

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.

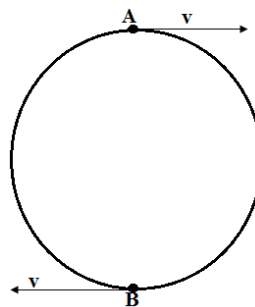
1. Read the following statements :

- (i) A virtual image cannot be photographed.
- (ii) The moon is visible to us due to irregular reflection of light from surface of moon.
- (iii) Laws of reflection are invalid for irregular reflection.

Choose the correct order considering T for true & F for False.

- (1) TTF (2) TTT (3) TFT (4) FTF

2. An object is moving along a circular path with a speed of 20 m/s as shown below. Points A and B are diametrically opposite. Find the difference in velocities of the object between points A and B.

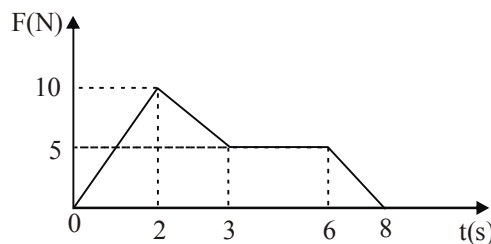


- (1) 40 m/s (2) Zero (3) 20 m/s (4) $20\sqrt{2}$ m/s

3. Nuclear fusion is most likely to be found

- (1) in the core of the Sun
- (2) in the core of the Earth
- (3) in nuclear power plants
- (4) in microwaves

4. A body of mass 10 kg is acted on by a force F which varies with time t as shown in graph. Find net momentum gained by it at the end of 8 s



- (1) 10 kg m/s (2) 37.5 kg m/s (3) 75 kg m/s (4) 85.5 kg m/s

5. Waves I & II are propagating with speeds 200 m/s and 500 m/s respectively. The wavelength of wave I is 10 times smaller than that of wave II. The ratio of time period of wave II to that of wave I is :

- (1) 1 : 1 (2) 2 : 5 (3) 1 : 4 (4) 4 : 1

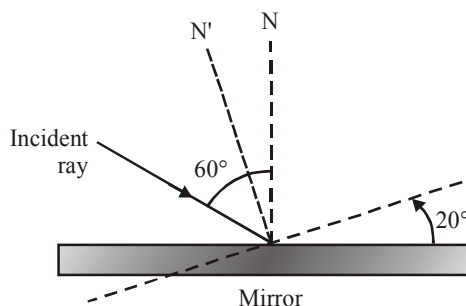
6. An apple falls towards the earth because the earth attracts it. The apple also attracts the earth by the same force. Why do we not see the earth rising towards the apple?

- (1) Acceleration of the earth is very large as compared to that of apple.
- (2) Acceleration of the earth is equal to that of apple.
- (3) Acceleration of the earth is very small as compared to that of apple.
- (4) None of these

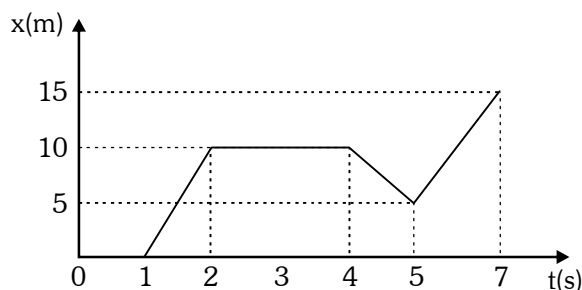


Sample Test Paper : CLASS-IX

7. A body whose momentum is constant must have constant
(1) force (2) velocity (3) acceleration (4) all of these
8. A ray of light strikes a mirror at an angle of 60° to the normal. The mirror is then rotated 20° anticlockwise, as shown in fig. What is the shift in the angle between the incident ray and the reflected ray now?



