PART I : PHYSICS

*This section contains **10 Single Choice Questions (Q : 01 to Q : 10).** Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

1. When you touch a metal spoon in hot soup, it feels hot due to —
(A) Convection
(B) Radiation
(C) Conduction
(D) Insulation

2. What is the unit of electric current?
(A) Volt
(B) Ampere
(C) Ohm
(D) Watt

3. Match **Column – I** with **Column – II** and select the correct answer using the codes given below.

Column – I	Column – II
P. Ammeter.	**1.** Measures current, voltage, and resistance
Q. Voltmeter.	**2.** Detects very weak current; used in labs
R. Galvanometer.	**3.** Measures potential difference; connected in parallel
S. Multimeter.	**4.** Measures electric current; connected in series

Code :

	P	*Q*	*R*	*S*
(A)	1	2	3	4
(B)	4	3	2	1
(C)	3	1	4	2
(D)	2	1	4	3

4. The functioning of an electric bell primarily relies on which physical effect of electric current?
(A) Mechanical
(B) Chemical
(C) Magnetic
(D) Heating

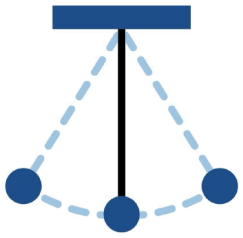
5. Mohit goes to school with his father by car. They travel half the distance at a speed of 40 km/h and the remaining half at 60 km/h. What is the average speed of the car during the entire journey?
(A) 48 km/h
(B) 50 km/h
(C) 52 km/h
(D) 54 km/h

Space for rough work

6. **Assertion (A) :** A silvered surface is used in a thermos to prevent heat loss.
Reason (R) : Silvered surfaces are good absorbers of radiation.
(A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).
(B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).
(C) Assertion (A) is true and Reason (R) is false.
(D) Assertion (A) is false and Reason (R) is true.

Paragraph for Questions 07 & 08

A group of students performed a pendulum experiment in a lab. They counted 20 oscillations in 30 seconds. Then, they changed the length of the pendulum and now counted 20 oscillations in 40 seconds.



Simple Pendulum Experiment

7. What is the new time period after changing the pendulum length?
(A) 2.5 s
(B) 2 s
(C) 1.8 s
(D) 1.5 s

8. What happened to the time period after increasing the length?
(A) It increased
(B) It decreased
(C) It remained same
(D) Cannot be predicted

9. **Assertion (A) :** Uniform motion implies constant acceleration with zero magnitude.
Reason (R) : Constant speed does not involve any change in velocity.
(A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).
(B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).
(C) Assertion (A) is true and Reason (R) is false.
(D) Assertion (A) is false and Reason (R) is true.

Space for rough work

Sequence Based

10. Sequence of heat transfer when boiling water in a metal pot on a gas stove:

P. Heat is conducted through metal to bottom of water

Q. Water at the bottom heats up and rises

R. Gas flame transfers heat to metal pot

S. Convection circulates water until boiling

Which list shows the steps in the correct order?

(A) P, R, Q, S

(B) R, P, Q, S

(C) R, P, S, Q

(D) P, Q, S, R

Space for rough work

PART II : CHEMISTRY

*This section contains **10 Single Choice Questions (Q : 11 to Q : 20)**. Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

11. A few changes are given below :

P. Making almirah from wood.

Q. Corrosion of an iron pot

R. Making an aeroplane from a paper.

S. Formation of acid rain from air pollutants.

T. Photosynthesis.

U. Cutting of paper

Classify these changes into :

I. Irreversible-physical change

II. Chemical change

III. Reversible-physical change.

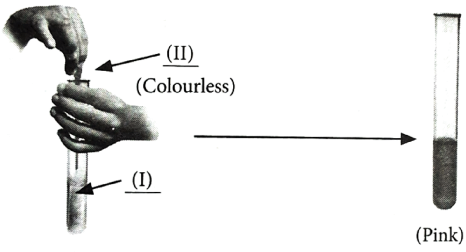
(A) I-P, U; II- Q, S, T; III - R

(B) I-P, Q, T; II-S, U; III - R

(C) I-P; II - Q, S; III - R, T, U

(D) I-U; II- R, S; III - P, Q, T

12. Identify I and II from diagram



(A) I is a base and II is Methyl orange

(B) I is an acid and II is Methyl orange

(C) I is a base and II is Phenolphthalein

(D) I is an acid and II is Phenolphthalein

13. Match **Column – I** with **Column – II** and select the correct answer using the codes given below.

Column – I	Column – II
P. Iron nail + Copper sulphate	**1.** Carbon dioxide
Q. Vinegar + Baking soda	**2.** Calcium carbonate
R. Iron + Moisture + Air	**3.** Green colour
S. Lime water + Carbon dioxide	**4.** Rust

