



# **APEX TALENT REWARD EXAM**

**Class VIII going to IX**

## **SCIENCE, MATHS & REASONING**

Time: 2Hours

**Maximum Marks: 320**

## ***Instructions:***

1. Attempt ALL the questions.
  2. Answers have to be marked on the OMR sheet.
  3. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.
  4. Blank papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.
  5. Write your **Name** and **Registration No.** in the space provided at the bottom of this sheet.

This Question Paper contains MCQs with 4 choices (Subjects: Mental ability: 20, Physics: 15, Chemistry: 15, Biology:15 & Maths: 15).

**Marking Scheme:** For each correct answer **4 marks** are awarded and for each wrong answer **-1 mark** is awarded. In case of no response zero mark will be awarded.

**Name of the Candidate** : ...

**Contact Number** : \_\_\_\_\_

**INSTRUCTIONS**

**Time duration:** 2:30 hours. (The initial 30 minutes are given for filling Response Sheet and the test duration is 2 hours).

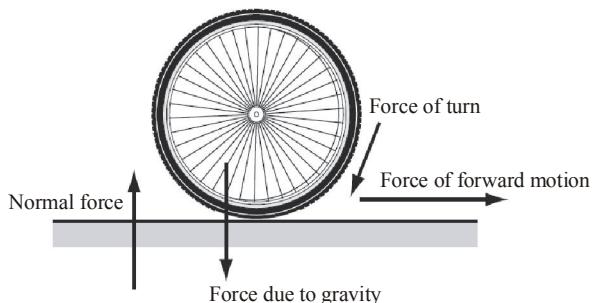
**Maximum Marks: 320**

This Question Paper contains 80 MCQs with 4 choices (Subjects: Physics: 15, Chemistry: 15, Biology: 15 & Maths: 15, Mental ability: 20).

**Marking Scheme:** For each correct answer **4 marks** are awarded and for each wrong answer **-1 mark** is awarded. In case of no response zero mark will be awarded.

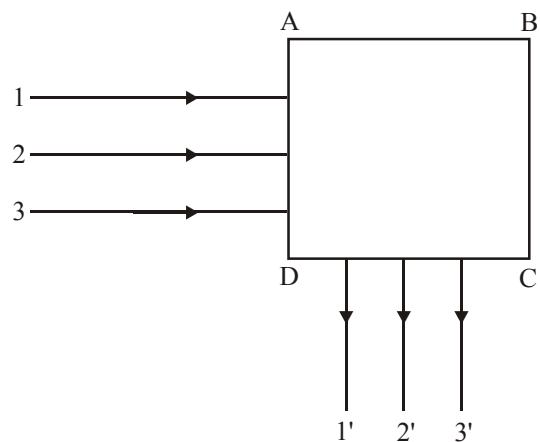
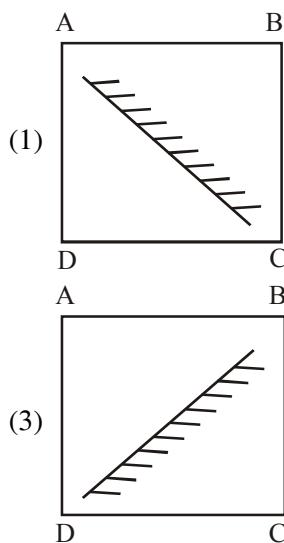
This section contains **80 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

1. When a bicycle wheel is in motion, many forces are acting on it. The sum of the forces results in forward motion. In which direction does friction from the ground act on the wheel?

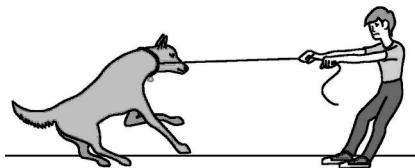


- (1) At right angles to the turn of the wheel.
- (2) In the direction of the turn of the wheel.
- (3) At right angles to the total forward movement.
- (4) In the direction opposite to the total forward movement.

