria

55. In human beings, digestion of proteins and carbohydrates start from which of the following parts of the alimentary canal respectively?

(1) Stomach and mouth respectively (2) Only from stomach

(3) Stomach and intestine respectively (4) Mouth and intestine respectively

56. Which of the following diseases belongs with the group shown in box below ?

GONORRHEA , AIDS , HERPES

(1) Typhoid fever (2) Cancer

(3) Syphilis (4) Cholera

57. Find out the correct sentence

(1) Enzymes packed in lysosomes are synthesized in the RER (Rough endoplasmic reticulum).

(2) Rough endoplasmic reticulum and smooth endoplasmic reticulum produce lipid and protein respectively.

(3) Endoplasmic reticulum is related with the destruction of plasma membrane.

(4) Nucleoid is present inside the nucleolus of an eukaryotic cell.

58. During photosynthesis, plants take in sunlight, water (H_2O), and carbon dioxide (CO_2) and make glucose ($C_6H_{12}O_6$) and oxygen (O_2).Which one of them is considered as an organic compound?

(1) Glucose (2) Oxygen (3) Sunlight (4) Water

59. Which statement provides the best description of pasteurization?

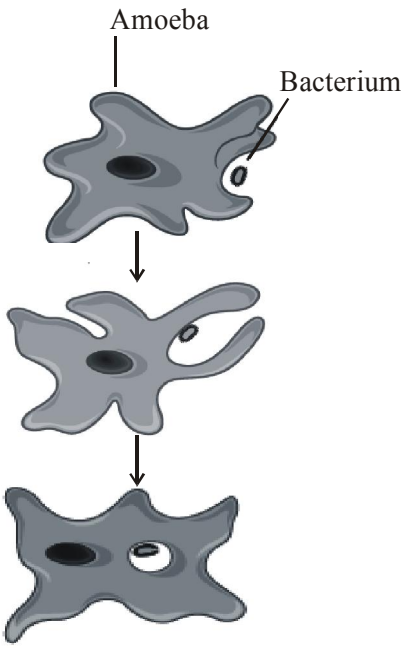
(1) Pasteurization is a process of heating milk to a high enough temperature then swiftly cooling it to destroy harmful bacteria.

(2) Pasteurization is a process of heating fruit juices so that they can retain their flavour even after they are packaged.

(3) Pasteurization is a process used by dairy farmers to ensure that the fat in milk does not separate from the rest of the milk liquid.

(4) Pasteurization is the process used to treat people suspected of having rabies.

60. The diagram below shows an amoeba performing a function necessary for life.



Which function is shown in the diagram?

(1) Collecting food (2) Excreting wastes

(3) Making food (4) Destroying wastes

SECTION-D : MATHEMATICS

This section contains **20 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

61. If B = 2 × 4 × 6 . . . 98 × 100, then the number of zeroes at the end of B will be
(1) 12 (2) 11 (3) 10 (4) 101

62. Find the square root of $\frac{\left(3\frac{1}{4}\right)^4-\left(4\frac{1}{3}\right)^4}{\left(3\frac{1}{4}\right)^2-\left(4\frac{1}{3}\right)^2}$

(1) $4\frac{5}{12}$ (2) $5\frac{5}{12}$ (3) $6\frac{5}{12}$ (4) $7\frac{5}{12}$

63. At the first stops on his route, a driver unloaded $\frac{2}{5}$ of the packages in his van. After he unloaded another three packages at his next stop, $\frac{1}{2}$ of the original number of packages remained. How many packages were in the van before the first delivery?
(1) 25 (2) 10 (3) 30 (4) 36

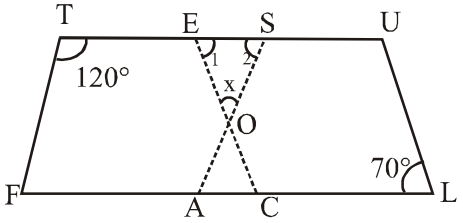
64. If $\left(\frac{p^2}{q^2}\right)^{5x+7}=\left(\frac{q^3}{p^3}\right)^{x-8}$, then the value of (5x + 7) is

(1) 12 (2) $10\frac{11}{13}$ (3) 17 (4) $7\frac{2}{9}$

65. If n leaves remainder 1 when divided by 2, then n^3 leaves a remainder of_____, when divided by 2.
(1) 1 (2) 2 (3) 0 (4) 3

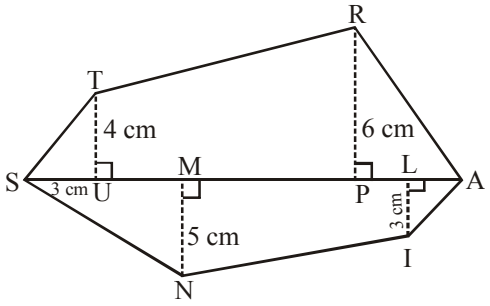
66. To construct a convex quadrilateral uniquely, it is necessary to know at least _____ of its building blocks.
(1) four (2) five (3) six (4) three

67. In the given figure, FAST and CLUE are parallelograms. Find the value of x.



(1) 50° (2) 40° (3) 49° (4) 60°

68. Find the area of hexagon STRAIN, if SA = 10 cm, SL = 8 cm, SP = 7 cm, SM = 5 cm, SU = 3 cm, TU = 4 cm, RP = 6 cm, LI = 3 cm and MN = 5 cm.