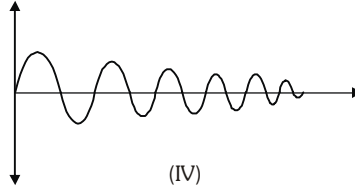
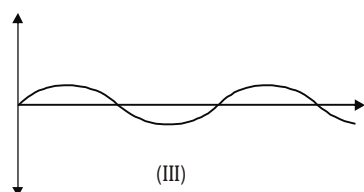
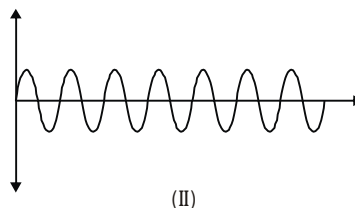
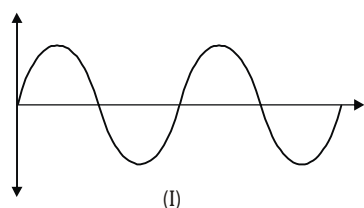
- (1) 10° (2) 20° (3) 40° (4) 60°
9. The figure below shows a displacement (x) – time (t) graph of a car in one-dimensional motion. The velocity of the car during 5 to 7 s is :



- (1) zero (2) 1 m/s (3) 3 m/s (4) 5 m/s
10. Two objects of masses 20 kg and 60 kg are kept 4 m apart. The gravitational force between them is 'F' N. If a third object of 5 kg mass is placed at mid point between them, the net gravitational force on 5 kg mass due to former two objects will be

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

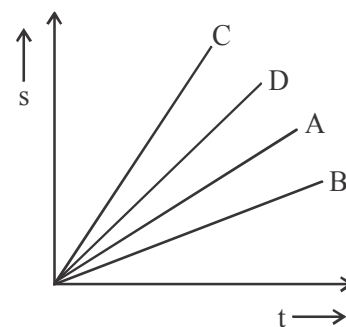
11.



Which wave represents the loudest sound ?

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

12. Four cars A, B, C and D are moving on a levelled road. Their distance versus time graphs are shown in figure. Choose the correct statement.



- (1) Car A is faster than car D
 (2) Car B is the slowest
 (3) Car D is faster than car C
 (4) Car C is the slowest

13. A lift is descending with a constant velocity 'v'. A man in the lift drops a coin. The coin experiences an acceleration towards the floor equal to

- (1) $g + v$ (2) $g - v$ (3) g (4) zero

14. Which of the following planets have its rotation sense different from others ?

- (1) Mercury (2) Venus (3) Earth (4) Mars

15. An athlete completes two and half round of a circular track of radius 'R' in time 't'. The average speed of athlete is

- (1) $\frac{5\pi R}{t}$ (2) $\frac{2R}{t}$ (3) $\frac{2\pi R}{t}$ (4) $\frac{R}{t}$

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.

16. Pranav was asked to sort some substances into metals and non-metals. He made the table shown below.

Metals	Non-metals
phosphorus	helium
magnesium	sulphur
sodium	carbon
lithium	calcium

Which of the substances did he put under the wrong heading?

- (1) phosphorus and calcium (2) phosphorus and helium
 (3) lithium and calcium (4) lithium and helium

17. If we add 68 g sugar and 272 g water to 160 gram solution having concentration 20%, find final concentration of this solution.

- (1) 20% (2) 30% (3) 40% (4) 50%

18. Which of the following natural resources is exhaustible?

- (1) Wind (2) Coal (3) Sunlight (4) Biomass

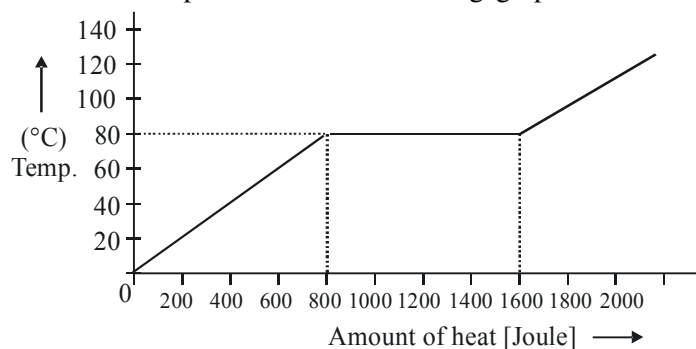
19. The farmers fill their fields with water in winter, because