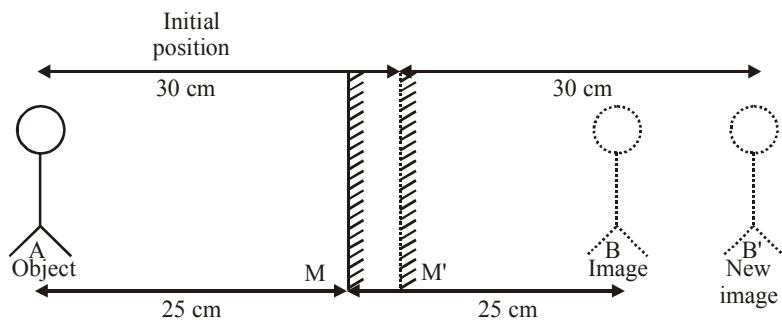
2. In figure, rays 1, 2 and 3 are the incident rays and 1', 2' and 3' are the reflected rays from the region ABCD after reflection from a plane mirror kept inside ABCD. Which option shows the correct location of the plane mirror.



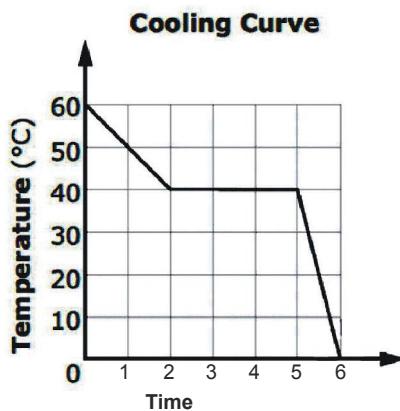
3. Which of the following best describes the forces being used by the dog?



- (1) The dog is pulling on the ground and pulling on the rope.
  - (2) The dog is pulling on the ground and pushing on the rope.
  - (3) The dog is pushing off the ground and pulling on the rope.
  - (4) The dog is pushing off the ground and pushing on the rope.
4. An object is at a distance 25 cm in front of a plane mirror. The mirror is shifted 5 cm away from the object. Find the distance between the two positions of the image.

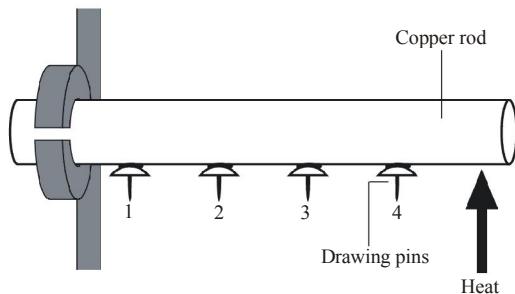


- (1) 5 cm
  - (2) 10 cm
  - (3) 15 cm
  - (4) 20 cm
5. This graph represents the cooling curve for a pure substance in a liquid state at  $t = 0$  min. Why does temperature remain constant from  $t = 2$  min to  $t = 5$  min ?



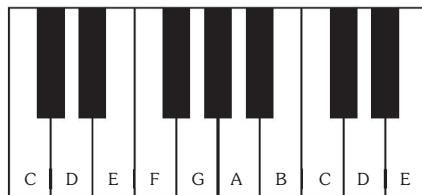
- (1) because the substance absorbs heat energy as it changes from a liquid to a solid
- (2) because heat energy is released from the substance as it changes from a liquid to a solid
- (3) because heat energy is released from the substance as it changes from a liquid to a gas
- (4) because the substance absorbs heat energy as it changes from a liquid to a gas

6. A student attaches four drawing pins to a copper rod using candle wax as shown in the diagram. The rod is then heated continuously at one end and the pins fall off in the order 4, 3, 2, 1.



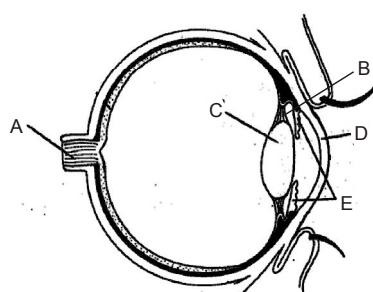
By which process does heat reach the pins?

- (1) expansion      (2) radiation      (3) conduction      (4) convection
7. The picture shows some keys on a piano.



Sounds are made when the keys are pushed. What can be done to the piano keys for the sounds to change pitch?

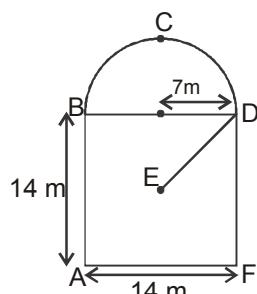
- (1) push different keys      (2) push one key softly  
 (3) push one key many times      (4) push harder on the same key
8. 1 hertz equals
- (1) 1 vibration per minute      (2) 10 vibrations per minute  
 (3) 60 vibrations per minute      (4) 600 vibrations per minute
9. Diagram of human eye is given below. Correctly identify A, B, C, D and E