(1) 61.5 cm^2 (2) 63.5 cm^2 (3) 60.5 cm^2 (4) 62.5 cm^2

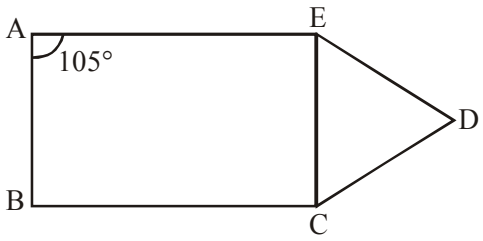
69. The circumference of a circle is equal to the sum of the perimeters of an equilateral triangle of side 12 cm and a square of diagonal $2\sqrt{2}$ cm. Find the area of the circle in cm^2.

(1) 44 (2) 144 (3) 154 (4) none of these

70. The expression $\sqrt{50}+\sqrt{32}$ is equivalent to which of the following?

(1) $\sqrt{82}$ (2) $9\sqrt{2}$ (3) $9\sqrt{1}$ (4) 36

71. In the given figure AE = BC and AE || BC and the three sides AB, CD and ED are equal in length. If m∠A = 105°, find measure of ∠ AED (figure not upto the scale)



(1) 75° (2) 105° (3) 135° (4) can't be determined

72. $\sqrt[3]{1+3+5+7+.....+53}$ =

(1) 11 (2) 13 (3) 7 (4) 9

73. Ravi makes and sells wooden toy boats. For each boat, it costs him \$2.00 for the wood and \$1.00 for the materials to decorate it. He sells each boat for \$7.50. Which of these expressions could represent the amount of money that Ravi will make selling n boats after his costs to make each boat are deducted?

n=number of boats sold

(1) 7.5n – 3 (2) 7.5n + 3

(3) n(7.5 – 3) (4) n(7.5 + 3)

74. The sides of a quadrilateral are produced in order. What is the sum of the four exterior angles ?

(1) 180° (2) 360° (3) 420° (4) 720°

75. The pair of equations $3^{x+y} = 81$, $81^{x-y} = 3$ has

(1) no solution

(2) the solution $x = 2\frac{1}{2}, y = 1\frac{7}{8}$

(3) the solution x = 2, y = 2

(4) the solution $x = 2\frac{1}{8}, y = 1\frac{7}{8}$

76. The sum of two numbers is 48. The smaller number is less than the greater number by half the greater number. Find the greater number :

(1) 24 (2) 32 (3) 36 (4) 34

77. $(3)^{0.8} \times (3)^{0.4} \div (9)^{0.2} = 3^x$ then x =

(1) 0.6 (2) 0.26 (3) 0.8 (4) 0.72

78. A wire bent in the form of a circle of radius $\frac{8\sqrt{2}}{\pi}$ cm is cut and again bent in the form of square, then the area of square will be

(1) $16\sqrt{2}$ sq.cm (2) $4\sqrt{2}$ sq.cm

(3) 32 sq.cm (4) $32\sqrt{2}$ sq.cm

79. Which is greatest among $(3)^{198}$, $(27)^{64}$, $(9)^{100}$ and $(81)^{49}$?

(1) $(9)^{100}$ (2) $(81)^{49}$

(3) $(27)^{64}$ (4) 3^{198}

80. Let x and y the positive integers such that x is prime and y is composite, then which of the following is true?

(1) y-x cannot be an even integer

(2) xy cannot be an even intetger

(3) $\frac{x+y}{x}$ cannot be an even integer

(4) x + y is an integer

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TALLENTEX 2015

ALLEN'S Talent Encouragement Exam

ANSWER KEY : CLASS - 8th (VIII)

(Held on : 16-11-2014)

Q. No.	1	2	3	4	5	6	7	8	9	10
Ans.	1, 4	3	4	4	2	4	4	2	4	2
Q. No.	11	12	13	14	15	16	17	18	19	20
Ans.	4	4	3	4	4	4	1	4	3	2
Q. No.	21	22	23	24	25	26	27	28	29	30
Ans.	2	3	4	1	4	1	4	4	2	1
Q. No.	31	32	33	34	35	36	37	38	39	40
Ans.	4	2	4	2	3	2	2	2	1	3
Q. No.	41	42	43	44	45	46	47	48	49	50
Ans.	2	3	2	4	3	1	3	3	1	4
Q. No.	51	52	53	54	55	56	57	58	59	60
Ans.	2	1	3	2	1	3	1	1	1	1
Q. No.	61	62	63	64	65	66	67	68	69	70
Ans.	1	2	3	2	1	2	1	4	3	2
Q. No.	71	72	73	74	75	76	77	78	79	80
Ans.	3	4	3	2	4	2	3	3	1	4

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