- (1) to protect the crops from frost because water due to its high specific heat capacity does not allow the temperature in the surrounding area of plants to fall below 0°C
 (2) to protect the crops from frost because water due to its low specific heat capacity does not allow the temperature in the surrounding area of plants to fall below 0°C
 (3) to protect the crops from frost because water due to its high specific heat capacity allow the temperature in the surrounding area of plants to fall below 0°C
 (4) all of these

20. Aluminium react with _____ to form aluminium oxide and hydrogen gas.

- (1) Cold water (2) Hot water (3) Steam (4) Oxygen

21. Which of the following statements is incorrect?
 (1) CO₂ is the best fire extinguisher.
 (2) Global warming causes acid rain.
 (3) Burning of coal and diesel releases sulphur dioxide gas.
 (4) L.P.G. has higher calorific value than biogas
22. In fractional distillation, a large surface area for condensation is provided through
 (1) A thermometer (2) Water bath
 (3) A fractionating column (4) Reflux condenser
23. Erika wanted to find out if more sugar dissolves in hot water or in cold water. She put one spoonful of sugar in the hot water and six spoonfuls of sugar in the cold water. She stirred both containers to see how much sugar dissolved. Her experiment could be improved by
 (1) using salt instead of sugar
 (2) using just cold water
 (3) using the same amount of sugar in both containers
 (4) using a large amount of hot water than cold water
24. The products of combustion of hydrocarbon fuel is/are :
 (1) CO₂ & H₂O (2) O₂ & H₂O (3) Only CO₂ (4) Only O₂
25. Water gas is a mixture of
 (1) CO + N₂ (2) CO + CH₄ (3) CO₂ + H₂ (4) CO + H₂
26. What is the correct increasing order of molecular motion (kinetic energy) of particles in the following?
 (1) Iron, water, nitrogen, curd (2) Curd, water, nitrogen, iron
 (3) Nitrogen, water, curd, iron (4) Iron, curd, water, nitrogen
27. Choose the correct statement about inflammable substances from the following
 (1) Low ignition temperature and cannot catch fire easily
 (2) High ignition temperature and catch fire easily
 (3) Low ignition temperature and can catch fire easily
 (4) High ignition temperature and cannot catch fire easily
28. A few method of separation are represented with the help of example as
 S : Separation of constituents of blood.
 T : Sugar is separated from solution in water without any loss of water.
 U : Separation of drugs from blood.
 V : Common salt and camphor
 S, T, U and V are respectively
 (1) Chromatography, Crystallisation, Centrifugation, Distillation
 (2) Centrifugation, Distillation, Sublimation, Chromatography,
 (3) Centrifugation, Crystallisation, Chromatography, Sublimation
 (4) Crystallisation, Evaporation, Chromatography, Sublimation
29. A substance is in the form of a solid at 0°C. The amount of heat added to this substance and the temperature of the substance are plotted on the following graph.



If the specific heat capacity of the solid substance is 500 J/kg °C find from the graph, mass of the substance