- (1) A- optic nerve, B- iris, C-lens, D- cornea, E- ciliary muscles  
 (2) A- optic nerve, B- ciliary muscles, C-lens, D- iris, E- cornea  
 (3) A- optic nerve, B-lens, C- iris, D- cornea, E- ciliary muscles  
 (4) A- optic nerve, B- ciliary muscles, C-lens, D- cornea, E- iris

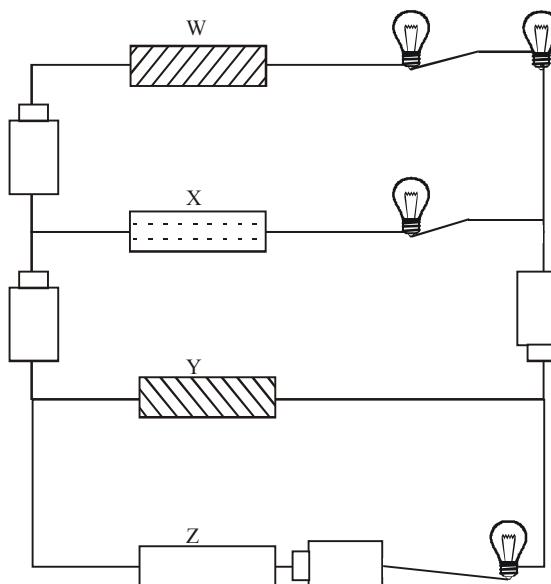
10. A boy travels from point A to point E via path ABCDE. If E is centre of square ABDF then the

distance and displacement of the boy in meters is ( $\pi = \frac{22}{7}$ )



- (1)  $36 + 7\sqrt{2}$ , 7      (2)  $36 + 7\sqrt{2}$ ,  $7\sqrt{2}$       (3)  $7\sqrt{2}$ ,  $36 + 7\sqrt{2}$       (4) 7, 43

11. Four materials, W, X, Y and Z, are connected in the electrical circuit shown below.



Which one of the following sets correctly represents the materials, W, X, Y and Z, in the electrical circuit so that only two of the bulbs light up ?

Material W	Material X	Material Y	Material Z
(1) brass	glass	porcelain	copper
(2) wood	plastic	rubber	gold
(3) iron	glass	wood	steel
(4) lead	porcelain	iron	glass

12. The fuse found in a plug will \_\_\_\_\_ (p) when too much \_\_\_\_\_ (q) passes through it.

The circuit is now \_\_\_\_\_ (r) and the electrical appliance is protected from catching fire.

Which of the following correctly represents (p), (q) and (r) ?

(p)

(1) melt

(q)

current

(r)

open

(2) boil

voltage

broken

(3) decompose

electricity

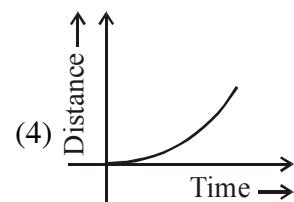
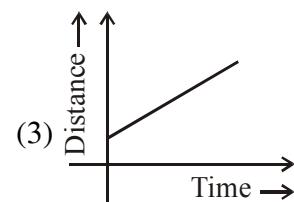
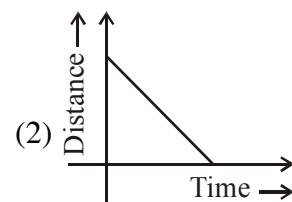
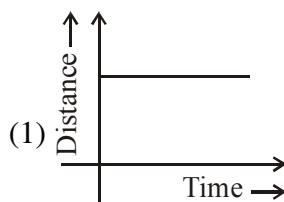
open

(4) burn

energy

closed

13. A car is parked on a road. The correct graph is



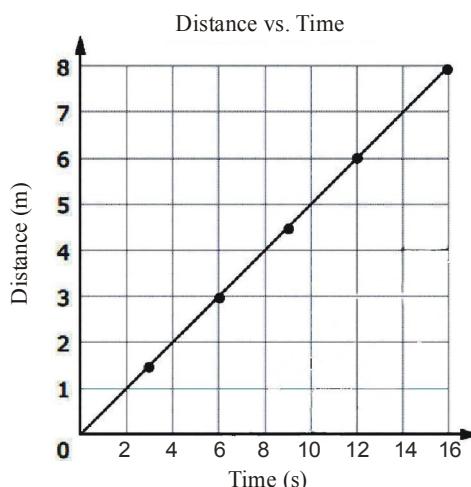
14. An athlete ran a distance of 8 m in 16 s. The graph below shows her motion. Which best describes her motion?

