PAPER CODE **B07151023**

CLASS : 7th

MATRIX OLYMPIAD

CSR Initiative of Matrix Education, Sikar to motivate and reward young talent.

☑ **Total Questions : 60** ☑ **Maximum Marks : 240** ☑ **Duration : 2 Hrs.**

PAPER PATTERN

Part	(I) Physics	(II) Chemistry	(III) Biology	(IV) Mathematics	(V) Logical Reasoning & IQ
Number of Questions	7	6	7	30	10

Marking Scheme: +4 For Each Correct Answer (There is no negative for wrong answer)

Instructions :

1. This Booklet is your **Question Paper.** DO NOT **break seal** of Booklet until the invigilator instructs to do so.
2. The Answer Sheet is provided to you separately which is a machine readable Optical Response Sheet (ORS). You have to mark your answer in the ORS by darkening bubble, as per your answer choice , by using **Black** /**Blue** ball point pen only.
3. If you are found involved in **cheating** or disturbing others then your ORS will be cancelled.
4. Do not **damage** the ORS sheet in any manner. If ORS is damaged or not completed properly, your results will not be prepared.
5. If you have any **confusion** in filling-up ORS sheet, please **contact** your invigilator. Incomplete ORS will be not be evaluated.
6. You can take the question paper home once the ORS is submitted.

Answer Key and Video Solutions Kindly Scan QR Code and subscribe Matrix youtube channel

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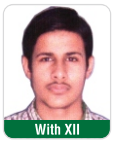
Mayank Soni — AIR 26 (Gen.)



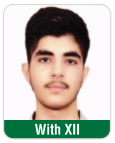
Priyanshu Meel — AIR 154 (Gen.)

Nagendra Singh — AIR 220 (Gen.)

Mohit Modi — AIR 296 (Gen.)

Aman Nehra — AIR 356 (Gen.)

Himanshu Rewar — AIR 358 (Gen.)



Aarish — AIR 415 (Gen.)


Uttam Paharia — AIR 421 (Gen.)

JEE MAIN TOPPERS

100 %tile — Mayank Soni — AIR 34 (Gen.)

99.99 %tile — Nagendra Singh — AIR 123 (Gen.)

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99.98 %tile — Mohit Modi — AIR 213 (Gen.)

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99.97 %tile — Satyam Sharma — AIR 426 (Gen.)

99.96 %tile — Anupam Jakhar — AIR 478 (Gen.)


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Marks-680 — Rekha Nitharwal — AIR 1665


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Akshay Choudhary — AIR 17 (Gen.) Stream- SB


Chirag Indoria — AIR 37 (Gen.) Stream- SB

STSE TOPPERS

Aman Nehra — 1st State Rank

Aman Nehra — 2nd State Rank

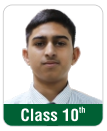
Dinesh Kumar — 2nd State Rank

Pranshu Bharia — 2nd State Rank

Shrishti — 2nd State Rank

Rohit Yadav — 2nd State Rank

Dev Kumar — 3rd State Rank



Mohd. Farhan — 3rd State Rank

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Nayan Godara — 1st State Rank

Aman Nehra — 1st State Rank

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Aditya Bijarniya — 4th State Rank

Pragati — 5th State Rank

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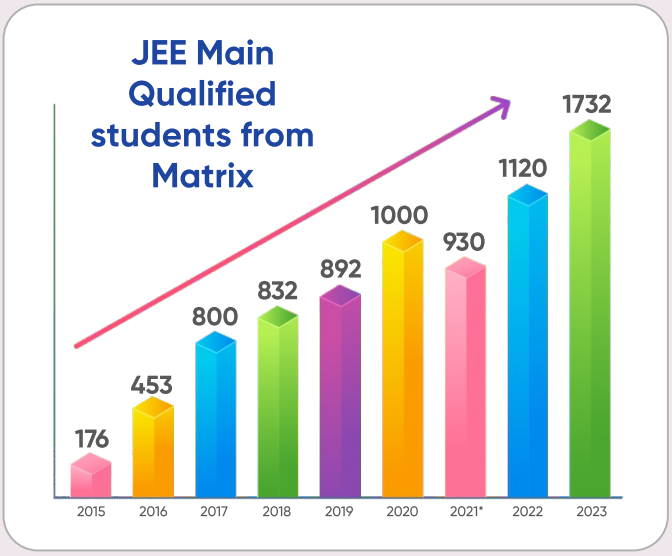

