SAMPLE PAPER

Class : IX   ***Time allowed :*** 2 hours   ***Maximum Marks :*** 340

Please read the instructions in Question Booklet before answering the question paper.

INSTRUCTIONS

01.   The question paper has **'10'** printed pages. Please ensure that the copy of the question paper you have received contains all pages.
02.   Before starting the paper, fill up the required details in the blank space provided in the answer sheet.
03.   Write your name and Seven digit **Reg. No.** in the space provided at the top of this booklet.
04.   The question paper consists of **'85'** objective type questions. Each question carry **4** *marks* and all of them are compulsory.
05.   Each question contains four alternatives out of which only **ONE** is correct.
06.   There is **NEGATIVE** marking. **1 mark** will be deducted for each wrong answer.
07.   Indicate the correct answer for each question by filling appropriate bubble in your answer sheet.
08.   The answers of the questions must be marked by shading the circle against the question by dark **Black Ball point Pen** only.
09.   For rough work, use the space provided at the bottom of each page. No extra sheet will be provided for rough work and you are not supposed to bring the same.
10.   Use of **blank papers**, **clip boards**, **log tables**, **calculator**, **slide rule**, **mobile** or any other **electronic gadgets** in any form is "**NOT PERMISSIBLE**".
11.   You must not carry mobile phone even if you have the same, give it to your Invigilator before commencement of the test and take it back from him/her after the exam.
12.   The Answer Sheet will be checked through computer hence the answer of the questions must be marked by shading the circles against the question by dark **Black Ball point Pen** only.

For example if only 'C' choice is correct then, the correct method for filling the bubble is

the wrong method for filling the bubble are
(a)   A   B   C   D   Tick Mark
(b)   A   B   C   D   Cross Mark
(c)   A   B   C   D   Half filled or Semi Dark
The answer of the questions in wrong or any other manner will be treated as wrong.

USEFUL DATA

Take g = 10 m/s^2 wherever required.

Q.1 Which of the following graphs best represents the graphical relation between momentum(P) and kinetic energy (k) for a body in motion:

(A) (B) (C) (D)
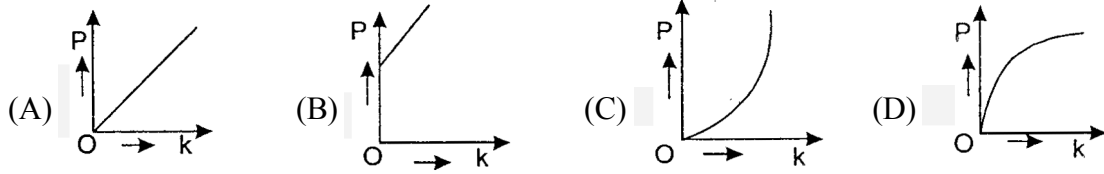
Q.2 A cluster of clouds at a height of 1000 m above the earth burst and enough rain fell to cover an area of 10^6 m^2 with a depth of 2 cm. How much work have been done in raising water of the height of clouds. (Take g = 9.8 ms^{-2} and density of water = 10^3 kg m^{-3})
(A) 1.96×10^{11} J   (B) 1.96×10^9 J   (C) 1.5×10^{11} J   (D) 2.5×10^{13} J

Q.3 A body of 10 N weight is resting on a plane surface. If external force of 5N is exerted on the body as shown in the figure, then friction force acting on the body by surface is :

$$F = 5 \text{ N}$$
$$W = 10 \text{ N}$$
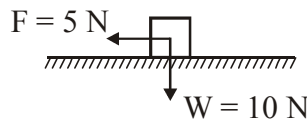
(A) 0   (B) 5 N   (C) 10 N   (D) 15 N

Q.4 The mains power supply of a house is through a 20 A fuse. When a 1500 W heater is used in this house, how many 100 W bulbs can be used simultaneously ? (The supply is at 220 V and the appliances are rated for 220 V)
(A) 27   (B) 29   (C) 30   (D) 33