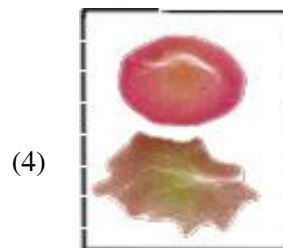
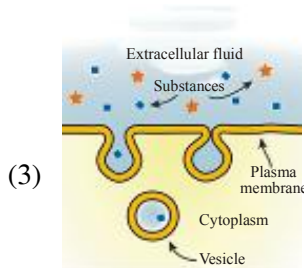
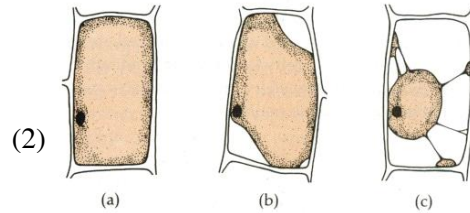
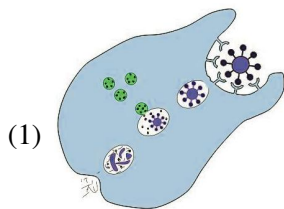
- (1) 20 g (2) 40 g (3) 60 g (4) 80 g

30. Any substance which is easily available and burns in air at a moderate rate, producing large amount of heat energy, without leaving behind undesirable residue is called
 (1) plastic (2) rubber (3) fuel (4) flame

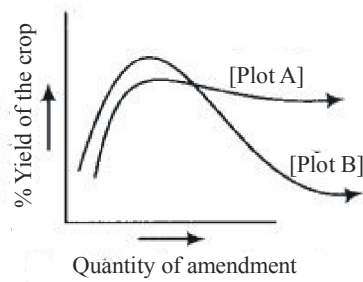
SECTION-C : BIOLOGY

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

31. Which of the following is not a feature of meristematic tissue?
 (1) Prominent nuclei (2) Dense cytoplasm
 (3) Central large vacuole (4) Thin cellulose walls
32. Group of population which are capable of interbreeding is known as
 (1) Kingdom (2) Phylum (3) Species (4) Endemic species
33. Choose the correct image that describe the process of plasmolysis.

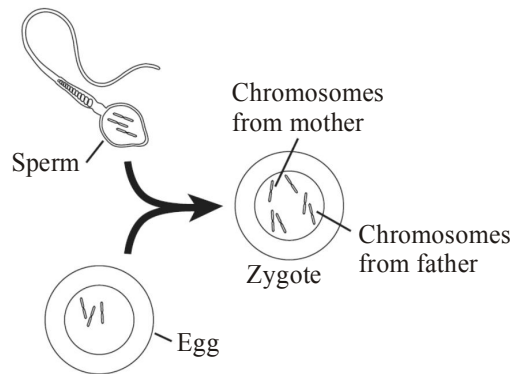


34. Sita analyse analytically about the percentage yield of the crop. She has drawn a graph of using manure and chemical fertilizer in her two plot as plot A and plot B. Her observation in graph are

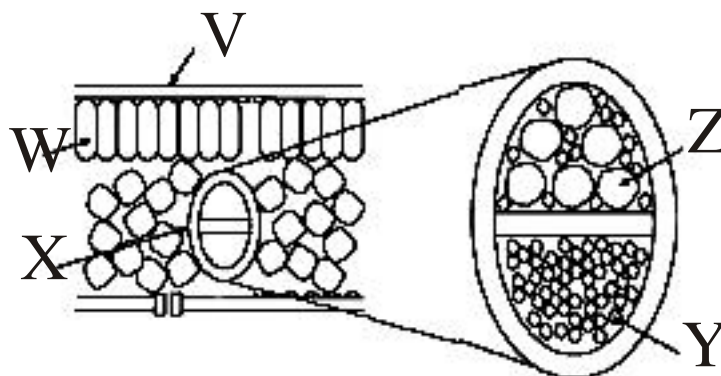


- (i) Plot B refer to chemical fertiliser which give short term benefit because they are nutrient specific.
 (ii) Plot B refer to chemical fertiliser which give short term benefit because they are not nutrient specific.
 (iii) Plot A refer to manures which give short term benefit because they are nutrient specific.
 (iv) Plot A refer to manures which give long term benefit because they are not nutrient specific.
- (1) (ii) and (iii) (2) (ii) and (iv) (3) (i) and (iv) (4) (i) and (iii)