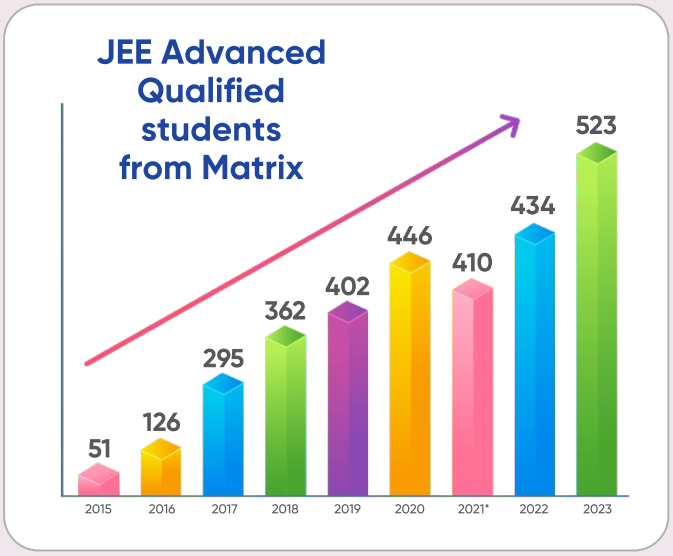

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Rank- **34**

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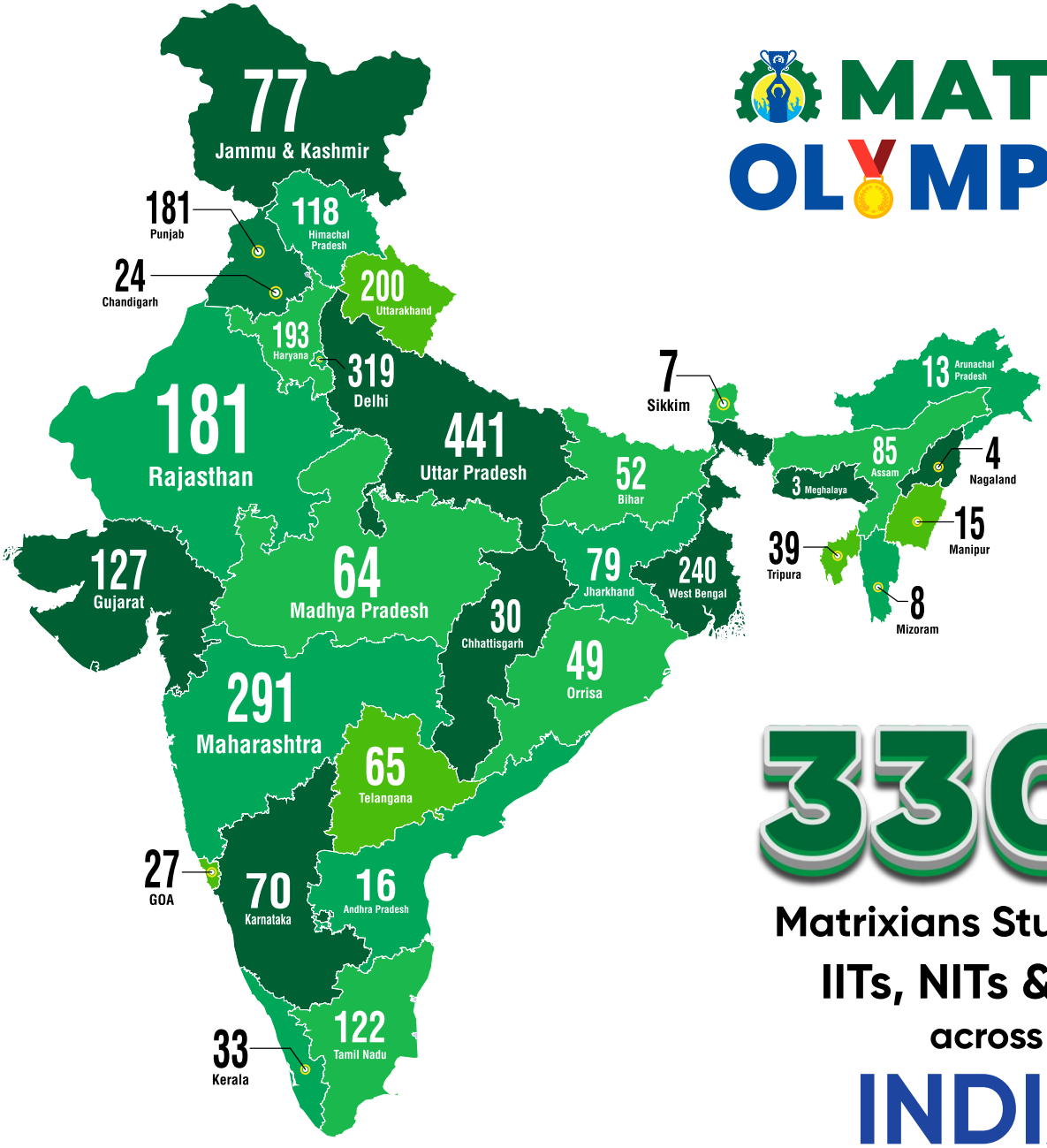