(1) Her speed was constantly changing.

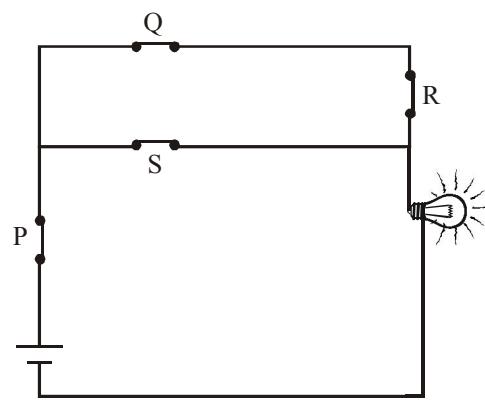
(2) Her speed remained constant.

(3) She stopped moving after four seconds.

(4) She decreased her speed after four seconds.



15. Study the circuit shown here. Which switch if opened will cause the light bulb to stop glowing ?



(1) P

(2) Q

(3) R

(4) S

16. Match the remedies with their problems and select the correct option from the codes given below.

Remedy		Problem	
(a)	Baking soda	(p)	Acidic soil
(b)	Calamine	(q)	Acidity in stomach
(c)	Organic matter	(r)	Pain from ant sting
(d)	Lime water	(s)	Basic soil

(1) a-s, b-q, c-p, d-r    (2) a-q, b-r, c-s, d-p    (3) a-r, b-q, c-p, d-s    (4) a-p, b-q, c-r, d-s

17. Which of the following statements is/are correct about an aqueous solution of an acid and of a base?

- |                                       |                                     |                  |                   |
|---------------------------------------|-------------------------------------|------------------|-------------------|
| (i) Higher the pH, stronger the acid  | (ii) Higher the pH, weaker the acid |                  |                   |
| (iii) Lower the pH, stronger the base | (iv) Lower the pH, weaker the base  |                  |                   |
| (1) (i) and (iii)                     | (2) (ii) and (iii)                  | (3) (i) and (iv) | (4) (ii) and (iv) |

18. On the basis of following features identify the correct fabric.

I. It is prepared by condensation polymerisation of two monomers.

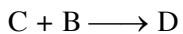
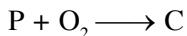
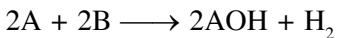
II. It is very durable.

III. It is used in making certain draperies and magnetic recording tapes.

IV. This fabric has two common names.

(1) Nylon    (2) Rayon    (3) Polyester    (4) Acrylic

19. Study the following equations and select the correct option.



<b>A</b>		<b>B</b>	<b>C</b>	<b>D</b>
(1)	S	H <sub>2</sub> O	POH	H <sub>3</sub> PO <sub>3</sub>
(2)	Na	H <sub>2</sub> O	PO <sub>3</sub>	H <sub>3</sub> PO <sub>3</sub>
(3)	K	H <sub>2</sub> O	P <sub>2</sub> O <sub>5</sub>	H <sub>3</sub> PO <sub>4</sub>
(4)	C	H <sub>2</sub> O	P <sub>2</sub> O <sub>5</sub>	H <sub>3</sub> PO <sub>3</sub>

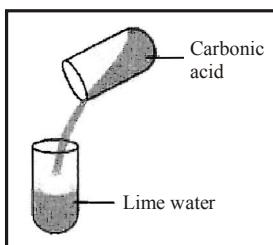
20. Formation of clouds, mist and fog are the examples of \_\_\_\_\_.

- (1) chemical combination of O<sub>2</sub> and H<sub>2</sub>O
- (2) physical change which involve condensation of water vapour
- (3) physical change which involves sublimation
- (4) chemical change which involves absorption of huge amount of energy