35. Farmers use compost to help fertilize their soil, allowing their crops to grow healthy and strong. What do these farmers primarily depend on in order for this process to work?
- (1) Producers (2) Decomposers
(3) Fertilizer distribution (4) Soil nutrient reproduction
36. Which of the following part of sperm is having an enzyme which will help in breaking the covering of ovum?
- (1) Tail (2) Acrosome (3) Middle piece (4) Neck
37. Plants and animals found in a particular area are termed as
- (1) Flora and fauna respectively (2) Endemic and epidemic species respectively
(3) Fauna and flora respectively (4) Endangered plant and animals
38. The diagram below shows the formation of a zygote from an egg and a sperm. Chromosomes carry genetic information.



- Which reproduction concept does the diagram show?
- (1) All the genetic information in a zygote is from one parent.
(2) All the genetic information in sperm is from both parents.
(3) Fertilization ensures that traits are inherited from both parents.
(4) Fertilization results in a reduced number of chromosomes.
39. Refer to the following diagram of a leaf cross-section. The central cylinder is enlarged as shown. Which of the following labels is CORRECTLY matched with its function?



- (1) V – secretes a waxy substance that enhances water loss.
(2) W – imparts physical strength to the leaf.
(3) X – primary structure for photosynthesis.
(4) Y – transports sucrose and other organic materials.

40. A new variety of tomato has better taste and can be stored longer than other tomato varieties. This new tomato is produced by placing additional gene segments into the cells of the tomato plant. This process is known as
- (1) genetic engineering (2) selective breeding
(3) natural selection (4) sexual reproduction
41. Genetic material of a eukaryotic cell can be
- (1) RNA (2) DNA (3) Protein (4) Either DNA or RNA
42. If a farmer wants to practice multiple cropping in his field, which two crops can be grown in his field which replenishes nitrogen into soil?
- (1) Groundnut, Pea (2) Groundnut, Maize
(3) Rice, Cotton (4) Spinach, Apple
43. T-lymphocytes are
- (1) Produced in bone marrow, mature in thymus gland
(2) Produced in bone marrow, mature in bone marrow
(3) Produced in thymus gland, mature in thymus gland
(4) Produced in thymus gland, mature in bone marrow
44. Which of the following have their own DNA and Ribosomes?
- (1) Mitochondria (2) Bacterial cell
(3) Endoplasmic reticulum (4) Both (1) and (2)
45. Rust of wheat disease is caused by



- (1) Bacteria (2) Fungi (3) Virus (4) Protozoa

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.

46. Which of the following is a trinomial?
- (1) $x^2 + 2x + x$ (2) xyz (3) $3x^3 + 2x^2 - x^2$ (4) $x^2 + x + 1$
47. If $x = 7 + 4\sqrt{3}$ and $xy = 1$ Then $\frac{1}{x^2} + \frac{1}{y^2} =$
- (1) 64 (2) 134 (3) 194 (4) $\frac{1}{49}$
48. The multiplicative inverse of cube of $2\frac{2}{3}$ is :
- (1) $\frac{8}{3}$ (2) $\frac{27}{512}$ (3) $18\frac{7}{27}$ (4) none of these

49. $0.0035\bar{2}$ when expressed as a rational number is

- (1) $\frac{349}{99000}$ (2) $\frac{317}{90000}$ (3) $\frac{88}{24975}$ (4) $\frac{352}{99999}$

50. Which of the following is the standard form of 0.00002018?

- (1) 2.018×10^{-6} (2) 2.018×10^6 (3) 2.018×10^{-5} (4) 20.18×10^{-6}

51. The L.C.M of $x^2 - 16$ and $2x^2 - 9x + 4$ is

- (1) $(2x+1)(x+4)(x-4)$ (2) $(x^2+16)(2x+1)$
 (3) $2(1-2x)(x+4)(x-4)$ (4) $(2x-1)(x+4)(x-4)$

52. The square root of 21^{2^2} is equal to

- (1) 441 (2) $21^{2^2} - 1$ (3) $\frac{1}{441}$ (4) $\frac{1}{21^{2^2-1}}$

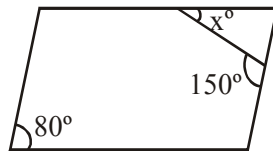
53. If each of the dimensions of a rectangle is increased by 100%, then the area is increased by

- (1) 100% (2) 200% (3) 300% (4) 400%

54. The polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ when divided by $(x - 4)$ leave the remainders R_1 and R_2 respectively. Find the value of a, if $2R_1 - R_2 = 0$.

