MEGA

ResoFAST 2025

Resonance Future Achievers Scholarship Test

TEST PAPER

Duration
1 Hour

Currently Studying in
Class - VIII

Max. Marks
160

Important Instructions to the Students

1. The question paper contains a total of **40 Multiple Choice Questions**, numbered from **Q1 to Q40**.
2. **Pattern & Marking Scheme of each section:**

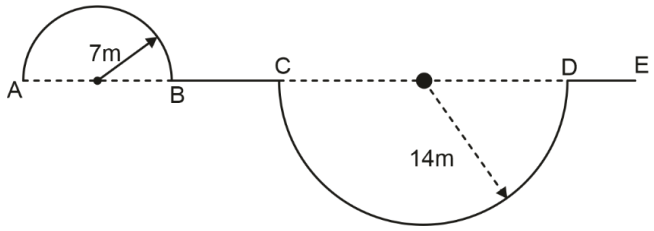
Parts	Subject	No. of questions	Questions Range	Marks
Part-A	Physics	07	Q1 to Q7	28 M
Part-B	Chemistry	07	Q8 to Q14	28 M
Part-C	Biology	07	Q15 to Q21	28 M
Part-D	Mathematics	14	Q22 to Q35	56 M
Part-E	Mental Ability	05	Q36 to Q40	20 M
	Total	**40**	**Q1 to Q40**	**160 M**

3. Attempt all questions, each having only one correct answer.
4. Each question carries **4 marks**.
5. Candidates must ensure that the **OMR Sheet is not folded or damaged** in any way. Avoid making any **stray marks** on the OMR sheet. **Do not** write your **Roll Number** anywhere except in the designated space provided in the OMR Sheet.
6. The use of **white correction fluid** is **strictly prohibited** on the OMR Sheet.
7. The use of **blank papers, clipboards, log tables, slide rules, calculators, mobile phones**, or **any other electronic gadgets** is **strictly not permitted** inside the examination hall.
8. There is an empty page left at the end of this question paper for **rough work.**

PART A – PHYSICS

1. Speed on the Curvy Track

A boy starts his motion from point A reaches to point B on a semi-circular track in 2 sec and then goes from B to C in next 2 sec moving with speed 7 m/sec. Thereafter he moves from C to D on semi-circular track in next 4 sec and finally reaches to point E with speed 14 m/sec in next 2 sec as shown in figure.



Which of the following is incorrect?

(A) Speed of the boy is not constant throughout his motion.

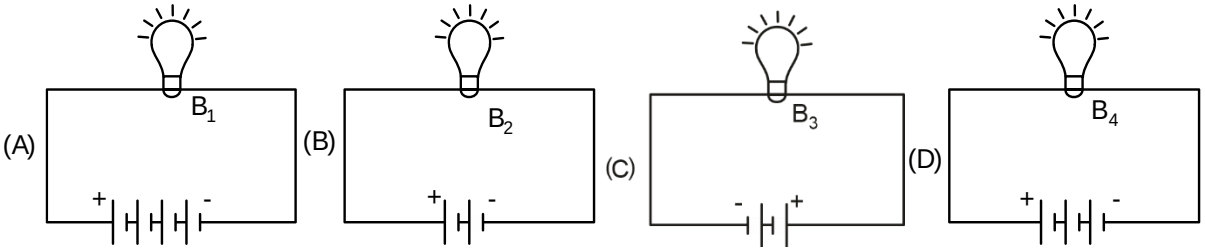
(B) The total displacement travelled by the boy is 108m

(C) The average speed of the boy is 10.8 m/s.

(D) Displacement along a closed path is always zero.

2. Who Shines Brightest?

Which of the following option is correct?