Q.5 Two masses of 1 kg and 4 kg are moving with equal kinetic energies. the ratio of the magnitudes of linear momentum of 1 kg mass to the linear momentum of 4 kg mass is
(A) 4 : 1   (B) $\sqrt{2}$:1   (C) 1 : 2   (D) 1 : 16

Q.6 An iceberg is floating in ocean. What fraction of its volume is above the water ?
(Given : density of ice = 900 kg/m^2 and density of ocean water = 1030 kg/m^3)
(A) 90/103   (B) 13/103   (D) 10/103   (D) 1/103

Q.7 If the density of iron is 7900 km m^{-3}, then its relative density is
(A) 790   (B) 79   (C) 7.9   (D) 0.79

Q.8 An athlete is doing push-up. He applies force of 300 N as he pushes up a distance of 0.5 m. He does 10 push-ups in 30s. Find his average power output during this time interval.
(A) 5 W   (B) 15 W   (C) 50 W   (D) 500 W

Q.9 A particle of mass m at rest is acted upon by a force F for a time t. Its kinetic energy after an interval t is:
(A) $\dfrac{F^2 t^2}{m}$ (B) $\dfrac{F^2 t^2}{2m}$ (C) $\dfrac{F^2 t^2}{3m}$ (D) $\dfrac{Ft}{2m}$

Q.10 If a body is thrown up with an initial velocity u and covers a maximum height of h, then h is equal to:
(A) $\dfrac{u^2}{2g}$ (B) $\dfrac{u}{2g}$ (C) $2u^2 g$ (D) None of these

Q.11 A baseball is thrown vertically into the air. The acceleration of the ball at its highest point is
(A) zero   (B) g, down   (C) g, up   (D) 2g, down

Q.12 A bullet of mass 10 g travelling horizontally with a velocity of 160 ms^{-1} strikes a stationary wooden block and comes to rest in 0.02 s. The distance of penetration of the bullet into the block will be :
(A) 1.20 m   (B) 1.60 m   (C) 2.00 m   (D) 2.40 m

Q.13 If a force F is applied on a body and it moves with velocity v, then power will be :
(A) $F \times v$ (B) $\dfrac{F}{v^2}$ (C) v F   (D) $F \times v^2$

Q.14 If the linear momentum of a body is increased by 50 %, then K.E. of that body will increase by :
(A) 50%   (B) 100%   (C) 125%   (D) 25%

Q.15 Three plane mirrors are mounted on the three walls forming an isoscles right triangle as shown in the figure. How many images of object A are formed in all ?

45°
A
45°
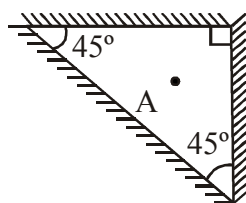
(A) 5   (B) 6   (C) 7   (D) 8

Q.16 Galvanised iron is protected from rust because it has a coating of :
(A) Hg   (B) Sn   (C) Cr   (D) Zn

Q.17 Which is the correct colour sequence of iron filings, sulphur and iron sulphide ?

Colouless   Pink   Green   Blue
I   II   III   IV
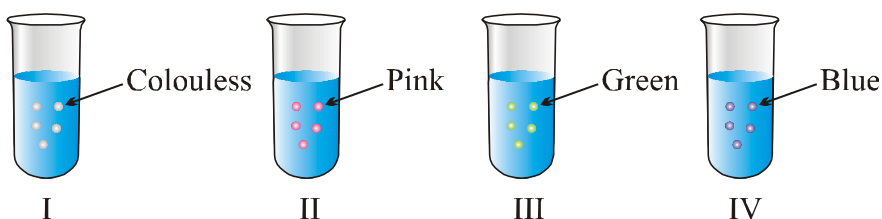
(A) Greyish black, yellow, black   (B) Black, yellow, brown
(C) Brown, yellow, black   (D) Black, yellow, greyish black

Q.18 Match the polymers given in column I with their uses in column II and select the correct option from the given codes.