Code :

	P	*Q*	*R*	*S*
(A)	4	2	3	1
(B)	2	3	4	1
(C)	2	1	4	3
(D)	3	1	4	2

14. Which of the following is **NOT** a correct example of a neutralisation reaction?

(A) $H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$

(B) $HCl + NH_4OH \rightarrow NH_4Cl + H_2O$

(C) $CH_3COOH + NaOH \rightarrow CH_3COONa + H_2O$

(D) $CO_2 + H_2O \rightarrow H_2CO_3$

Space for rough work

15. Which of the following is/are correctly matched?

S.No.	Reactants	Products	Changes observed
I	Mg + O_2	MgO_2	White powder
II	Citric acid+Baking soda	Salt+CO_2+H_2O	Brisk effervescence
III	HCl+NaOH	NaCl+H_2O	Release of heat
IV	$Ca(OH)_2$+ CO_2	$CaCO_3$ +H_2O	Milky appearance

(A) II and III

(B) I, II and III

(C) II, III and IV

(D) I and IV

16. **Assertion (A) :** Aqueous solutions of C_2H_5OH and $C_6H_{12}O_6$ do not give Litmus test.

Reason (R) : All hydrogen containing substances are not acidic.

(A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).

(C) Assertion (A) is true and Reason (R) is false.

(D) Assertion (A) is false and Reason (R) is true.

Paragraph for Questions 17 & 18

The pH scale plays a crucial role in various activities of our daily life. A small change in blood pH can lead to serious health problems. Farmers use the pH of soil to determine which crops can grow better. In industries, pH is used in the manufacturing of medicines, cosmetics, food products, and cleaning agents.

17. For the treatment of acidic soil which of the following substances farmers do not mix in soil?

(A) Quicklime

(B) Slaked lime

(C) Lime juice

(D) Limestone

18. What are the molecular formulae of Slaked lime and Quick lime respectively?

(A) CaO and $Ca(OH)_2$

(B) $Ca(OH)_2$ and $CaCO_3$

(C) $Ca(OH)_2$ and CaO

(D) $CaCO_3$ and $Ca(OH)_2$

Space for rough work

19. Assertion (A) : The ash produced by burning of magnesium when dissolved in water, turns red litmus blue.

Reason (R) : On dissolving in water, magnesium oxide forms magnesium hydroxide which is acidic in nature.

(A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).

(C) Assertion (A) is true and Reason (R) is false.

(D) Assertion (A) is false and Reason (R) is true.

Sequence Based

20. Which of the following is correct sequence of burning of a fuel?

(A) Presence of Fuel → Presence of Oxygen (Air) → Combustion starts → Heat to reach ignition temperature → Heat and light

(B) Presence of Fuel → Presence of Oxygen (Air) → Heat to reach ignition temperature → Combustion starts → Heat and light

(C) Presence of Fuel → Presence of Oxygen (Air) → Heat to reach ignition temperature → Heat and light → Combustion starts

(D) Presence of Fuel → Heat and light → Heat to reach ignition temperature → Combustion starts → Presence of Oxygen (Air)

Space for rough work

PART III : BIOLOGY

*This section contains **10 Single Choice Questions (Q : 21 to Q : 30)**. Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

21. During the primary nutritional process in most green plants, a significant gaseous by-product is released from specialized pores on the leaves. This particular gas is essential for:

(A) The absorption of carbon dioxide from the atmosphere into plant cells.

(B) The formation of glucose, serving as the plant's primary energy source.

(C) The synthesis of chlorophyll, essential for light capture.

(D) The metabolic activities of nearly all aerobic life forms on Earth.