Statement I: B_2 and B_3 will glow with same brightness

Statement II: B_1 will glow the brightest

Statement III: B_4 will glow the brightest

Statement IV: B_1 and B_4 will glow with same brightness

(A) Statement I and statement II are correct

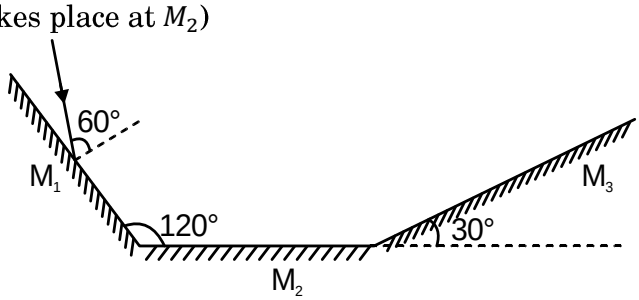
(B) Statement I and statement IV are correct

(C) Statement III and statement IV are correct

(D) Statement I and statement III are correct

3. Mirror Maze Mystery

Three mirrors M_1, M_2 and M_3 are placed as shown in the figure. A ray of light is incident on mirror M_1 at an angle of 60°. Find the possible angle of reflection of the reflected ray from the mirror M_3. (Assume reflection takes place at M_2)

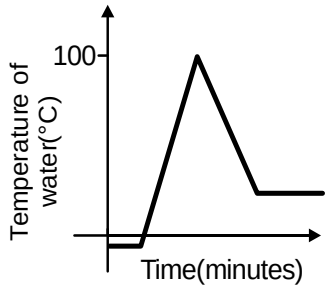


(A) 30° (B) 20° (C) 60° (D) No reflection at all

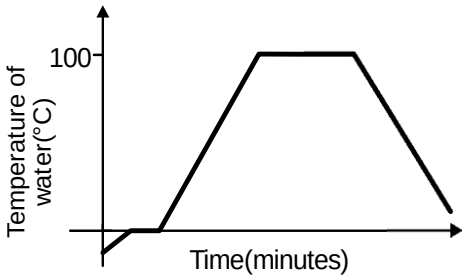
4. The Temperature Roller-Coaster

Sita places an ice cube in a small dish and heats it until it completely melts. Once all the ice is melted, she continues heating the water until it boils. After boiling for a few minutes, Sita removes the pan from the stove and places it in the refrigerator to cool it. Which of the following graphs correctly represents the temperature variation with time?

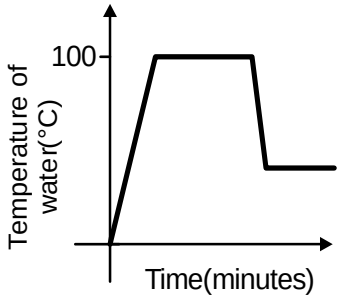
(A)



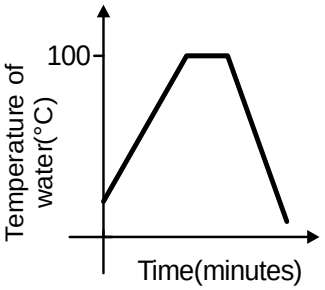
(B)



(C)



(D)



5. The Unmoving Block Mystery

A 5 kg wooden block (Block X) rests on a rough table. A 10 N force is applied horizontally, but the block does not move. Analyze the statements:

(i) The net force on the block is zero, so it stays at rest.

(ii) The static friction is less than 10 N, which keeps the block stationary.

(iii) The gravitational force and normal force are an action-reaction pair (Newton's Third Law).

(iv) If the block is flipped onto its smallest face, the pressure increases, but the gravitational force remains unchanged.

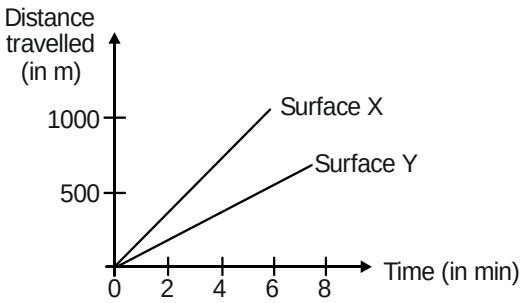
(v) If the applied force is increased to 15 N and the block still doesn't move, the frictional force must be 15 N.

Which statement(s) are INCORRECT?

(A) (i), (iv), and (v) only
(B) (ii) and (iii) only
(C) (i) and (v) only
(D) (ii), (iii), and (iv) only

6. Which Path Slows You Down?

The given figure represents the distance-time graphs of a bicycle rolling on two surfaces *X* and *Y*.

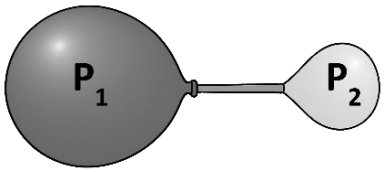


Which one of the following statements is correct about the surfaces *X* and *Y*?