Column I
P. Nylon
Q. Teflon
R. Melamine
S. PET

Column II
(i) Making bottles
(ii) Making fire-proof uniforms
(iii) Non-stick coating on cookwares
(iv) Making seat belts

	p	Q	R	S		p	Q	R	S
(A)	(i)	(iv)	(iii)	(ii)	(B)	(iv)	(iii)	(ii)	(i)
(C)	(iv)	(ii)	(iii)	(i)	(D)	(i)	(iii)	(ii)	(iv)

Q.19 Which of the following have low melting and boiling points?
(A) Phosphorus   (B) Sodium   (C) Iron   (D) Both A and B

Q.20 Rama heated a mixture of iron filings and sulphur in a hard glass test tube for some time till a grey-black product was formed. She cooled the test tube and then added 2 ml of carbon disulphide in it and shook the contents of the test tube. The observation made by her was likely to be shown as :
(A) I   (B) II   (C) III   (D) IV

Q.21 Arrange the metals given in the box in order of their reactivity and fill in the blanks with an appropriate option.

Copper   Zinc   Magnesium   Iron

1. The metal which can displace the other three metals from their salt solutions is (i).
2. The metal which can displace only one of the given metals from its salt solution is (ii)
3. The metal which can displace two of the given metals from their salt solutions is (iii)
4. The metal which cannot displace any of the given metals from its salt solution is (iv).

	(i)	(ii)	(iii)	(iv)
(A)	Zinc	Copper	Iron	Magnesium
(B)	Magnesium	Iron	Copper	Zinc
(C)	Iron	Zinc	Magnesium	Copper
(D)	Magnesium	Iron	Zinc	Copper

Q.22 Which among the follOWing has strong forces of attraction?
(A) Hydrogen chloride   (B) Bromine   (C) Flourine   (D) Chlorine

Q.23 Which of the following are physical changes :
(i) Melting of iron metal   (ii) Rusting of iron metal
(iii) Bending of an iron rod   (iv) Drawing a wire of iron metal.
(A) (i), (ii) and (iii)   (B) (i), (ii) and (iv)   (C) (i), (iii) and (iv)   (D) (ii), (iii) and (iv)

Q.24 Which of the following statements about coal and petroleum is incorrect?
(A) Bitumen is used in place of coal tar for metalling the roads.
(B) Coke is used in the extraction of many metals and also in the manufacture of steel.
(C) Coal tar is used in the manufacture of detergent, fibres, polythene and other man-made plastics.
(D) Naphthalene balls used to repel moths and other insects are obtained from coal tar.

Q.25 When a gas is compressed keeping temperature constant, it results in :
(A) increase in speed of gaseous molecules
(B) increase in collision among gaseous molecules
(C) decrease in speed of gaseous molecules
(D) decrease in collision among gaseous molecules

Q.26 Which of the following is not the attribute of a good fuel?
(A) Low calorific value   (B) Moderate rate of combustion
(C) Fairly cheap and easily available   (D) Safe to handle, store and transport

Q.27 _____ is a petroleum byproduct used in making ointments.
(A) Paraffin wax   (B) Bitumen   (C) Lubricating oil   (D) Coal

Q.28 Which one is called black gold?
(A) silver   (B) platinum   (C) petroleum   (D) coal

Q.29 Volume of gas at constant pressure
(A) increases with increase in temperature   (B) decreases with increase in temperature
(C) remains constant at all temperature   (D) increases with decrease in temperature

Q.30 If a person is caught in a fire and blanket is wrapped around him the fire will extinguish by :
(A) Raising the ignition temperature
(B) Absence of non- combustible ubstance
(C) Cutting the supply of air
(D) All of these

Q.31 Ribosomes are made up of
(A) RNA   (B) Proteins   (C) Lipoprotein   (D) Both A and B

Q.32 Organelle covered by double membrane is :
(A) Nucleus   (B) Mitochondria   (C) Plastid   (D) All of the above

