



# MATRIX OLYMPIAD

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

✓ Total Questions : 70

✓ Maximum Marks : 280

✓ Duration : 2 Hrs.

## PAPER PATTERN

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

**Marking Scheme: +4 For Correct Answer (One mark will be deducted 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.





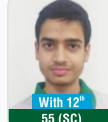


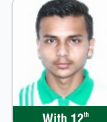


Answer Key and Video Solutions Kindly Scan QR Code and subscribe Matrix youtube channel

# MATRIX: Where producing outstanding results is a habit!

## JEE ADVANCED TOPPERS

 With XII Mayank Soni	AIR 26 (Gen.)	 With XII Priyanshu Meel	AIR 154 (Gen.)	 With XII Nagendra Singh	AIR 220 (Gen.)	 With XII Mohit Modi	AIR 296 (Gen.)	 With XII Aman Nehra	AIR 356 (Gen.)	 With XII Himanshu Rewar	AIR 358 (Gen.)	 With XII Aarish	AIR 415 (Gen.)	 Uttam Paharia	AIR 421 (Gen.)
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## JEE MAIN TOPPERS

100 %tile  With XII Mayank Soni	AIR 34 (Gen.)	99.99 %tile  With 12 <sup>th</sup> 15 (OBC) Nagendra Singh	AIR 123 (Gen.)	99.97 %tile  With 12 <sup>th</sup> 55 (SC) Shailesh Saini	AIR 354 (Gen.)	99.98 %tile  With XII Mohit Modi	AIR 213 (Gen.)	99.97 %tile  With XII Aman Nehra	AIR 393 (Gen.)	99.97 %tile  With 12 <sup>th</sup> Satyam Sharma	AIR 426 (Gen.)	99.96 %tile  With XII Anupam Jakhhar	AIR 478 (Gen.)	99.95 %tile  Uttam Paharia	AIR 509 (Gen.)
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## NEET (UG) Toppers

Marks-680  Rekha Nitharwal	AIR 1665	Marks-670  Narendra Farroda	AIR 2905	Marks-667  Mahendra Yadav	AIR 3263	Marks-666  Ankit Kumar Chahar	AIR 3378	Marks-665  Deepika Soni	AIR 3545	Marks-665  Lokesh Goyal	AIR 3621	Marks-665  Mohit Haritwal	AIR 3661
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## KVPY TOPPERS

 Manas Jajodia	AIR 6 (Gen.) Stream- SB	 Ishu	AIR 8 (Gen.) Stream- SB	 Lakshya	AIR 13 (Gen.) Stream- SB	 Akshay Choudhary	AIR 17 (Gen.) Stream- SB	 Chirag Indoria	AIR 37 (Gen.) Stream- SB
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## STSE TOPPERS

 Aman Nehra	1 <sup>st</sup> State Rank Class 12 <sup>th</sup>	 Mayank Soni	2 <sup>nd</sup> State Rank Class 12 <sup>th</sup>	 Dinesh Kumar	2 <sup>nd</sup> State Rank Class 12 <sup>th</sup>	 Pranshu Bharia	2 <sup>nd</sup> State Rank Class 10 <sup>th</sup>	 Shrishti	2 <sup>nd</sup> State Rank Class 10 <sup>th</sup>	 Rohit Yadav	2 <sup>nd</sup> State Rank Class 10 <sup>th</sup>	 Dev Kumar	3 <sup>rd</sup> State Rank Class 10 <sup>th</sup>	 Mohd. Farhan	3 <sup>rd</sup> State Rank Class 10 <sup>th</sup>
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## OUR BOARD TOPPERS

99.20%  Pinakin Choudhary	98.80%  Aradhya Raina	98.20%  Laxmi	98.00%  Vishal Choudhary	97.80%  Preksha Singh	97.80%  Piyush Sagatani	97.60%  Khushee Binwal	97.60%  Reena	97.60%  Siddhant Lalpuria	97.40%  Rohit Yadav
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## NTSE TOPPERS

 Aditya Jhajhria	1 <sup>st</sup> State Rank	 Nayan Godara	1 <sup>st</sup> State Rank	 Aman Nehra	1 <sup>st</sup> State Rank	 Aaditya Pratap	2 <sup>nd</sup> State Rank	 Mayank Soni	2 <sup>nd</sup> State Rank	 Aditya Bijarniya	4 <sup>th</sup> State Rank	 Pragati	5 <sup>th</sup> State Rank
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Authenticity of result, promise of Matrix!