3302

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PART I : PHYSICS

*This section contains **07 Multiple Choice Questions (Q : 01 to Q : 07).** Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

1. The time taken by a car to achieve the velocity of 25 m/s with the acceleration of 2.5 m/s^2 starting from rest is -

(A) 5 s

(B) 10 s

(C) 15 s

(D) 20 s

2. A horse is tied to a rope of length 5 m and other end of the rope is tied to a pole. The distance and displacement travelled by the horse, when it makes $\left(\frac{3}{4}\right)^{th}$ of the revolution along a circular path, is respectively -

(A) 7.5 π m, $5\sqrt{2}$ m

(B) 14.5π m, $5\sqrt{3}$ m

(C) 7.5 π m, $2\sqrt{5}$ m

(D) 9.5 π m, $3\sqrt{2}$ m

3. Which among the following is the unit of heat?

(A) Kelvin

(B) Calorie

(C) Degree centigrade

(D) Fahrenheit

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

(i) Speedometer is used to measure the distance travelled by a vehicle.

(ii) Heat is an invisible form of energy.

(iii) The distance - time graph of car at rest is a straight line parallel to time axis.

Code :

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

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

Column – I	**Column – II**
P. Convection	**1.** Solids
Q. Vacuum	**2.** Gases
R. Conduction	**3.** Radiation

Code :

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

Space for rough work

6. Sea breeze and land breeze are formed due to _____.

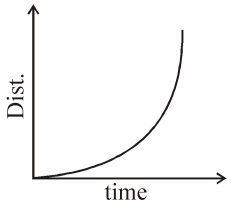
(A) Conduction

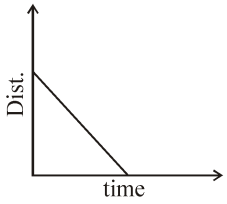
(B) Radiation

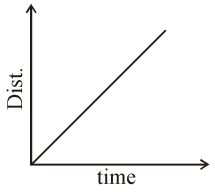
(C) Convection

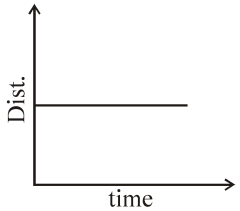
(D) Sublimation

7. Tarzon is speeding up his wonder car during a police chase on a straight horizontal road. Which of the following is correct possible distance - time graph for the motion of the Tarzon's car?

(A) 

(B) 

(C) 

(D) 

Space for rough work

PART II : CHEMISTRY

*This section contains **06 Multiple Choice Questions (Q : 08 to Q : 13)**. Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

8. Which fibre is known as the "Diamond fibre"

(A) Silk
(B) Mohair wool
(C) Cotton
(D) Angora wool

9. Which natural fibre is known for its glossy appearance and soft texture ?

(A) Cotton
(B) Jute
(C) Silk
(D) Coir

10. The silk fibre is obtained from :

(A) Fleece of sheep
(B) Cotton ball
(C) Cocoon
(D) None of these

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

(i) The correct chemical formula of baking soda is Na_2CO_3.
(ii) Red cabbage is a synthetic indicator.
(iii) Na_2CO_3 is a basic salt.