Q.33 Match the following and select the correct answer.
1.   Mitochondria   a.   Helps in synthesis of food.
2.   Chloroplast   b.   Cotrols all the activities of the cell.
3.   Nucleus   c.   Gives shape to the cell.
4.   Cell wall   d.   Provide energy.
(A) 1-d, 2-a, 3-c, 4-b   (B) 1-d, 2-c, 3-a, 4-b
(C) 1-d, 2-a, 3-b, 4-c   (D) 1-d, 2-c, 3-b, 4-a

Q.34 Cell body of a nerve cell contains :
(A) Nucleus   (B) Cytoplasm
(C) Nissl granules and neurofibrils (D) All the above

Q.35 Cells found in pulp and skin of fruits :
(A) Fibres   (B) Grit cells   (C) Epithelial cells   (D) All of the above

Q.36 Fish meat is considered to be good because :
(A) it has more proteins   (B) it has more fats
(C) it has lesser carbohydrates   (D) none of the above

Q.37 Vessles and Companion cells occur in :
(A) Angiosperm   (B) Gymnosperm   (C) Pteridophytes   (D) Bryophytes

Q.38 Rhizobium bacteria
(A) help in digestion   (B) help in nitrogen fixation
(C) cause various diseases   (D) All of above

Q.39 Silver Revolution is related to
(A) Egg production   (B) Milk production   (C) Grain production   (D) Meat production

Q.40 Vermicompost is produced by
(A) Fungus   (B) Bacteria like Rhizobium
(C) Earthworm   (D) None

Q.41 Which one of the following is not true about ploughing?
(A) Loosens the soil   (B) Aerates the soil
(C) Makes the soil hard   (D) Allows easy penetration of roots into the soil.

Q.42 Seeds are put in a beaker having water before sowing:
(A) It helps in cleaning soil from seed. (B) It helps in selecting good quality seed.
(C) It increases moisture in seed (D) All of them

Q.43 Best source of dietary protein for a vegetarian is :
(A) Soyabean (B) Gram (C) Groundnut (D) Milk

Q.44 Process of cross-breeding two individuals of different variety is
(A) Hybridisation (B) Feeding (C) Intermixing (D) None

Q.45 Xylem & Phloem belong to the group of :
(A) Simple tissue (B) Latex tissue (C) Complex tissue (D) None of these

Q.46 $\dfrac{\sqrt[3]{8}}{\sqrt{16}} \div \dfrac{\sqrt{100}}{\sqrt{49}} \times \dfrac{\sqrt[3]{125}}{\sqrt{49}}$ is equal to

(A) 7 (B) $\dfrac{1}{4}$ (C) $\dfrac{7}{100}$ (D) $\dfrac{4}{7}$

Q.47 If $0 < y < x$, which statement must be true ?
(A) $\sqrt{x} - \sqrt{y} = \sqrt{x-y}$ (B) $\sqrt{x} + \sqrt{x} = \sqrt{2x}$ (C) $x\sqrt{y} = y\sqrt{x}$ (D) $\sqrt{xy} = \sqrt{x}\,\sqrt{y}$

Q.48 Multiplicative inverse of '0' is :
(A) $\dfrac{1}{0}$ (B) 0 (C) does not exist (D) none of these

Q.49 Identify the zeros of the given polynomial.
$$p(z) = 4z^2 - 15\,z\pi - 4\pi^2$$

(A) $4\pi, -\dfrac{\pi}{4}$ (B) $-4\pi, \dfrac{\pi}{4}$ (C) $4\pi, \dfrac{\pi}{4}$ (D) $-4\pi, \dfrac{\pi}{4}$

Q.50 If $x + y + z = 0$, then $\dfrac{x^2}{yz} + \dfrac{y^2}{xz} + \dfrac{z^2}{xy}$ is