(A) Surface *X* produces more friction.
(B) Surface *Y* produces more friction.
(C) Both surfaces produce equal friction.
(D) Smoothness of surfaces does not affect friction

7. Balloon Pressure Battle

Two balloons having some air inside it, is connected to each other through a straw as shown in the figure. Which one of the following statements is correct?



(A) Pressure P_1 is greater than P_2 and air will flow from P_1 to P_2

(B) Pressure P_1 is less than P_2 and air will flow from P_1 to P_2

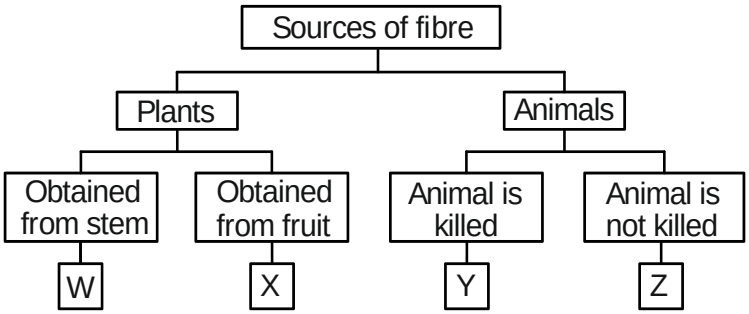
(C) Pressure P_1 is greater than P_2 and air will flow from P_2 to P_1

(D) Pressure P_1 is less than P_2 and air will flow from P_2 to P_1

PART B – CHEMISTRY

8. Who Becomes Your Fabric?

Refer to the given flow chart and select the correct option.



(A) X-Nylon, Y-Jute (B) W-Cotton, Y-Silk

(C) W-Linen, Z-Wool (D) X-Jute, Z-Polyester

9. Changes Gone Wrong!

A few changes are classified in the given table:

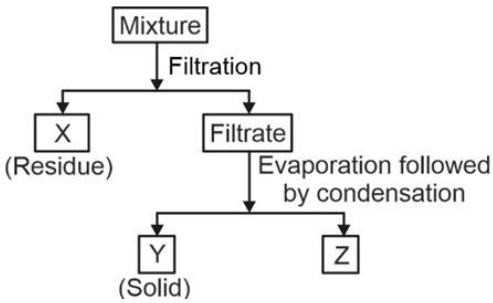
S.No.	Change	Type	Reversible
I.	Mixing sand and water	Physical	✓
II.	Frying of potatoes	Chemical	×
III.	Mixing lemon juice and baking powder	Physical	✓
IV.	Mixing of cement with water	Physical	×
V.	Boiling of water	Physical	×

Changes classified incorrectly are

(A) II and IV only (B) I and III only (C) III, IV and V only (D) III and V only

10. Residue to Vapour Riddle

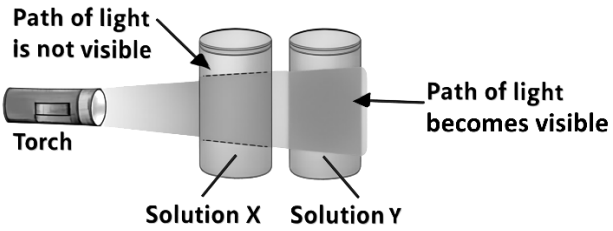
Study the given flow chart and identify X, Y and Z.



	X	Y	Z
A.	Sugar	Salt	Water
B.	Sand	Water	Chalk powder
C.	Chalk powder	Sand	Water
D.	Chalk powder	Sugar	Water

11. The Tyndall Torch Test

Observe the given figure carefully.



Select the correct statement(s) from the following.

I. Solution X can be copper sulphate solution and solution Y can be a mixture of water and milk.

II. The given experiment represents Brownian motion of colloidal particles.

III. The given experiment shows that a true solution exhibits Tyndall effect while a colloidal solution does not exhibit Tyndall effect.

IV. The given experiment shows that a colloidal solution exhibits Tyndall effect while a true solution does not exhibit Tyndall effect.