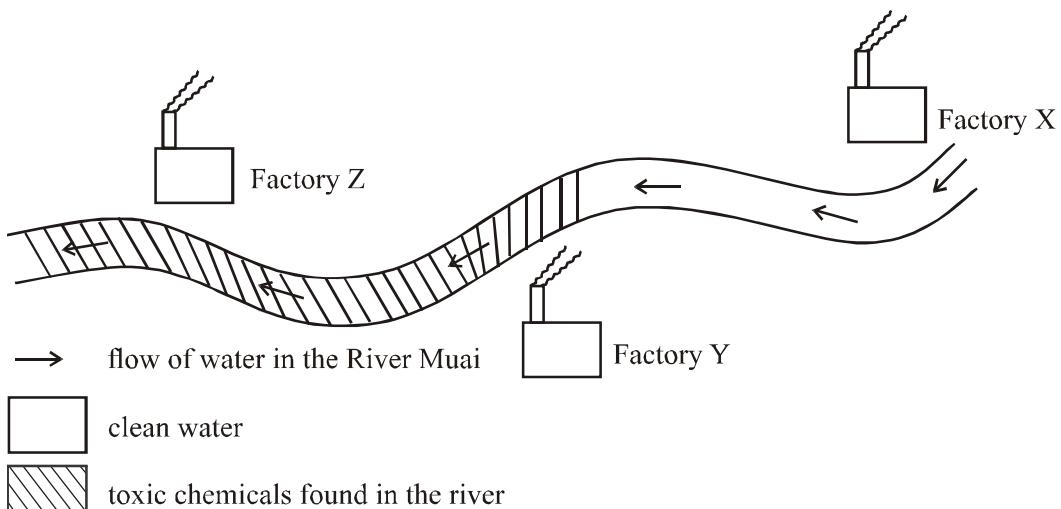
21. Which of the following is correctly defines an aquifer ?

- (1) Water percolates into the soil and remains there as moisture
- (2) Clouds bring fresh water as rain to the land
- (3) The ground water is stored in between layers of porous rocks
- (4) Rain water is used to recharge ground water

22. Observe the given figure carefully and select the correct option.



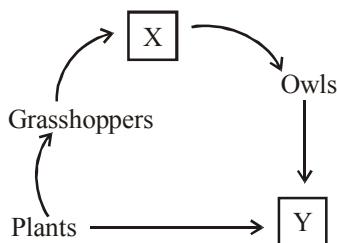
- I. A white precipitate is obtained.
  - II. Effervescence is observed in the test tube containing lime water.
- (1) II only                    (2) I only                    (3) Both I and II                    (4) Neither I nor II
23. The metallic salt solution that gives a ‘reddish brown precipitate’ with Ammonium hydroxide is
- (1)  $\text{FeCl}_3$                     (2)  $\text{Pb}(\text{NO}_3)_2$                     (3)  $\text{ZnSO}_4$                     (4)  $\text{CuSO}_4$
24. Which of the following is commonly called polyamide ?
- (1) Orlon                    (2) Nylon                    (3) Terylene                    (4) Rayon
25. Which acid is used in soda acid fire extinguisher ?
- (1)  $\text{HNO}_3$                     (2)  $\text{HCl}$                     (3)  $\text{H}_2\text{SO}_4$                     (4)  $\text{CH}_3\text{COOH}$
26. Which of the following is the best explanation for statement ?  
 “Polystyrene foam is used in insulating refrigerators and cold stores”.
- (1) Polystyrene foam is heavy thus acts as a proper insulator.  
 (2) Polystyrene foam is the cheapest among all rest insulators.  
 (3) When air is blown through molten polystyrene it forms light foam, which is excellent insulating and packaging material.  
 (4) Polystyrene foam is biodegradable in comparison to rest polymeric insulators.
27. A group of scientists discovered that certain stretches of the River Muai were polluted with toxic chemicals.



Which factory/factories was/were most likely responsible for the water pollution ?

- (1) Factory X                    (2) Factory Z  
 (3) Factory Y                    (4) Not possible to tell

28. Identify raw material used for making microwave oven-wares.
- (1) Polyethylene
  - (2) Polyvinyl chloride
  - (3) Polypropylene
  - (4) Polytetrafluoroethylene
29. Which oxide can be reduced to the metal using carbon ?
- (1) Zinc oxide
  - (2) Magnesium oxide
  - (3) Sodium oxide
  - (4) All of these
30. Which of the following is not an example of physical change ?
- (1) Dissolving sugar in water
  - (2) Casting iron in moulds
  - (3) Setting of cement
  - (4) Magnetisation of iron
31. Which statement about the mammalian circulatory system is correct ?
- (1) The thickness of walls of veins is greater than that of arteries.
  - (2) The order of decreasing velocity of blood flow is : veins > capillaries > arteries.
  - (3) The total surface area of the capillaries is considerably greater than that of all the arteries and veins combined.
  - (4) In order to return blood to the heart, the blood pressure in veins is higher than it is in the arteries.
32. Select the incorrect statement.
- (1) Phloem tubes are only found in the leaves of plants as this is where the sugars are made.
  - (2) Volume of blood in an average human adult is 10 liters.
  - (3) Blood contains many more white blood cells than red blood cells.
  - (4) All of the above
33. Study the food chain carefully.