22. Read the given statements and select the option that correctly fills the blanks in any two of them.

(i) _____are the tiny out-growths on the inner surface of the small intestine.

(ii) Mucus, hydrochloric acid and digestive juice are secreted by _____.

(iii) Length of small intestine in an adult human being is about_____.

(iv) _____mainly absorbs water from the undigested food.

(A) (i) Villi (ii) Stomach

(B) (iii) 5m (iv) Small intestine

(C) (i) Buds (iii) 7m

(D) (ii) Small intestine (iv) Large intestine

23. Match **Column – I** with **Column – II** and select the correct answer using the codes given below.

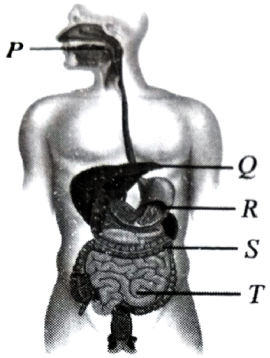
Column – I	**Column – II**
P. Xylem	**1.** Movement of sugars
Q. Phloem	**2.** Evaporation of water from leaves
R. Transpiration	**3.** Unidirectional flow of water and minerals
S. Root Pressure	**4.** Force pushing water up from roots

Code :

	P	***Q***	***R***	***S***
(A)	1	2	3	4
(B)	4	3	2	1
(C)	3	1	2	4
(D)	2	1	4	3

Space for rough work

24. Identify P, Q, R, S and T in the given figure and select the correct statement regarding them.



(A) S is the organ where starch is broken down into sugar by the action of saliva.

(B) Digestive juice secreted by Q gets stored in P

(C) Many bacteria that enter our body along with the food get killed in the organ R.

(D) Organ T absorbs water and also some salts from the undigested food materials.

25. Which of the following options contains the correct equation for aerobic respiration?

(A) $C_6H_{12}O_6 + 6O_2 \rightarrow CO_2 + C_2H_2OH +$ Energy

(B) $CO_2 + H_2O \rightarrow C_6H_{12}O_6 + 6O_2 +$ Energy

(C) $C_6H_{12}O_6 + 60_2 \rightarrow 6CO_2 + 6H_2O +$ Energy

(D) $C_6H_{12}O_6 + 6CO_2 \rightarrow 6O_2 + 6H_2O +$ Energy

26. **Assertion (A) :** Transpiration is often referred to as a "necessary evil" for plants.

Reason (R) : Transpiration creates a suction in the xylem, which is the primary driving force for the ascent of water and minerals from the roots to the leaves.

(A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).

(C) Assertion (A) is true and Reason (R) is false.

(D) Assertion (A) is false and Reason (R) is true.

Paragraph for Questions 27 & 28

In the body, some organs are glands that release enzymes, while some also help in digestion. For example, the salivary gland secretes saliva to digest starch, the liver produces bile to break fats, and the pancreas secretes both hormones and digestive enzymes.

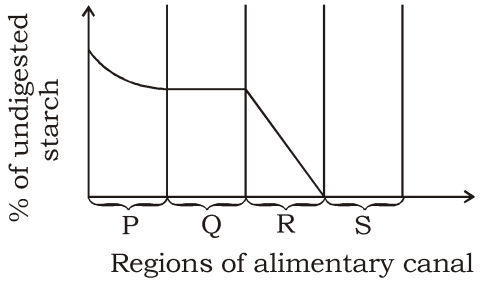
In the percentage graph , transformation of food content varies across different regions of the alimentary canal.

Space for rough work

A noticeable decline in certain components reflects the action of digestive enzymes along the path.

Venn diagrams help to classify organs based on such overlapping functions.

27. Refer to the given graph representing the percentage of undigested starch in different parts of the alimentary canal. **Identify regions of alimentary canal P-S and select the correct statement.**



(A) P could be mouth, Q could be oesophagus, R could be stomach and S could be small intestine.

(B) Digestion of food is completed in R which also possesses many finger-like projections in its wall that provide a large surface area for the absorption of food molecules.

(C) Q secretes digestive juice which contains mucus and enzyme amylase.

(D) P makes the medium acidic to help the digestive enzyme to act upon food stuff.