(A) I and IV only (B) II and IV only (C) I and III only (D) I only

12. pH Warriors in Order

The pH values of different solutions are listed below:

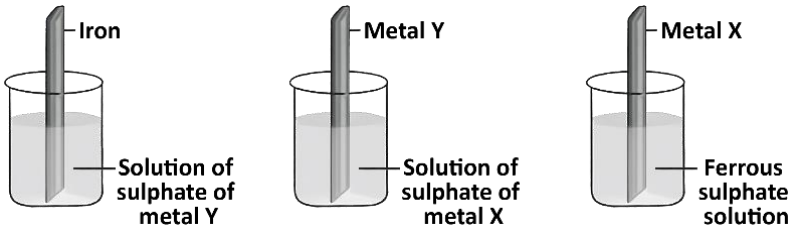
Solution	pH
T	3.5-3.8
U	8.2-9.6
V	10.5-11.2
W	4.5-5.2

Arrange the given solutions in increasing order of their OH^- ion concentration and select the correct option.

(A) T < V < W < U (B) V < U < W < T (C) T < W < U < V (D) W < U < T < V

13. Displacement Duel of Metals

The following set-up was arranged by Rachit to find out the reactivity order of metals.



The following observations were made by him during the experiment.

(i) The clean iron metal did not react with solution of sulphate of metal Y.

(ii) Clean metal Y dissolved in solution of sulphate of metal X and deposition of metal X took place.

(iii) Clean metal X dissolved in ferrous sulphate solution and iron metal was deposited.

Select the correct statement regarding the experiment.

(A) Metals X and Y could be zinc and aluminium respectively.

(B) Metals X and Y could be copper and calcium respectively.

(C) Metals X and Y could be silver and magnesium respectively.

(D) The reactivity order of the three metals is X > Y > Fe.

14. The Mighty Metal Behaviour

Select the correct statement(s) from the following.

(i) Non-metals react with acids to displace hydrogen gas.

(ii) During anodising, a clean aluminium article is made the cathode and is electrolysed with dilute sulphuric acid.

(iii) Sodium and potassium react violently with cold water and the reaction is endothermic.

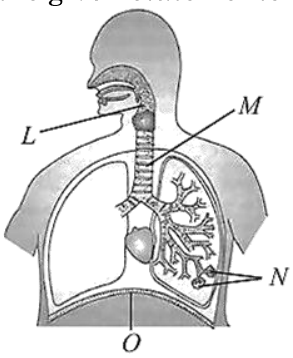
(iv) During electrolytic refining of metals, on passing the current through the electrolyte, the pure metal ions from the impure anode enter into the electrolyte.

(A) (i) and (iv) only (B) (ii) and (iii) only (C) (ii) and (iv) only (D) (iv) only

PART C – BIOLOGY

15. Breathing System Breakdown

Refer to the given figure and read the given statements regarding it.



I. L provides a passage into trachea through a slit-like aperture called glottis.

II. M has cartilaginous rings to prevent it from collapsing in between breaths.

III. Wall of *N* is composed of moist, non-ciliated squamous epithelium and it is the main site of gaseous exchange.

IV. During inhalation *O* becomes dome shaped whereas during exhalation it becomes flat.

Which of the given statements is/are incorrect?

(A) I and II only (B) II and III only (C) I and III only (D) IV only

16. The Metabolic Breath Mystery

Oxygen consumption can be used as a measure of metabolic rate because oxygen is

(A) Required by all living organisms

(B) Required to break down lactic acid that is produced in muscles

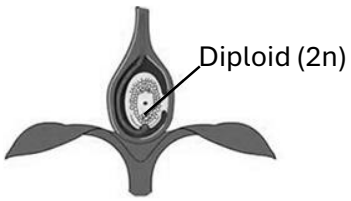
(C) Necessary for Adenosine Tri-Phosphate (ATP) synthesis by oxidation

(D) Necessary to replenish glycogen levels

17. From Fusion to Life

Sexual reproduction in plants and animals involve the union of two gametes to form a single cell called zygote. Gametes include the egg and sperm cells. Zygote is formed after the sperm fertilizes the egg, resulting in diploid chromosome. The zygote develops into:

(Hint: The following figure indicates fertilized egg)



(A) Embryo (B) Endosperm (C) Carpel (D) Ovule

18. Green Cells, Big Power

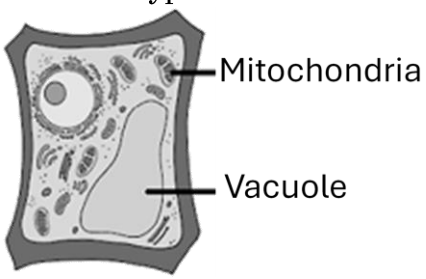
What is the primary function of chloroplasts?