(A) $3x^2y^2z^2$ (B) 3 (C) $3x^3y^3z^3$ (D) $x + y + z$

Q.51 The distance of the point (2, 0) from the origin is
(A) 1 unit (B) 2 units (C) 4 units (D) 0 units

Q.52 To locate a point (–a, –b) in the third quadrant if a > 0, b > 0.
(A) Move only in the negative direction of x-axis.
(B) Move 'a' units in the negative direction of x-axis then b units vertically downward in the negative direction of y-axis parallel to the y-axis.
(C) Move 'b' units along the x-axis
(D) None of these.
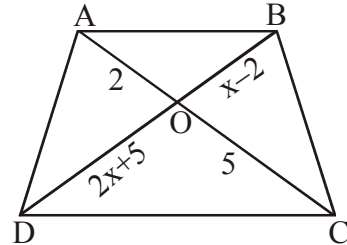
Q.53 Factorize: $a^{2x} - b^{2x}$

(A) $(a^x + b^x)(a^x - b^x)$ (B) $(a^x - b^x)^2$ (C) $(a^x + b^x)(a^2 - b^2)$ (D) $(a^x + b^x)(a^2 + b^2)$

Q.54 If two circles are congruent, then their _____ are equal

(A) radii   (B) diameters   (C) circumferences   (D) All of these

Q.55 In a given figure in trapezium ABCD if AB ∥ CD then value of x is :

(A) $\dfrac{29}{8}$ (B) $\dfrac{8}{29}$

(C) 20   (D) $\dfrac{1}{20}$

Q.56 The value of $\sqrt{3 - 2\sqrt{2}}$ is

(A) $\sqrt{2} - 1$ (B) $\sqrt{2} + 1$ (C) $\sqrt{3} - \sqrt{2}$ (D) $\sqrt{3} + \sqrt{2}$

Q.57 If n is a natural number, then $\sqrt{n}$ is
(A) always a natural number
(B) always an irrational number
(C) always an rational number
(D) sometimes a natural number and sometimes an irrational number

Q.58 All linear pairs are :

(A) Supplementary   (B) Vertically opposite   (C) Right angles   (D) None of these

Q.59 If the ratio of the interior angles of a triangle is 2 : 4 : 9 , then the difference between smallest and middle exterior angles is :

(A) 20°   (B) 44°   (C) 50°   (D) 60°

Q.60 If X is a point on the line AB and Y, Z are points outside such that $\angle AXY = 45°$ and $\angle YXZ = 60°$, then $\angle BXZ$ is equal to

(A) 120°   (B) 75°   (C) 150°   (D) 105°

Q.61 Which of the following statements is true?

(A) $-\dfrac{2}{3} < \dfrac{4}{-9} < \dfrac{-5}{12} < \dfrac{7}{-18}$

(B) $\dfrac{7}{-18} < \dfrac{-5}{12} < \dfrac{4}{-9} < \dfrac{-2}{3}$

(C) $\dfrac{4}{-9} < \dfrac{7}{-18} < \dfrac{-5}{12} < \dfrac{-2}{3}$

(D) $\dfrac{-5}{12} < \dfrac{-2}{3} < \dfrac{4}{-9} < \dfrac{7}{-18}$

Q.62 The sum of two number is 45 and their ratio is 7 : 8. The numbers are
(A) 28 : 32   (B) 35 : 40   (C) 21 : 24   (D) none of these

Q.63 If $x + y = 2013$ and $\dfrac{1}{x} + \dfrac{1}{y} = 2013$, what is the value of xy ?

(A) $\dfrac{1}{2013}$ (B) 4026   (C) 0   (D) 1

Q.64 The point $(2, -3)$ belongs to quadrant
(A) Q_1 (B) Q_2 (C) Q_3 (D) Q_4

Q.65 The sum of two digits of a two digit number is 12. If the digits are reversed, then the number so formed exceeds the original number by 18. Find the original number.
(A) 57   (B) 85   (C) 75   (D None

Direction (Q.67 & 68) : Read the following information carefully and answer these questions. In a certain coding system,
816321 means
"The brown dog frightened the cat"
64851 means
"The frightened cat ran away"
7621 means
"The cat was brown"
341 means "The dog ran".