\*cumulative result so far

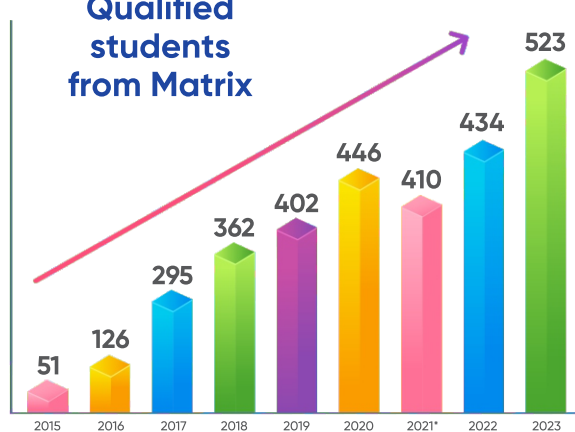
यह परिणाम मैट्रिक्स के केवल Yearlong classroom Program Students का ही है

# Remarkable result growth in both JEE Main & Advanced on a consistent basis

## JEE Main Qualified students from Matrix



## JEE Advanced Qualified students from Matrix



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\*due to covid

"Authenticity of result, promise of Matrix"

## HIGHLIGHTS at MATRIX

Total students qualified in JEE Main

**6700+**

students have been qualified in JEE main from matrix till date.

**2500+**

students have qualified JEE Advanced till date – Highest in Sikar

**2000+**

final admissions in various top IITs over last 5 years – Highest in Sikar

**3500+**

selection in NIT/IIITs and other or other Prestigious Universities Highest in Sikar

**2023** RESULT

Top score in JEE Main 2023  
Mayank Soni

Rank- **34**

Top scorer JEE Advanced 2023  
Mayank Soni

AIR- **26** (Gen)

**200** Doctors in very 1st year of Matrix NEET Division

All India Rank **6** in KVPY 2021:  
**MANAS JAJODIA**

55+ total selections in KVPY over last 4 years **45+**

More than **40,000** students have been beneficiary of Matrix system till date

Matrix has the largest pre-foundation career program in Sikar with highest number of enrolment and top results in all sort of competitive examinations.

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**70** selections in NDA 2023 April attempt!