(A) Transfer of potassium ions (B) Production of oxygen

(C) Storage of water and starch (D) Production of carbon dioxide

19. Who Owns This Organelle?

The given cell is best described as what type of cell?



(A) White blood cell (B) Prokaryotic cell

(C) Plant cell (D) Animal cell

20. The Forest Chain Reaction

A village near a forest notices a sharp decline in the population of frogs over the past two years. Soon after, farmers observe a large increase in insect pests that damage crops. At the same time, many villagers have been cutting trees for firewood, and a small area of the forest has been converted into farmland. Using your understanding of "Conservation of Plants and Animals," select the option that explains how the sudden increase in insect pests in the village.

(A) Due to increased rainfall (B) Due to decrease in number of frog predators

(C) Due to overuse of chemical fertilizers (D) Due to increase in soil nutrients

21. Microbes: Friends or Foes?

A food-processing company stores large quantities of wheat flour in a warehouse. After a few months, workers notice that the stored flour has developed a bad smell, greenish patches, and has become unfit for consumption. At the same time, a group of farmers nearby uses *Rhizobium*-inoculated seeds, and they observe a significant increase in crop yield.

Which of the given case best illustrates the important principle about microorganisms?

(A) Microorganisms only cause diseases

(B) Microorganisms are active only in laboratories

(C) Microorganisms can be both beneficial and harmful depending on the situation

(D) Microorganisms affect only living organisms, not stored food

PART D – MATHEMATICS

22. The Perfect Power Puzzle

The number $3^9 + 3^{12} + 3^{15} + 3^n$ is a perfect cube of an integer for natural number n, then n is

(A) 12 (B) 13 (C) 14 (D) 15

23. The Fare Mystery Challenge

A bus is carrying 45 passengers, some with 50-paisa tickets and the remaining with 1-rupee tickets. If the total fare received from all these 45 passengers is Rs 32.50, find the number of passengers with 50-paisa tickets.

(A) 20 (B) 25 (C) 35 (D) 30

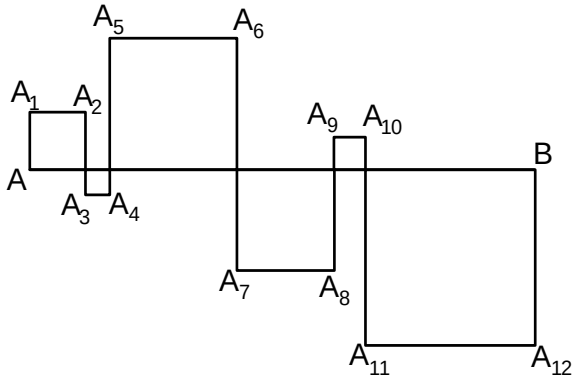
24. Fraction Fight Finale

Find the result of the operation: $3-\frac{1}{2}-\frac{1}{6}-\frac{1}{12}-\frac{1}{20}-\frac{1}{30}-\frac{1}{42}-\frac{1}{56}$

(A) $2\frac{1}{2}$ (B) $2\frac{1}{4}$ (C) $2\frac{1}{6}$ (D) $2\frac{1}{8}$

25. How Long Is the Zigzag?

The squares on the figure are formed by intersecting the segment AB by the broken line $AA_1A_2 \ldots A_{12}B$. The length of AB is 24 cm. All the polygons in the figure given below are to be considered squares. What is the length of the broken line $AA_1A_2 \ldots A_{12}B$?



(A) 48 cm (B) 72 cm (C) 96 cm (D) 56 cm

26. Rooting the Rational Beast

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

(A) $4\frac{5}{12}$ (B) $5\frac{5}{12}$ (C) $6\frac{5}{12}$ (D) $7\frac{5}{12}$

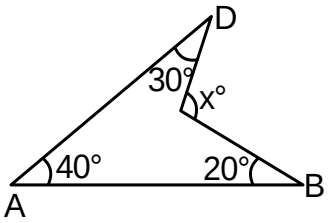
27. Zeros at the End!