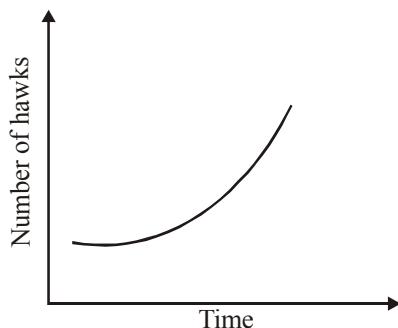
Which of these can we say about organisms X and Y based on the above figure ?

- (1) X is a carnivore, Y is a herbivore
- (2) X is an omnivore, Y is a carnivore
- (3) X is a herbivore, Y is a herbivore
- (4) X is a carnivore, Y is an omnivore

34. Study the food chain given below

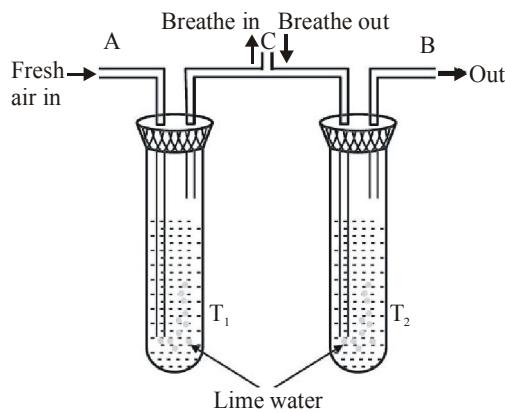
maize → mouse → weasel → hawk

The population of hawks over a period of time is represented by the graph shown below.



Which of the following show how the other populations are affected ?

- (A) There is a decrease in the population of the weasels.  
 (B) There is an increase in the population of the maize.  
 (C) There is a decrease in the population of the maize.  
 (D) There is an increase in the population of the mouse.
- (1) A and C                    (2) A, C and D                    (3) A and D                    (4) B, C and D
35. Observe the given apparatus carefully showing an activity performed to compare the carbon dioxide content of inhaled and exhaled air. What would be the observation for  $T_1$  and  $T_2$  test tubes and its correct explanation? [(+) indicates milky colouration in limewater]



$T_1$	$T_2$	Explanation
(1) +++	++	$\text{CO}_2$ content is a little higher in inhaled air
(2) +++++	+	$\text{CO}_2$ content is considerably higher in inhaled air
(3) +	++++	$\text{CO}_2$ content is considerably higher in exhaled air
(4) ++	++	$\text{CO}_2$ content is same in both inhaled and exhaled air

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

**Column I**

- |               |                            |
|---------------|----------------------------|
| (a) Earthworm | (i) Pulmonary respiration  |
| (b) Human     | (ii) Branchial respiration |
| (c) Prawn     | (iii) Tracheal respiration |
| (d) Insects   | (iv) Cutaneous respiration |
- (1) (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)  
(2) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)  
(3) (a) - (iii), (b) - (ii), (c) - (iv), (d) - (i)  
(4) (a) - (iv), (b) - (ii), (c) - (i), (d) - (iii)

**Column II**

**37.** Which is the odd one out ?

Karan swiss; Karan fries; Sahiwal; Frieswal

(1) Sahiwal  
(3) Karan fries

(2) Karan swiss  
(4) Frieswal

**38.** Combine is a machine used for

- (1) irrigation  
(3) transplantation
- (2) sowing  
(4) harvesting

**39.** Given below are steps written randomly for the experiment to show that light is essential for photosynthesis.

- (i) Pluck the leaf to be experimented  
(ii) Cover a portion of leaf on both sides by using strips of black paper  
(iii) Keep the plant in dark place for three days to destarch its leaves  
(iv) Test the experimental leaf for the presence of starch  
(v) Expose the plant to sunlight for four hours  
(vi) Remove the black paper strips from the leaf

Which of the following sequences of steps is to be followed for the successful run of the experiment?

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

**40.** In which part of alimentary canal does the digestion of fats get completed ?

- (1) Stomach
- (2) Food pipe
- (3) Small intestine
- (4) Large intestine

**41.** Unicellular organisms rarely grow larger than 1 mm in diameter. Beyond this size,

- (1) cells become visible to predators.
- (2) it is not possible for mitosis (cell division) to occur.
- (3) cell membranes begin to disintegrate.
- (4) diffusion alone is not adequate for nutrient supply.