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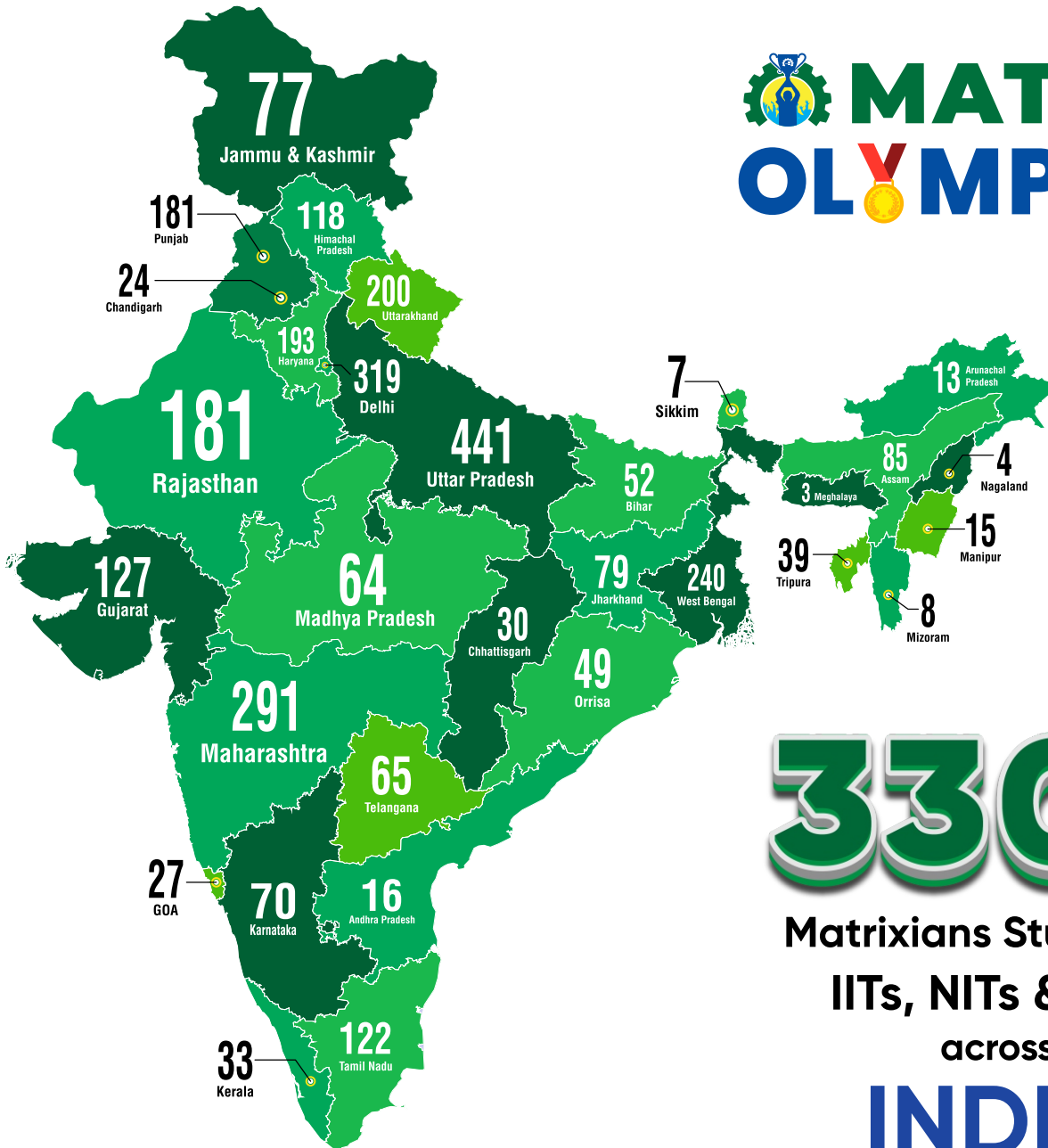
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# MATRIX OLYMPIAD



# 3302

Matrixians Studied at  
IITs, NITs & IIITs  
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**PART I : PHYSICS**

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

- |   |                                   |   |
|---|-----------------------------------|---|
| <p>1. A car start from rest and accelerates uniformly to speed 180 km/h in 10 second. The distance covered by the car in this time interval is :</p> <p>(A) 500 m<br/>(B) 250 m<br/>(C) 300 m<br/>(D) 450 m</p> <p>2. A body is thrown vertically upwards. If air resistance is negligible, then the time during which the body rises is :</p> <p>(A) Equal to the time of fall<br/>(B) Less than the time of fall<br/>(C) Greater than the time of fall<br/>(D) Twice the time of fall</p> <p>3. A boy standing at the top of a tower of 5 m height drops a stone. Assuming <math>g=10 \text{ m/s}^2</math>, the velocity with which it hits the ground is :</p> <p>(A) 10.0 m/s<br/>(B) 20.0 m/s<br/>(C) 40.0 m/s<br/>(D) 5.0 m/s</p> | *****<br>D09291023 *****<br>***** | <p>4. A body of mass 3.513 kg is moving along the x-axis with a speed of 5.00 m/s. The magnitude of its momentum is :</p> <p>(A) 16.6 kg m/s<br/>(B) 17.565 kg m/s<br/>(C) 18.56 kg m/s<br/>(D) 15.57 kg m/s</p> <p>5. A man fires a bullet of mass 200 g at a speed of 5 m/s, the gun is 1 kg of mass. By what velocity the gun rebounds backward ?</p> <p>(A) 1 m/s<br/>(B) 0.01 m/s<br/>(C) 0.1 m/s<br/>(D) 10 m/s</p> <p>6. A ball of mass 25 g moving with velocity of 2 m/s is stopped within 5 cm. The average resistance offered to the ball is :</p> <p>(A) 10 N<br/>(B) 5 N<br/>(C) 2 N<br/>(D) 1 N</p> |
|---|-----------------------------------|---|