28. What is the role of pancreatic juice?

(A) Trypsin digests emulsified fats and lipase digests protein

(B) Trypsin and lipase both digest fats

(C) Trypsin digests proteins and lipase digests emulsified fats

(D) Trypsin digests proteins and lipase digests carbohydrates

29. **Assertion (A) :** Plants do not need specialized respiratory organs.

Reason (R) : Plants do not have great demands for gaseous exchange.

(A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).

(C) Assertion (A) is true and Reason (R) is false.

(D) Assertion (A) is false and Reason (R) is true.

Space for rough work

Sequence Based

30. Given are different parts of the respiratory tract.

P. Nasal cavity

Q. Alveolar duct

R. Larynx

S. Respiratory bronchioles

T. Epiglottis

U. Terminal bronchioles

V. Lobular bronchioles

W. Trachea

X. Bronchus

Which path a molecule of carbon dioxide in the alveolus of the inferior lobe of the lung takes on its journey to the outside?

(A) $Q \rightarrow U \rightarrow S \rightarrow V \rightarrow X \rightarrow W \rightarrow R \rightarrow T \rightarrow P$

(B) $Q \rightarrow S \rightarrow U \rightarrow V \rightarrow X \rightarrow W \rightarrow T \rightarrow R \rightarrow P$

(C) $Q \rightarrow S \rightarrow U \rightarrow V \rightarrow X \rightarrow W \rightarrow R \rightarrow T \rightarrow P$

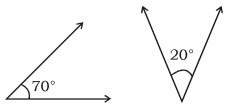
(D) $Q \rightarrow S \rightarrow U \rightarrow X \rightarrow V \rightarrow W \rightarrow R \rightarrow T \rightarrow P$

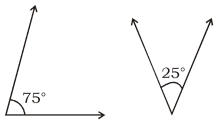
Space for rough work

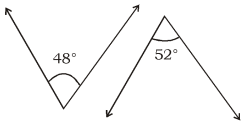
PART IV : MATHEMATICS

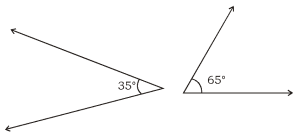
*This section contains **20 Single Choice Questions (Q : 31 to Q : 50)**. Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

31. Which pair of angles are complementary ?

(A) 

(B) 

(C) 

(D) 

Sequence Based

32. Consider a ray OC standing on a line AB such that A–O–B is a straight line.

P. Therefore their measures add to 180° : ∠AOC + ∠BOC = 180°

Q. By definition, angles that form a linear pair are supplementary

R. First identify that ∠AOC and ∠BOC form a linear pair

S. If ∠AOC = 60°, then ∠BOC = 180° – 60° = 120°.

Which list shows the steps in the correct order?

(A) R, Q, P, S

(B) P, R, Q, S

(C) R, P, Q, S

(D) P, Q, S, R

33. A student scores $\frac{5}{8}$ in maths, $\frac{3}{4}$ in science and $\frac{4}{5}$ in english. Which subject had the lowest score ?

(A) Maths

(B) Science

(C) English

(D) All are equal

34. **Assertion (A) :** Every integer is a rational number.

Reason (R) : Rational numbers are always non-terminating and non-repeating decimals.

(A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).

(C) Assertion (A) is true and Reason (R) is false.

(D) Assertion (A) is false and Reason (R) is true.

Space for rough work

35. If a = –2, find the value of $4a^2–3a+2$.

(A) 24

(B) 28

(C) 30

(D) 26

36. Which of the following statement/s is/ are **True(T)** or **False(F)** ?

(i) Vertically opposite angles are always equal.

(ii) The sum of angles on a straight line is 180°.

(iii) Two lines intersect at more than one point.

(iv) If two angles form a linear pair, they are Supplementary.

Code :

	(i)	*(ii)*	*(iii)*	*(iv)*
(A)	T	F	T	F
(B)	T	F	T	T
(C)	T	T	F	T
(D)	F	T	T	F

37. In a triangle, if two angles are 45° and 60°, what is the third angle ?

(A) 75°

(B) 90°

(C) 60°

(D) 45°

Paragraph for Questions 38 & 39

A school is preparing special maths kits for olympiad participants. Each kit contains $\frac{3}{5}$ meter of measuring tape, 0.75 meter of ribbon and $\frac{7}{10}$ meter of string. The school has a total of 15 meter of materal available. The goal is to create the maximum number of kits without wasting any materials.