- (1) 1 (2) $\frac{18}{127}$ (3) $\frac{7}{16}$ (4) $\frac{27}{121}$

55. In the parallelogram, the value of x is



- (1) 30° (2) 50° (3) 70° (4) 80°

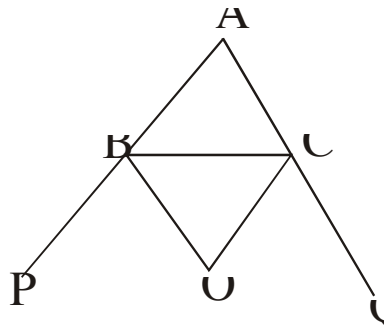
56. The sum of three consecutive multiples of 7 is 357. Find the smallest multiple.

- (1) 112 (2) 126 (3) 119 (4) 116

57. The compound interest on Rs. 3000 for 1 year at 5% per annum compounded semi-annually is

- (1) Rs. 102 (2) Rs. 402.88 (3) Rs. 172.25 (4) Rs. 151.875

58. In the adjoining figure, BO and CO are angle bisectors of external angles of ΔABC . Then $\angle BOC$ is



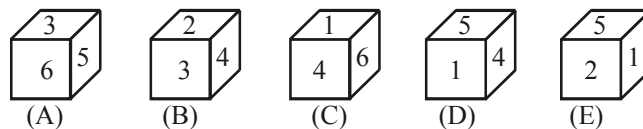
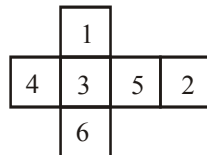
- (1) $90^\circ - \frac{1}{2}\angle A$ (2) $90^\circ + \frac{1}{2}\angle A$ (3) $180 - \frac{1}{2}\angle A$ (4) $180 + \frac{1}{2}\angle A$

59. If the perimeter of a square is $(4y + 12)$ m, then the length of its diagonal is
 (1) $\frac{y+3}{\sqrt{2}}$ m (2) $\sqrt{2}(y+3)$ m (3) $\sqrt{2}(4y+12)$ m (4) $\frac{4y+12}{\sqrt{2}}$ m
60. A machine in a soft drink factory fills 840 bottles in six hours. How many bottles will it fill in five hours?
 (1) 700 (2) 650 (3) 600 (4) 140

SECTION-E : 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.

61. Kavi walks Northward upto 10 m. He turns left and walks 30 m. Finally he turns left and walks 50 m. At what distance Kavi is now from his starting point?
 (1) 50 m (2) 10 m (3) 20 m (4) 90 m
62. If SOFTWARE can be coded as TQIUYDSG, then TYPE is written as
 (1) S Z R G (2) V B R G (3) U A S F (4) R X Q H
63. How many 5's are there in the following sequence such that the sum of the two immediately following digits is greater than the sum of the two immediately preceding digits?
 3 7 6 5 8 3 2 4 5 5 4 8 7 9 1 5 3 4 8 7 5 9 8 7 6 4
 (1) One (2) Two (3) Three (4) Four
64. A problem figure and five answer figures marked (A), (B), (C), (D) and (E) are given. You have to choose the answer figure(s) which is/are similar to the cube formed from problem figure.