Code :

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

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

Column – I	**Column – II**
P. Vinegar	**1.** Sodium hydroxide
Q. Caustic Soda	**2.** Tamarind
R. Tartaric acid	**3.** Acetic Acid

Code :

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

Space for rough work

13. Due to use of excess of fertilisers in the soil, the nature of the soil becomes acidic. Acidic soil is not good for plants. To neutralise the acidity of the soil some bases like slaked lime or quick lime is added to the soil.

Which of following substance is used to treat acidity of soil ?

(A) Calcium hydroxide

(B) Calcium Oxide

(C) Both (A) and (B)

(D) None of these

Space for rough work

PART III : BIOLOGY

*This section contains **07 Multiple Choice Questions (Q : 14 to Q : 20)**. Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

14. Given below are the various steps involved in animal nutrition.

(i) Assimilation (ii) Ingestion

(iii) Absorption (iv) Digestion

Which is the correct sequential order in an animal nutrition ?

(A) (iii), (ii), (iv), (i)

(B) (iii), (i), (iv), (ii)

(C) (ii), (iv), (iii), (i)

(D) (iii), (iv), (ii), (i)

15. Penguins keep themselves warm by _____.

(A) Their black and white colour.

(B) Their thick skin.

(C) Huddle together.

(D) Both (B) and (C)

16. The equation given below represents photosynthesis.

$$X + \text{Water} \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} \text{Glucose} + Y$$

Which of the following is represented by X and Y in the given equation ?

(A) X - Carbondioxide, Y- Oxygen

(B) X - Oxygen, Y- Carbon

(C) X - Carbondioxide, Y- Hydrogen

(D) X- Oxygen, Y- Carbondioxide

17. What is the role of the bacteria in leguminous plants ?

(A) Convert oxides of nitrogen into soil nitrates

(B) Convert atmospheric nitrogen gas into soil nitrates.

(C) Convert soil nitrates into gaseous nitrogen.

(D) Convert plant proteins into ammonia.

18. Which statement is true about Peristalsis ?

(A) The wearing out of colour on the parts of leaves due to lack of carbon dioxide and chlorophyll.

(B) The process of breakdown of large food molecules into simpler molecules by the amylase enzyme.

(C) The movement of food through alimentary canal by the wavelike movement controlled by involuntary muscles.

(D) The process by which digested food is carried by the blood to different cells in the body.

Space for rough work

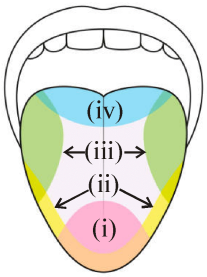
19. Match **Column – I** with **Column – II** and select the correct answer using the codes given below.

Column – I	Column – II
P. Polar bear	**1.** Hump on their back
Q. Camel	**2.** Streamlined body
R. Fish	**3.** Has layer of fat under its skin

Code :

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

20. Taste buds are sensory organs that are found on our tongue and allow us to experience tastes that are sweet, salty, sour and bitter.
Which labelled part of tongue detects the flavour of lemon juice ?



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

Space for rough work

PART IV : MATHEMATICS

*This section contains **30 Multiple Choice Questions (Q : 21 to Q : 50)**. Each question has four choices **(A), (B), (C) and (D)** out of which **ONLY ONE** is correct.*

21. Value of $(-1) \times (-1) \times (-1)$..... 11 times is :

(A) +1

(B) 0

(C) –1

(D) None of these

22. The value of $63 - (-3)\{-2-\overline{8-3}\} \div 3\{5+(-2)(-1)\}$ is :

(A) 26

(B) 48

(C) 62

(D) 96

23. Kritika use to note in her accounts book positive numbers for profits and negative numbers for losses that she make in her business. These are the entries in the book for the last seven days : 21, –19,11, –20, 17, 25 and –13. How much profit did she make in the last week ?