38. What is the total length of material requried for one kit ?

(A) 1.85 meters

(B) 2.05 meters

(C) 1.45 meters

(D) 2.15 meters

39. What is the maximum number of complete kits that can be assembled with the available material ?

(A) 6

(B) 7

(C) 5

(D) 8

Space for rough work

40. Match **Column – I** with **Column – II** and select the correct answer using the codes given below.

Column – I		Column – II	
P.	a × (b + c) = a × b + a × c	**1.**	0
Q.	Reciprocal of a negative rational number	**2.**	Distributive Property of multiplication over addition
R.	The property shown by p/q × 1 = p/q	**3.**	Multiplicative identity
S.	The rational number that has no reciprocal	**4.**	is a negative rational number

Code :

	P	*Q*	*R*	*S*
(A)	1	2	3	4
(B)	4	3	2	1
(C)	3	1	2	4
(D)	2	4	3	1

41. A rectangular board has its length as x + 5 cm and width as 2x – 3 cm. Find the perimeter of rectangle in terms of x.

(A) 6x + 4

(B) 3x + 2

(C) 4x + 6

(D) 2x + 3

Sequence Based

42. Rearrange the parts to describe an equilateral triangle :

P. All there angles are equal,

Q. Each angle is 60°

R. In an equilateral triangle

S. And all three sides are equal in length.

(A) R, P, S, Q

(B) P, R, S, Q

(C) R, P, Q, S

(D) S, P, R, Q

43. ΔABC is a right angle triangle in which ∠A = 90° and AB = AC. The value of ∠B and ∠C will be:-

(A) ∠B = ∠C = 60°

(B) ∠B = ∠C = 30°

(C) ∠B = ∠C = 45°

(D) ∠B = ∠C = 50°

Space for rough work

44. **Assertion (A) :** The product of two proper fractions is always less than each individual fraction.

Reason (R) : When a proper fraction is multiplied by another proper fraction, the result is a smaller part of an already a smaller quantity.

(A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).

(C) Assertion (A) is true and Reason (R) is false.

(D) Assertion (A) is false and Reason (R) is true.

45. Simplify :

$$\left[\left(\frac{3}{4}\div\frac{-5}{8}\right)-\left(\frac{-7}{12}\times\frac{4}{21}\right)\right]+\left(\frac{5}{6}\div\left(\frac{2}{3}-\frac{1}{4}\right)\right)$$

(A) $\frac{45}{41}$

(B) $\frac{41}{45}$

(C) $\frac{35}{31}$

(D) $\frac{31}{35}$

46. Which of the following statement/s is/ are **True(T)** or **False(F)** ?

(i) A constant term has no variable part.

(ii) The product of 5x and 2y is 10xy.

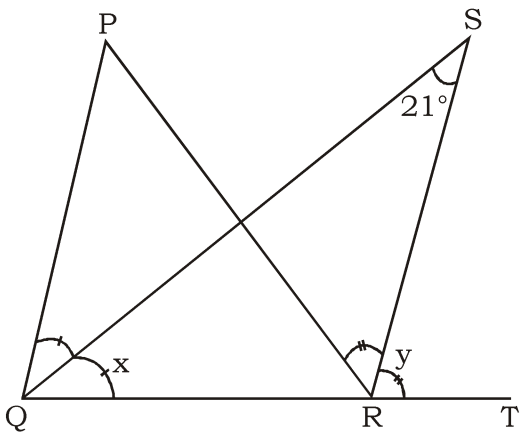
(iii) Subtracting $2x^2 + 3x$ from $5x^2 + x$ gives $3x^2 + 4x$.

(iv) The expression 7 is a monomial.