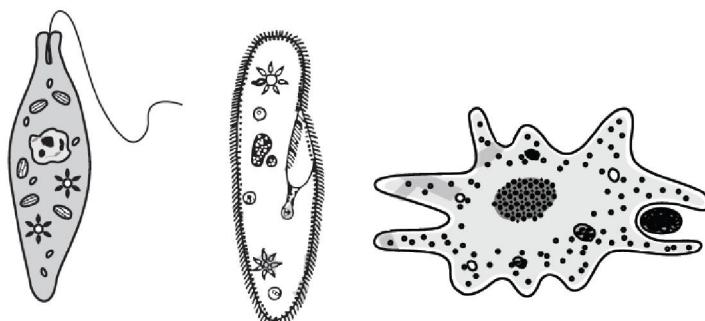
**42.** Extranuclear DNA is found in

- (1) Chloroplast
- (2) Endoplasmic Reticulum
- (3) Ribosomes
- (4) Nucleus

**43.** Which of the following is an example of cell devoid of nuclear membrane and mitochondria ?

- (1) Bacterial cell
- (2) Sperm
- (3) Protist
- (4) Sponge cell

**44.** The illustrations below are of a euglena, a paramecium, and an amoeba.



How do these microorganisms compare ?

- (1) They use different structures for movement.
- (2) They use different structures to control cell activity.
- (3) They all make their own food by photosynthesis.
- (4) They all have eyespots to sense sunlight.

$$\begin{array}{r} 6\frac{1}{4}-5\frac{3}{4}+6\frac{2}{4} \\ \hline 4\frac{1}{5}+6\frac{2}{5}-2\frac{3}{5} \end{array}$$

- (1) 0.875      (2) 0.675      (3) 1.225      (4) 0.450

**48.** If A : If the hypotenuse and an acute angle of one right triangle is equal to the hypotenuse and corresponding acute angle of another right triangle, then those two triangles are congruent  
R : By RHS property, the two right triangles are congruent. Then which of the following statements is true?

(1) A is true and R is not the correct explanation of A.  
(2) A is false and R is the correct explanation of A.  
(3) A is false and R is false.  
(4) None of these.

49. In  $\triangle ABC$ ,  $m\angle BAC = 70^\circ$ . Point D lies on  $\overleftrightarrow{BC}$  such that  $\angle ACD$  become exterior of  $\triangle ABC$ . If  $m\angle ACD = 120^\circ$  then the value of  $\angle ABC$  is \_\_\_\_\_.  
(1)  $50^\circ$       (2)  $60^\circ$       (3)  $20^\circ$       (4) none of these

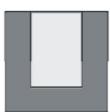
- 50.** Kritika shades various shapes on square sheets of paper, as shown. How many of these shapes have the same perimeter as the sheet of paper itself?



(1) 2

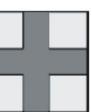


(2) 3



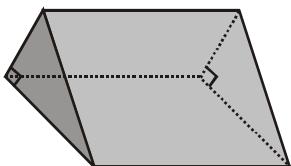
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(3) 4

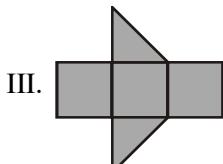
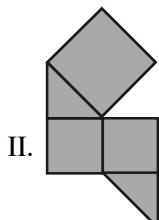


(4) 5

51.



Which of the following is/are the net of the above prism ?






**52.** The value of  $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \frac{1}{4 \times 5} + \frac{1}{5 \times 6} + \frac{1}{6 \times 7} + \frac{1}{7 \times 8}$  is

- (1)  $\frac{8}{7}$       (2)  $\frac{7}{8}$       (3) 1      (4)  $\frac{1}{1569}$

53. A bag contains some marbles. Half of the marbles are given to A,  $\frac{1}{3}$  of the remaining to B and the

remaining to C. If C has twice that of B, then the number of marbles is



**54.** If the sum of interior angles of a polygon is 3 times the sum of its exterior angles, then the number of sides of the polygon is



55. A general wishes to draw up his 36562 soldiers in the form of a solid square. After arranging them, he found that some of them are left over. How many are left ?



- 62.** One number is missing in the series. You have to understand the pattern of the series and insert the number.