- (1) A and B only (2) A and C only (3) C and D only (4) A and E only
65. In a code language, each of the vowels, i.e., A, E, I, O and U, is substituted by the letter preceding it, while a consonant is substituted by the nearest vowel. How can the word EVIDENCE be written in the code?
 (1) DUHJEDOED (2) DUHEDUAD
 (3) DUJEDOAD (4) DUHEDOAD OR DUHEDOED
66. In the following question a problem figure is given. The problem figure is hidden in one of the figures given as alternatives. Find the figure in which the problem figure is hidden.

Problem figure



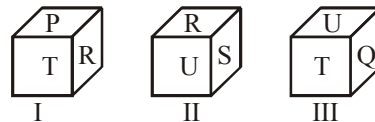
- (1)  (2)  (3)  (4) 

67. In alphabet series, some alphabets are missing which are given in that order as one of the alternatives below it choose the correct alternative.

a_ca_bc_bcc_bca

- (1) bbaa (2) bbab (3) aabb (4) baba

68. From the given three positions of single dice. Find the letter of the face opposite to the face having letter Q?

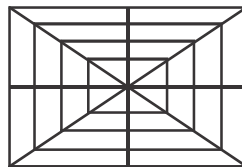


- (1) P (2) R (3) S (4) T

69. One morning after sunrise, Suresh was standing facing pole. The shadow of the pole fell exactly to his right. To which direction was he facing?

- (1) East (2) North (3) South (4) Data inadequate.

70. Find the straight lines in the given figure.

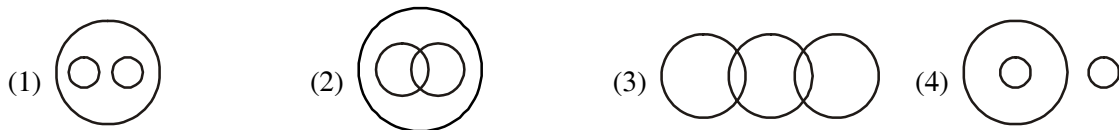


- (1) 20 (2) 24 (3) 32 (4) 36

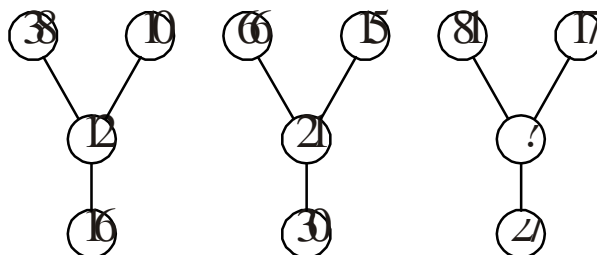
71. If '+' means 'x', '-' means '÷', 'x' means '-' and '÷' means '+', then what will be the value of $16 \div 64 - 8 \times 4 + 2 = ?$

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

72. Which of the following Venn diagrams correctly represent : Sister, Women, Mothers?



73. Which number will replace the question mark in the given figures.

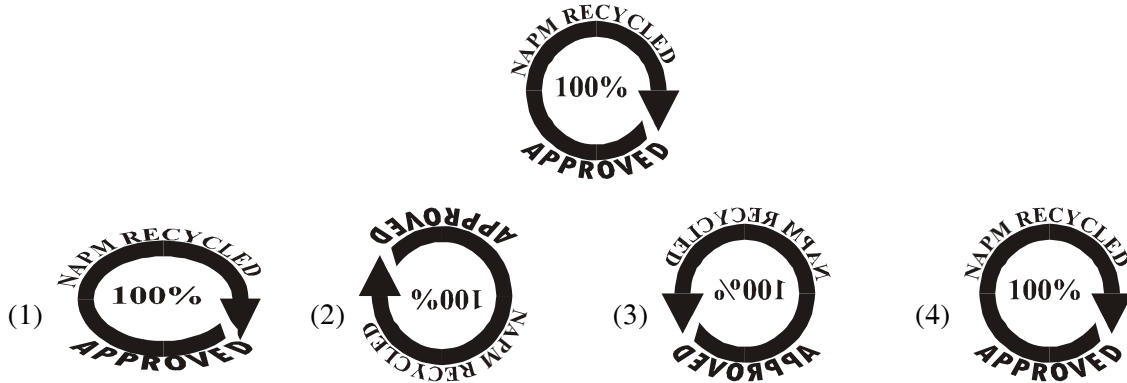


- (1) 18 (2) 32 (3) 17 (4) 37

74. Daya has brother, Anil. Daya is son of Chandra. Bimal is Chandra's father. In terms of relationship what is Anil of Bimal?