*Space for rough work*

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

Column – I	Column – II
------------	-------------

P. Momentum	1. Chinawares are packed in straw paper before packing
Q. Impulse	2. An athlete runs for a certain distance before taking long jump
R. Inertia	3. Explosion of bomb

Code :

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

8. Which of the following statement/s is/are **True(T)** or **False(F)** ?
- (i) The Displacement of a body may be zero, when distance travelled by it is not zero .
  - (ii) A body can have acceleration even if its velocity is zero at the instant of time .
  - (iii) The displacement is the longer distance between initial and final position .

Code :

(i) (ii) (iii)

- (A) T F F
- (B) T T F
- (C) F F T
- (D) F T F

**Paragraph for Questions 09 & 10**

A body is said to be in non uniform motion if its velocity changes with time. Here either the speed of the body or its direction of motion or both change with time. For example when a vehicle starts moving from rest , its velocity increases for sometime , then its may become constant for sometime and finally slow down and come to rest again.

9. A 100 m long train moving with a uniform velocity of 45 km /h. The time taken by the train to cross the bridge of length 1 km is :
- (A) 58 s
  - (B) 68 s
  - (C) 78 s
  - (D) 88 s
10. A train starting for railway station and moving with uniform acceleration attains a speed 54 km/h in 20 min. Find its acceleration.
- (A) 0.0125 m/s<sup>2</sup>
  - (B) 0.125 m/s<sup>2</sup>
  - (C) 1.125 m/s<sup>2</sup>
  - (D) 0.00125 m/s<sup>2</sup>

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**PART II : CHEMISTRY**

This section contains 10 Multiple 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 solution in which the amount of solute is less than the saturation level is called  
 (A) Unsaturated solution  
 (B) Saturated solution  
 (C) Supersaturated solution  
 (D) None of these
12. When impurities are added to solution then its :  
 (A) Decrease the melting point and increase the boiling point.  
 (B) Increase the melting point and decrease the boiling point.  
 (C) No change in melting point and boiling point.  
 (D) None of the above
13. Which of the following will sublime on heating?  
 (A) Ammonium chloride  
 (B) Sodium chloride  
 (C) Sugar  
 (D) Copper chloride
14. Which of the following is a pure substance?  
 (A) Kerosene oil  
 (B) Steel  
 (C) Sodium chloride  
 (D) Vulcanized rubber
15. On converting 55°C, 77°C and 85°C to Kelvin scale, the correct sequence of temperature will be :  
 (A) 335 K, 360 K, 358 K  
 (B) 315 K, 350 K, 358 K  
 (C) 328 K, 350 K, 358 K  
 (D) 298 K, 350 K, 358 K
16. During summer, water kept in an earthen pot becomes cool because of the phenomenon of  
 (A) Diffusion  
 (B) Transpiration  
 (C) Evaporation  
 (D) Osmosis
17. Match **Column – I** with **Column – II** and select the correct answer using the codes given below.
- | Column – I                           | Column – II    |
|--------------------------------------|----------------|
| P. Uniform composition               | 1. Foam        |
| Q. Particle size greater than 1000nm | 2. Homogeneous |
| R. Shaving Cream                     | 3. Suspension  |

Space for rough work

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**Code :**

	<b>P</b>	<b>Q</b>	<b>R</b>
--	----------	----------	----------

- |     |   |   |   |
|-----|---|---|---|
| (A) | 2 | 3 | 1 |
| (B) | 3 | 1 | 2 |
| (C) | 3 | 2 | 1 |
| (D) | 2 | 1 | 3 |

**18.** Which of the following statement/s is/are

**True(T) or False(F) ?**

- (i) The intermixing of particles of matter is called diffusion.
- (ii) Rate of diffusion increases on decreasing density.
- (iii) Rate of diffusion decreases on increasing pressure and temperature.