Code :

	(i)	*(ii)*	*(iii)*	*(iv)*
(A)	T	F	T	F
(B)	T	F	T	T
(C)	T	T	F	T
(D)	F	T	T	F

47. In the given figure, measure of ∠QPR is :



(A) 10.5°

(B) 42°

(C) 111°

(D) 50°

Space for rough work

Paragraph for Questions 48 & 49

The local municipality is renovating the school playground. They have decided to included a special "Adventure zone" shaped like a triangle. The contractor Mr. Singh is given a design for this zone, which is triangle ABC. According to the blueprint, the length of side AB is 15 meter and side BC is 20 meter. Mr. Singh notices that the ∠ABC is specified as 90°. For safety, all the corners of the adventure zone need to be rounded, and the lengths of the sides are critical for ordering the fencing material. A supervisor suggests adding a climbing net along the side AC.

48. What is the length of the climbing net needed for side AC ?

(A) 25 meter

(B) 35 meter

(C) 17.5 meter

(D) 10 meter

49. If the angle ∠BCA is x degrees, and the angle ∠BAC is y degrees, what is the sum of x and y ?

(A) 90°

(B) 180°

(C) 60°

(D) 45°

50. Match **Column – I** with **Column – II** and select the correct answer using the codes given below.

Column – I	**Column – II**
P. 0.25×0.4	**1.** $\frac{9}{7}$
Q. $\frac{3}{4} \div \frac{1}{2}$	**2.** $\frac{13}{15}$
R. Sum of $\frac{1}{5}$ and $\frac{2}{3}$	**3.** 0.1
S. Reciprocal of $\frac{7}{9}$	**4.** $\frac{3}{2}$

Code :

	P	***Q***	***R***	***S***
(A)	1	2	3	4
(B)	4	3	2	1
(C)	3	4	2	1
(D)	2	1	4	3

Space for rough work

PART V : LOGICAL REASONING & IQ

*This section contains **10 Single Choice Questions (Q : 51 to Q : 60)**. Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

51. In this given number series, find the next term:

4, 11, 31, 65, 193, ?

(A) 368

(B) 389

(C) 398

(D) 386

52. In this given alphabet series, find the next term:

TM, ZO, FQ, LS, ?

(A) RY

(B) RZ

(C) RU

(D) RX

53. Deepa starts from her house and cycles 4 km towards the North and then turns left and cycles 6 km. She again turns left and cycles for X km to reach her school. Point A is to the East of her school and also 3 km to the South of her house. What is the value of X ?

(A) 1 km

(B) 7 km

(C) 9 km

(D) 3 km

54. In this question, choose the correct mirror-image from alternatives (PQ is mirror):

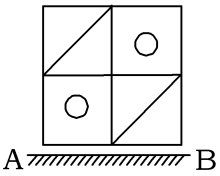
(A) ƎVIИSƎTИI

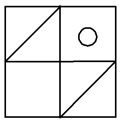
(B) IИTƎSИIVƎ

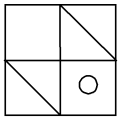
(C) ƎVISИƎTИI

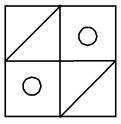
(D) IИTƎИSIVƎ

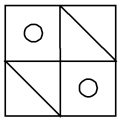
55. In this question, choose the correct water-image from alternatives:



(A) 

(B) 

(C) 

(D) 

Space for rough work

56. Manisha ranks eleventh in a class of 46 students. What is her rank from last?

(A) 35th

(B) 36th

(C) 37th

(D) 38th

57. If A denotes 'addition', B denotes 'multiplication', C denotes 'subtraction', and D denotes 'division', then what will be the value of the following expression ?

66 A (132 D 12) C (4 A 3) B (15 D 5) A 16 B (–3)

(A) 8

(B) 10

(C) 6

(D) 56

58. Which two signs should be interchanged to make the given equation correct ?

36 ÷ 2 × 12 + 3 – 6 = 24

(A) – and ÷

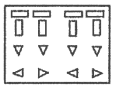
(B) × and –

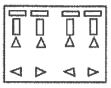
(C) + and ×

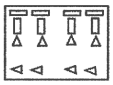
(D) ÷ and ×

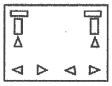
59. Find the completely unfolded figure of Z.

X Y Z

(A) 

(B) 

(C) 

(D) 

60. Find out from amongst the four alternatives as to how the pattern would appear when the transparent sheet is folded at the dotted line.

X

(A) 

(B) 

(C) 

(D) 

Space for rough work