If $B = 2 \times 4 \times 6 \times \ldots \times 98 \times 100$, then the number of zeroes at the end of B will be

(A) 12 (B) 11 (C) 10 (D) 101

28. The Angle Triangle Twist

In the given figure, the value of X° is



(A) 60° (B) 80° (C) 70° (D) 90°

29. Ordering the Wild Exponents

If $-1 < a < 0$, then the relation in sizes of a^3, $-a^3$, a^4, $-a^4$, $\frac{1}{a}$, $-\frac{1}{a}$ is

(A) $\frac{1}{a} < -a^4 < a^3 < -a^3 < a^4 < -\frac{1}{a}$ (B) $a < \frac{1}{a} < -a^4 < a^4 < -\frac{1}{a} < -a^3$

(C) $\frac{1}{a} < a^3 < -a^4 < a^4 < -a^3 < -\frac{1}{a}$ D) $\frac{1}{a} < a^3 < a^4 < -a^4 < -a^3 < -\frac{1}{a}$

30. The River Current Mystery

A boat goes upstream and covers the distance between two ports in 4 hours while it covers the same distance downstream in $1\frac{7}{13}$ hours. If the speed of the boat is 18 km/hr in still water, then the speed of the stream is

(A) 8 km/hr (B) 20 km/hr (C) 9 km/hr (D) 10 km/hr

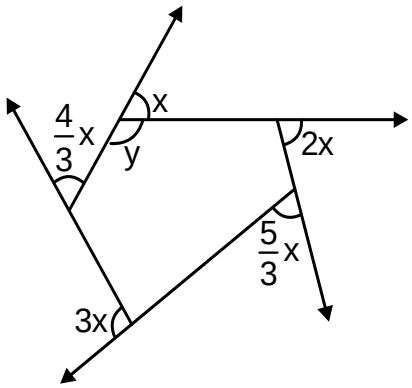
31. Exponential Explosion!

If $3^x - 3^{x-1} = 18$, then the value of x^x is

(A) 4 (B) 256 (C) 27 (D) 46656

32. Find y Before It Hides

Find y in the following figure.



(A) 40° (B) 120° (C) 140° (D) 130°

33. The Negative Power Race

If $ab < 0$, then the relation in sizes of $(a-b)^2$ and $(a+b)^2$ is

(A) $(a-b)^2 < (a+b)^2$ (B) $(a-b)^2 = (a+b)^2$

(C) $(a-b)^2 > (a+b)^2$ (D) Not determined.

34. The Exponent Trap

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

(A) 12 (B) $10\frac{11}{13}$ (C) 17 (D) $7\frac{2}{9}$

35. Where Did the Salary Go?

Amit earns Rs. 16000 per month. He spends $\frac{1}{4}$ of his income on food; $\frac{3}{10}$ of the remainder on house rent and $\frac{5}{21}$ of the remainder on the education of the children. How much money is still left with him?

(A) 6000 (B) 6400 (C) 8000 (D) None

PART E – MENTAL ABILITY

36. The Number Gap Mystery

How many such pairs of digits are there in the number "74896254317" for which the number of digits between the two digits in the given number is exactly the same as the number of digits between those two digits in the number series (from 0 to 9)?

Note: While checking the number series, consider only the digits from 0 to 9.

(A) Eight (B) Nine (C) Ten (D) Five

37. Positions Gone Wild

In a row of boys, if A who is 10^{th} from the left and B who is 9^{th} from the right, interchange their positions, A becomes 15^{th} from the left. How many boys are there in the row?

(A) 24 (B) 31 (C) 23 (D) 28

38. Letter Pairs with a Twist

How many such pairs of letters are there in the word **'UNASCERTAINABLE'**, each of which has as many letters between them in the word (both forward and backward direction) as they have between them in the English Alphabet?

(A) Two (B) Four (C) One (D) More than four

39. GO + DO Mystery Math

If XY = 600, ABC = 6 then, GO + DO will be equal to:

(A) 150 (B) 180 (C) 165 (D) 155

40. Crack the Secret Language

In a certain code language, 'WHAT' is coded as '1365' and 'CROW' is coded as '5249'. What is the code for ' W ' in the given code language?

(A) 5 (B) 9 (C) 1 (D) 4