**Code :**

	<b>(i)</b>	<b>(ii)</b>	<b>(iii)</b>
--	------------	-------------	--------------

- |     |   |   |   |
|-----|---|---|---|
| (A) | T | F | T |
| (B) | T | T | F |
| (C) | F | F | T |
| (D) | F | T | F |

**Paragraph for Questions 19 & 20**

Matter is anything that occupies space and has mass. Matter is classified into solid, liquid and gas. In solid state particles are closely packed and have very strong force of attraction, particles can only vibrate and rotate around fixed positions. In liquid state, particles are less closely packed and have strong force of

attraction but less than solids, particles can move throughout the liquid. In Gaseous state, particles are far apart with weak force of attraction and are in state of constant random motion. Gases can be easily compressed whereas solids and liquids are incompressible.

**19.** An inflated balloon is placed in the refrigerator, what will happen?

- (A) Balloon will shrink and particles will move faster and become closer.
- (B) Balloon will expand and particles will move faster and become far apart.
- (C) Balloon will shrink, particles will move slower and become closer together.
- (D) Balloon will expand, particles will move slower and come closer therefore, the volume of the balloon will decrease.

**20.** When liquid changes into vapours at any temperature below its boiling point is called \_\_\_\_\_ .

- (A) Evaporation
- (B) Boiling
- (C) Sublimation
- (D) Vaporization

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*Space for rough work*

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**PART III : BIOLOGY**

This section contains 10 Multiple 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. Select one which is not true for ribosome :

- (A) Made of two sub units
- (B) Form polysome
- (C) May attach to mRNA
- (D) Have no role in protein synthesis

22. What is tonoplast ?

- (A) Outer membrane of mitochondria.
- (B) Inner membrane of chloroplast.
- (C) Membrane boundary of the vacuole of plant cells.
- (D) Cell membrane of a plant cell.

23. Plastid differs from mitochondria on the basis of one of the following features. Mark the right answer :

- (A) Presence of two layer of membrane.
- (B) Presence of ribosome.
- (C) Presence of chlorophyll.
- (D) Presence of DNA.

24. Hyaline cartilage does not have\_\_\_\_\_.

- (A) Fibres
- (B) Lacunae
- (C) Cells
- (D) Blood capillaries

25. Smooth muscles are :

- (A) Voluntary, spindle shaped, uninucleated
- (B) Involuntary, spindle shaped, non striated
- (C) Voluntary, multinucleated, Cylindrical
- (D) Involuntary, Spindle shaped, striated

26. Histology deals with the study of :

- (A) Structures seen with naked eyes.
- (B) Tissues
- (C) Changes in form and structure during development.
- (D) Cell

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

- (i) Both cardiac and smooth muscles are uninucleated and involuntary.
- (ii) Node of Ranvier occur in non-myelinated nerve fibres.
- (iii) Squamous epithelium is also called pavement epithelium.

**Code :**

- |     |            |             |              |
|-----|------------|-------------|--------------|
|     | <b>(i)</b> | <b>(ii)</b> | <b>(iii)</b> |
| (A) | T          | F           | T            |
| (B) | T          | T           | T            |
| (C) | F          | F           | T            |
| (D) | F          | T           | F            |

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

Column – I	Column – II
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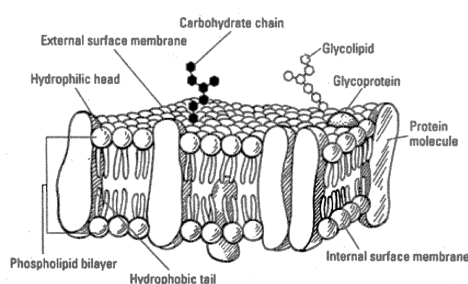
- |                            |                |
|----------------------------|----------------|
| P. Adipose tissue          | 1. Blood       |
| Q. Stratified epithelium   | 2. Skin        |
| R. Fluid Connective tissue | 3. Fat storage |

**Code :**

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

**Paragraph for Questions 29 & 30**

Given diagram is of model explains the structure of the plasma membrane of animal cells as a mosaic of components such as phospholipids, proteins, cholesterol and carbohydrates.