- (1) Son (2) Grandson (3) Brother (4) Grandfather

75. Find the mirror image

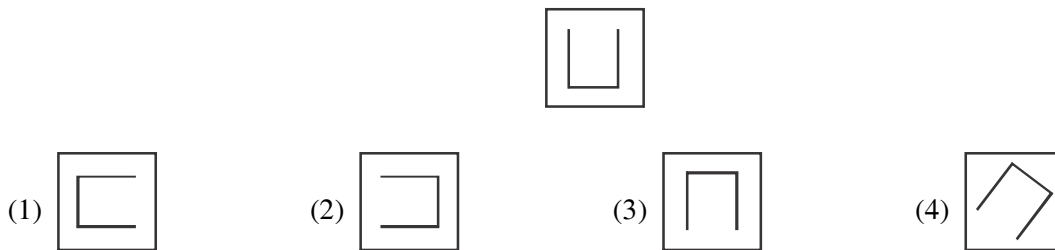


76. Which number will replace the ‘?’

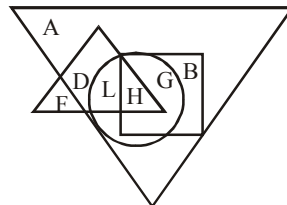
3, 7, 15, 31, 63, ‘?’

- (1) 105 (2) 115 (3) 117 (4) 127

77. Choose the correct water image of question figure from given options



78. Study the figure carefully and answer the given question. Here, big triangle represents artists, Small Triangle represents Scientists. Square represents dancers and circle represents doctors.



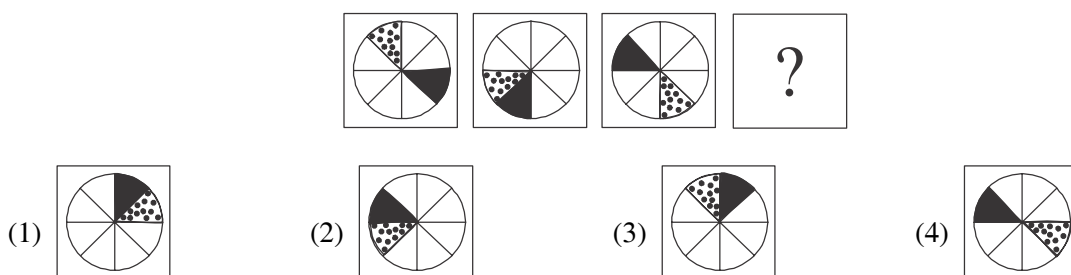
Which letter represents the artists who are doctors and dancers only?

- (1) A (2) D (3) G (4) H

79. Pointing to photograph, Vipul said, “She is the daughter of my grandfather only son”. How is Vipul related to the girl in the photograph?

- (1) Father (2) Brother (3) Cousin (4) Uncle

80. Complete the following series :



ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	1	1	2	4	3	2	3	4	2	1	2	3	2	1
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	1	1	2	1	3	2	3	3	1	4	4	3	3	1	3
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	3	3	2	3	2	2	1	3	4	1	2	1	1	4	2
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	4	3	2	2	3	4	1	3	2	3	1	4	1	2	1
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	1	3	3	4	4	3	1	2	3	1	4	2	4	2	3
Que.	76	77	78	79	80										
Ans.	4	3	3	2	1										