Q.66 What is the code for 'away'?
(A) 5   (B) 7   (C) 6   (D) 1

Q.67 What is the code for 'the dog was frightened'
(A) 8263   (B) 8731   (C) 5438   (D) none of these

Q.68 Rahul told Anand, "Yesterday I defeated the only brother of the daughter of my grandmother." Whom did Rahul defeat?
(A) Son   (B) Father   (C) Brother   (D) Father-in-law

Q.69 Rajani says to Shushmita, 'Your brother is the husband of my sister'. How is Rajni related to Shushmita?
(A) Cousin (brother/sister)   (B) Sister
(C) Daughter-in-law   (D) None of these

Q.70 Atul is son of Zamir. Alka is daughter of Aman. Sheela is Aman's wife. Mohan is Sheela's son. Atul is Sheela's brother. How is Zamir related to Mohan ?
(A) Maternal uncle   (B) Maternal Grand father
(C) Uncle   (D) Grand father

Q.71 Vijay starts walking straight towards East. After walking 75 metres he turns to the left and walks 25 metres straight. Again he turns to the left and walks a distance of 40 metres straight. Again he turns to the left and walks a distance of 25 metres. How far is he from the starting point ?
(A) 140 metres   (B) 50 metres   (C) 35 metres   (D) 115 metres

Q.72 Gopal is elder by 4 years to Govind. After 16 years Gopal will be thrice his present age and Govind will be five times of his present age. How old is Gopal ?
(A) 4 years   (B) 8 years   (C) 12 years   (D) 16 years

Q.73 Five boys are standing in a row facing East. Deepak is to the left of Sameer, Tushar and Shailendra. Sameer, Tushar and Shailendra are to the left of Sushil. Shailendra is between Sameer and Tushar. If Tushar is fourth from the left, how far is Sameer from the right?
(A) First   (B) Second   (C) Third   (D) Fourth

Q.74 If GO = 32, SHE = 49, then SOME will be equal to
(A) 56   (B) 58   (C) 62   (D) 64

Q.75 If PEN is written written as '+X' and ENT is written as 'X-' in a certain code, how is TEN written in the same code?
(A) −X   (B) X   (C) −X−   (D) − − X

Q.76 Roshan ranked 11th from the top and thirty one from the bottom in a class. How many students are there in the class ?
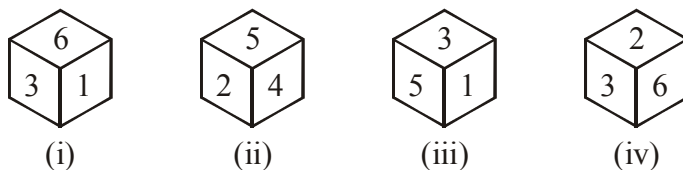(A) 42   (B) 43   (C) 41   (D) 40

Q.77 Find the missing number.

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        9                    15
  4 |  58  | 8        9 |  ?  | 8
       10                   10
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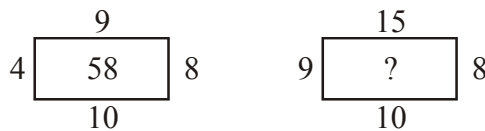
(A) 117   (B) 100   (C) 78   (D) 63

Q.78 Find the odd one out:
(A) T   (B) V   (C) X   (D) L

Q.79 If ÷ means +, − means ÷, × means − and + means ×, then $\dfrac{(36\times4)-8\times4}{4+8\times2+16\div1} = ?$
(A) 0   (B) 8   (C) 12   (D) 16

Q.80 A die is thrown four times and its different positions are recorded as follow.