(A) 32

(B) 22

(C) 34

(D) 24

24. Which list of integers is in order from least to the greatest ?

(A) – 42, –39, – 4, 40, 41

(B) – 42, 41, 40, –39, – 4

(C) – 4, – 39, 40, 41, – 42

(D) 41, 40, – 4, – 39, – 42

25. The difference between the greatest and the least number of $\frac{5}{9}, \frac{1}{9}, \frac{11}{9}$ is :

(A) $\frac{2}{9}$

(B) $\frac{4}{9}$

(C) $\frac{10}{9}$

(D) $\frac{2}{3}$

26. Suppose in a game of ludo, the player requires 1, 3, 5 and 6 to be safe. What is the probability of being unsafe ?

(A) $\frac{4}{6}$

(B) $\frac{3}{6}$

(C) $\frac{2}{6}$

(D) $\frac{1}{6}$

Space for rough work

27. 5 added to thrice a number is equal to 12 added to twice the number. What is the number ?

(A) 3

(B) 1

(C) 7

(D) 5

28. A farmer divides his herd of n cows among his four sons so that first son gets one-half the herd, the second son gets one-fourth, the third son gets one-fifth and the fourth son gets 7 cows. then n is :

(A) 180

(B) 140

(C) 240

(D) 100

29. Solve for x : $\frac{x+2}{6}-\left[\frac{11-x}{3}-\frac{1}{4}\right]=\frac{3x-4}{12}$

(A) 13

(B) 10

(C) 14

(D) 11

30. If $x=\frac{y+z}{3}$, then find the value of y in terms of x and z.

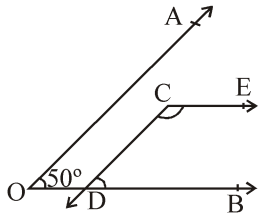
(A) $\frac{x}{3}-z$

(B) $\frac{3x-z}{3}$

(C) $3x-z$

(D) $\frac{3x-z}{9}$

31. In the adjoining figure, it is being given that AO || CD, OB || CE and $\angle AOB = 50^\circ$.



Find the measure of $\angle ECD$.

(A) 70°

(B) 90°

(C) 110°

(D) 130°

32. The angles are supplementary and the larger angle is 40° less than three times the smaller angle. Find the angles.

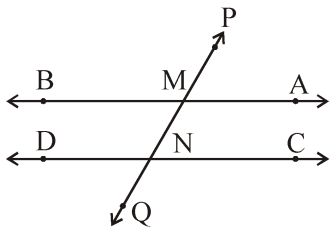
(A) 80°, 100°

(B) 90°, 90°

(C) 55°, 125°

(D) 140°, 40°

33. In the given figure, $\overline{BA}$ is parallel to $\overline{DC}$ and $\overline{PQ}$ is a transversal of $\overline{BA}$ and $\overline{DC}$. If $\angle PMA = 70^\circ$ and $\angle DNM = 2x + 30^\circ$, then find the value of x.