6, 126, ?, 9, 108, 12, 7, 133, 19, 12, 72, 6

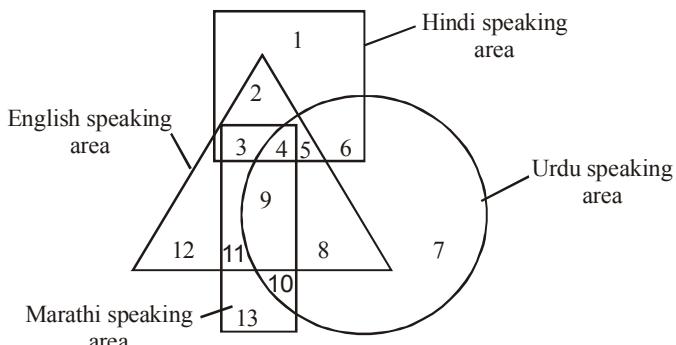


- 63.** Find the missing character (?)

5	8	11
7	?	4
3	2	10
71	98	127



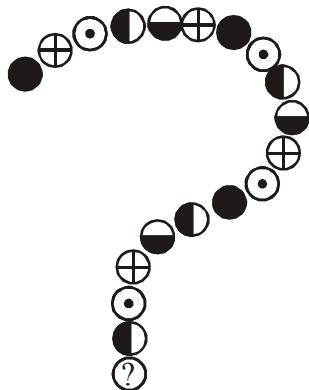
64. Following figure depicts an area where people speak four different languages. The triangle depicts English speaking area, the square depicts Hindi speaking areas, the circle stands for Urdu speaking area and the rectangle for area where people speak Marathi. Each part is numbered.



Which number depicts the area where, the three languages English, Marathi and Urdu are spoken but Hindi is not spoken ?



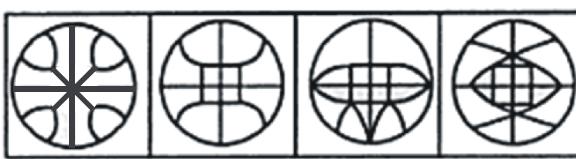
- 65.** A wooden cube is painted with purple on all the four adjoining faces and yellow on two opposite faces then it is cut into 216 identical smaller cubes then how many cubes are there having two different colour on them.



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



(X)



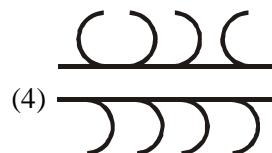
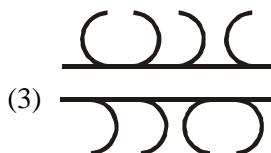
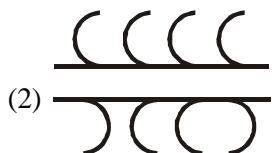
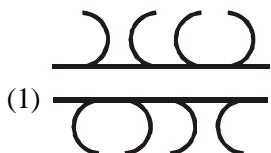
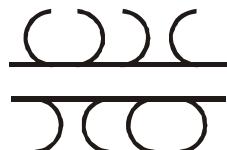
(1)

(2)

(3)

(4)

- 76.** Choose the correct mirror image of figure from the given alternatives (1), (2), (3) & (4).

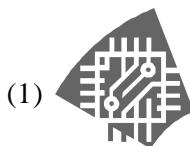
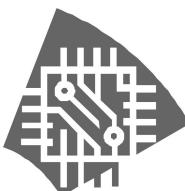


77. Find the missing term (?)

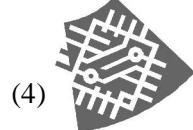
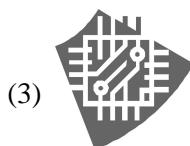
166, 257, 368, 499, 6410, ?



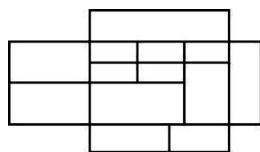
- 78.** Choose the correct water image of figure from the given alternatives (1), (2), (3) & (4).



(2)

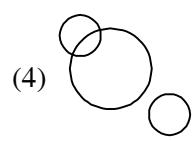
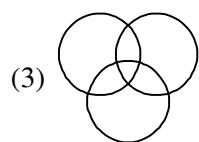
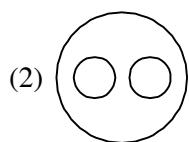
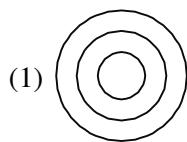


**79.** How many Quadrilaterals does this diagram have?






**80.** Choose the Venn diagram which best illustrates the three given classes in question : State, Country, City



**ANSWER KEY**

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