(i)   6 / 3 1
(ii)   5 / 2 4
(iii) 3 / 5 1
(iv)   2 / 3 6

What number is opposite 3?
(A) 2   (B) 3   (C) 4   (D) 6

Q.81 Choose the best suitable alternative diagram marked A, B, C and D, the one that represent the best relationship amongest the given group.
Snakes, Land creatures, Water creatures

(A)   (B)   (C)   (D)
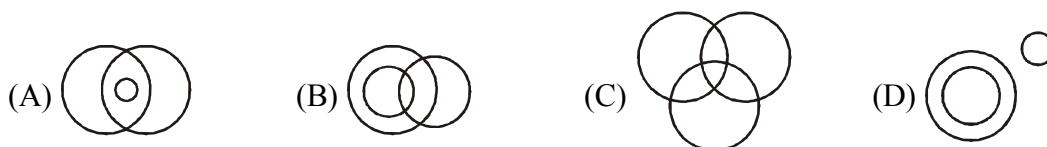
Directions (Q.82 & 84): In the following questions, there is a relationship between the numbers on the left of the sign (: :). The same relationship exists to the right of the sign (: :), of which one is missing. Find the missing term from the alternatives.

Q.82   7 : 42 : : 9 : ?
    (A) 51   (B) 65   (C) 72   (D) 90
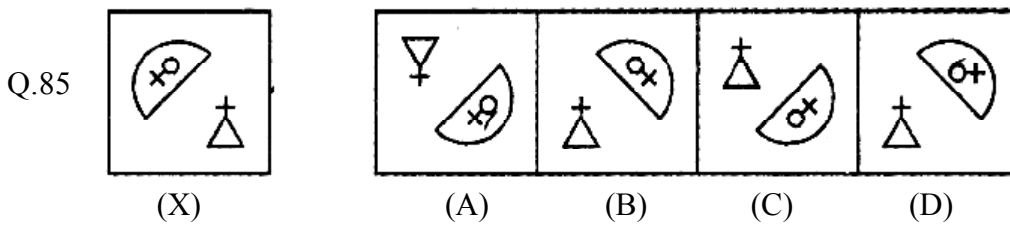
Q.83   0.16 : 0.0016 : : 1.02 : ?
    (A) 0.0102   (B) 0.102   (C) 1.020   (D) 10.20

Q.84   81 : 3 : 27 : : ? : ? : 125
    (A) 225 : 25   (B) 5 : 25   (C) 150 : 15   (D) 625 : 5

Direction (Q.85) : Find the mirro image of figure (X).

Q.85

(X)   (A)   (B)   (C)   (D)

ANSWER KEY

Q.1	D	Q.31	D	Q.61	A
Q.2	A	Q.32	D	Q.62	C
Q.3	B	Q.33	C	Q.63	D
Q.4	B	Q.34	D	Q.64	D
Q.5	A	Q.35	B	Q.65	A
Q.6	B	Q.36	A	Q.66	A
Q.7	C	Q.37	A	Q.67	B
Q.8	C	Q.38	B	Q.68	B
Q.9	B	Q.39	A	Q.69	D
Q.10	A	Q.40	C	Q.70	B
Q.11	B	Q.41	C	Q.71	C
Q.12	B	Q.42	B	Q.72	B
Q.13	A	Q.43	A	Q.73	D
Q.14	C	Q.44	A	Q.74	A
Q.15	C	Q.45	C	Q.75	A
Q.16	D	Q.46	B	Q.76	C
Q.17	A	Q.47	D	Q.77	C
Q.18	B	Q.48	C	Q.78	D
Q.19	D	Q.49	A	Q.79	A
Q.20	A	Q.50	B	Q.80	C
Q.21	D	Q.51	B	Q.81	A
Q.22	A	Q.52	B	Q.82	C
Q.23	C	Q.53	A	Q.83	A
Q.24	C	Q.54	D	Q.84	D
Q.25	B	Q.55	C	Q.85	B
Q.26	A	Q.56	A		
Q.27	A	Q.57	D		
Q.28	C	Q.58	A		
Q.29	A	Q.59	D		
Q.30	C	Q.60	B		