Space for rough work

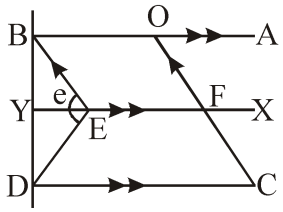
(A) 40°

(B) 60°

(C) 80°

(D) 100°

34. In the given figure, if AB||CD||XY and OC||EB. ∠ABE = 46° and ∠EDC = 33°, then find the value of ∠e and ∠OCD.



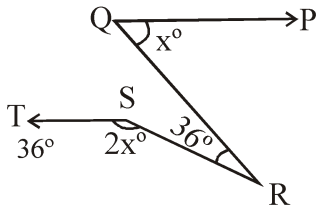
(A) ∠e = 79°, ∠OCD = 46°

(B) ∠e = 101°, ∠OCD = 33°

(C) ∠e = 89°, ∠OCD = 46°

(D) ∠e = 79°, ∠OCD = 33°

35. In the given figure, QP || TS and ∠QRS = 36°, then value of ∠PQR is :



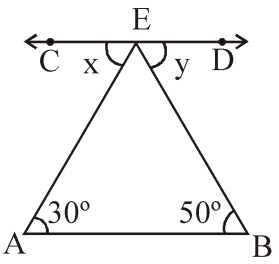
(A) 48°

(B) 52°

(C) 72°

(D) 50°

36. If AB and CD are parallel in the given figure, then find the value of x + y.



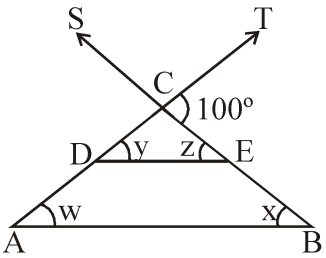
(A) 60°

(B) 80°

(C) 90°

(D) 100°

37. If in a given Δ ABC side AC = CB and CD = CE, then find the value of ∠w + ∠x + ∠y + ∠z.



(A) 108°

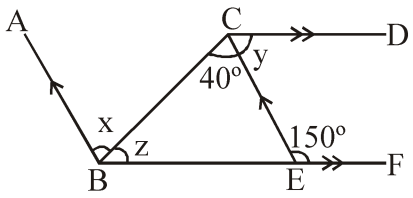
(B) 200°

(C) 280°

(D) 360°

Space for rough work

38. Find $x : y$ in the given figure.



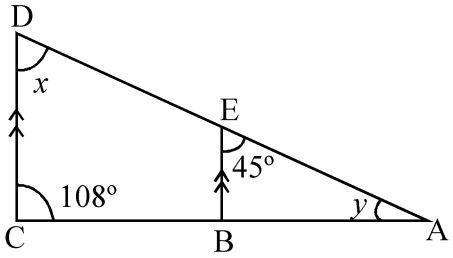
(A) 5 : 7

(B) 4 : 3

(C) 3 : 10

(D) 5 : 3

39. Find the angles x and y respectively in the following figure.



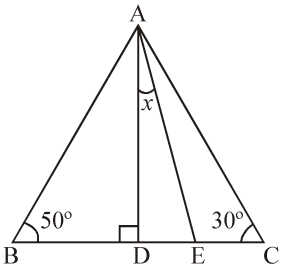
(A) $x = 47^\circ, y = 25^\circ$

(B) $x = 27^\circ, y = 45^\circ$

(C) $x = 45^\circ, y = 27^\circ$

(D) $x = 25^\circ, y = 47^\circ$

40. Find the value of x in the following figure if $AD \perp BC$ and AE is the bisector of $\angle DAC$.



(A) 30°

(B) 20°

(C) 10°

(D) 60°

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

(i) Multiplication of two integers with unlike signs is always positive.

(ii) When a positive integer is divided by a negative integer, the quotient obtained is a negative integer ?

(iii) Product of odd number of times of negative integers is positive.

Code :

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

Space for rough work

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

(i) Value of number increases when decimal moves from right to left.

(ii) 0.30 is less than 0.3000.

(iii) 1 ÷ 20 can be written as 0.05.

Code :

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

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

(i) The mode is always one of the number in a data.

(ii) The mean is one of the numbers in a data.

(iii) The median is always one of the numbers in a data.

Code :

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

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

Column – I	**Column – II**
P. Solve : $4\frac{3}{10}-1\frac{2}{5}+8\frac{1}{9}$	**1.** 2.395
Q. Solve : $0.25+9.81\times 6.4+4\frac{5}{8}$	**2.** 11.01
R. Solve : $2\frac{3}{8}-4\frac{7}{9}\times 0.9+4.32$	**3.** 67.659

Code :

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

Space for rough work

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

Column – I	Column – II
P. Array	**1.** The value of middle most observation
Q. Statistics	**2.** A raw data that can be arranged in ascending and descending order.
R. Median	**3.** Deals with collection, presentation, analysis and interpretation of data.

Code :

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

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

Column – I	Column – II
P. If you take away 5 from 5 times a number you get 50. Find the number.	**1.** 50
Q. Add 4 to one-fourth of a number gives 20. Find the number.	**2.** 64
R. If one-fifth of a number is 5 more than one-tenth of the same number, then the number is:	**3. 11**

Code :

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

Space for rough work

Paragraph for Questions 47 & 48

Rahul walks $\frac{2}{5}$ km from his home and reach at a point A then he walk straight about 450 m and stop there. His friend walking towards Rahul and has covered 850 m. Distance between their homes is 2 km.

47. Distance between Rahul and his friend is :

(A) 1.2 km

(B) 30 km

(C) 300 m

(D) 400 km

48. Total distance covered by Rahul and his friend is :

(A) 1.8 Km

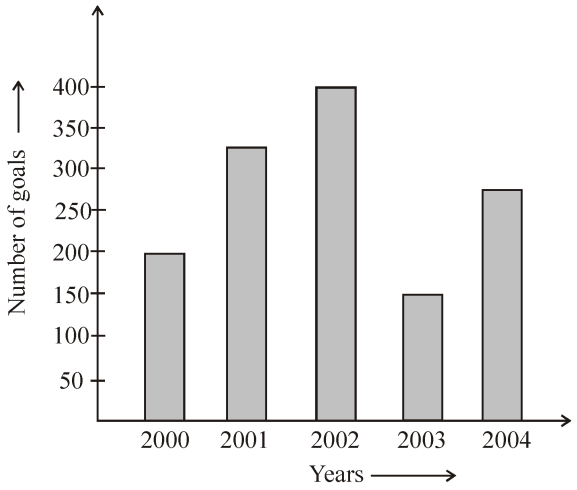
(B) 1.6 Km

(C) 1.9 Km

(D) 1.7 Km

Paragraph for Questions 49 & 50

The given bar graph shows the number of goals made by a football player during five years. Study the graph carefully and answer the following questions.



49. Find the ratio of number of goals made by him during the year 2002 and 2003 together to the number of goals made by him in five years.

(A) 11 : 27

(B) 27 : 11

(C) 12 : 25

(D) 25 : 12

50. What is the average number of goals made by the player during all the five years ?

(A) 250

(B) 320

(C) 270

(D) 135

Space for rough work

PART V : LOGICAL REASONING & IQ

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

Direction (51 – 52) : In each of the following questions, a number series is given with one term missing. Choose the correct alternative that will continue the same pattern and replace the question mark in the given series.

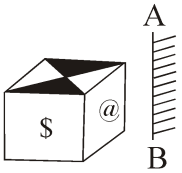
51. 482, 239, 158, 131, 122, ?

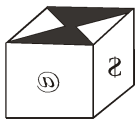
(A) 121
(B) 119
(C) 117
(D) 113

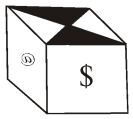
52. 10, 20, 23, ?, 97, 582

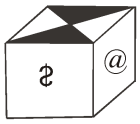
(A) 53
(B) 78
(C) 82
(D) 92

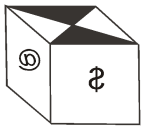
53. Choose the one from the alternatives which most closely resembles the mirror - image of the given figure :



(A) 

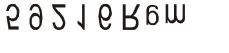
(B) 

(C) 

(D) 

54. Choose the alternative which is closely resembles the water-image of the given combination :

5 9 2 1 6 R g m
A B

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

55. If '+' means '÷','–' means '+', '×' means '–' and '÷' means '×', what will be the value of the following expression ?

(38 × 23 – 4 ÷ 3 + 6 –3) ÷ 2

(A) 40
(B) 20
(C) 5
(D) 42

Space for rough work

56. Select the correct combination of mathematical signs to replace * signs and to balance the given equation :

54*36*12*18*24*24

(A) ÷,+,×,–,=

(B) ÷,×,–,+,=

(C) ÷,×,+,–,=

(D) +,×,–,÷,=

57. A square transparent sheet with a pattern is given in figure. Find out from amongst the alternatives as to how the pattern would appear when the transparent sheet is folded at the dotted line.

(A) 

(B) 

(C) 

(D) 

58. In a row of student, Ashish is 15th place from the right end and Neha is 10th place from left end. If Neha is 20th place from right end, then what is position of Ashish from left end ?

(A) 8th

(B) 7th

(C) 10th

(D) 15th

59. City A is located to the North of city B. City D is located to the East of city B. City C is located to the West of city D. City E is located to the South of city C and to the South-West of city A. What is the position of city B with respect to city C ?

(A) South

(B) West

(C) East

(D) North

60. Rihana drives 6 km West from her home and then turns left and drives 3 km. Again she turns left and drives10 km and reaches her office. What is the shortest distance between her home and office ?

(A) 10 km

(B) 5 km

(C) 4 km

(D) 9 km

Space for rough work