29. This model was proposed by :
- Robert Hooke
  - Robert Brown
  - Schleiden and Schwann
  - Singer and Nicolson
30. Which component of plasma membrane are amphipathic molecules ?
- Protein
  - Phospholipids
  - Cholesterol
  - Carbohydrates

\*\*\*\*\* D09291023 \*\*\*\*\*

*Space for rough work*

D09291023

**PART IV : MATHEMATICS**

This section contains 30 Multiple Choice Questions (Q : 31 to Q : 60). Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

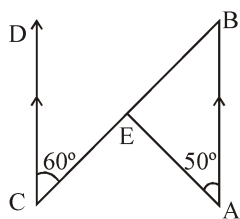
- |  |  |
|--|--|
| <p><b>31.</b> The value of <math>\sqrt{3-2\sqrt{2}}</math> is :</p> <p>(A) <math>\sqrt{3} + \sqrt{2}</math></p> <p>(B) <math>\sqrt{3} - \sqrt{2}</math></p> <p>(C) <math>\sqrt{2} + 1</math></p> <p>(D) <math>\sqrt{2} - 1</math></p> <p><b>32.</b> Simplest form of <math>0.12\bar{3}</math> is :</p> <p>(A) <math>\frac{41}{330}</math></p> <p>(B) <math>\frac{37}{330}</math></p> <p>(C) <math>\frac{37}{300}</math></p> <p>(D) None of these</p> <p><b>33.</b> A rational number equivalent to <math>\frac{7}{19}</math> is :</p> <p>(A) <math>\frac{17}{119}</math></p> <p>(B) <math>\frac{14}{57}</math></p> <p>(C) <math>\frac{21}{38}</math></p> <p>(D) <math>\frac{21}{57}</math></p> | <p><b>34.</b> If <math>(x + 1)</math> is a factor of polynomial <math>(2x^2 + kx)</math> then the value of <math>k</math> is :</p> <p>(A) <math>-2</math></p> <p>(B) <math>-3</math></p> <p>(C) <math>2</math></p> <p>(D) <math>3</math></p> <p><b>35.</b> If <math>\frac{a}{b} + \frac{b}{a} = -1</math>, then <math>(a^3 - b^3)</math> ?</p> <p>(A) <math>-3</math></p> <p>(B) <math>-2</math></p> <p>(C) <math>-1</math></p> <p>(D) <math>0</math></p> <p><b>36.</b> The value of <math>(249)^2 - (248)^2</math> is :</p> <p>(A) <math>12</math></p> <p>(B) <math>477</math></p> <p>(C) <math>487</math></p> <p>(D) <math>497</math></p> <p><b>37.</b> Which of following point lies on the <math>x</math> - axis ?</p> <p>(A) <math>(8, 2)</math></p> <p>(B) <math>(0, 2)</math></p> <p>(C) <math>(2, 0)</math></p> <p>(D) <math>(4, 4)</math></p> |
|--|--|

\*\*\*\*\* D09291023 \*\*\*\*\*

*Space for rough work*

D09291023

38. The mirror image of (3, 5) in x - axis is :  
 (A) (3, 0)  
 (B) (0, 5)  
 (C) (3, -5)  
 (D) (-3, 5)
39. The perpendicular distance of the point (4, -3) from the x- axis is :  
 (A) 3 units  
 (B) 4 units  
 (C) 5 units  
 (D) -4 units
40. An angle is one fifth of its supplementary the measure of the angle is :  
 (A) 15°  
 (B) 150°  
 (C) 30°  
 (D) 75°
41. In the given figure  $AB \parallel CD$ . if  $\angle EAB = 50^\circ$  and  $\angle ECD = 60^\circ$ , then  $\angle AEB = ?$



- (A) 50°  
 (B) 60°  
 (C) 55°  
 (D) 70°

42. If two angles are complement of each other then each angle is :  
 (A) An acute angle  
 (B) An obtuse angle  
 (C) A right angle  
 (D) A reflex angle
43. It is given that  $\triangle ABC \cong \triangle FDE$  in which  $AB = 5$  cm,  $\angle B = 40^\circ$  and  $\angle A = 80^\circ$ ,  $FD = 5$  cm, then which of the following is true ?  
 (A)  $\angle D = 60^\circ$   
 (B)  $\angle E = 60^\circ$   
 (C)  $\angle F = 60^\circ$   
 (D)  $\angle D = 80^\circ$
44. In  $\triangle ABC$ ,  $\angle C = \angle A$ ,  $BC = 4$  cm and  $AC = 5$  cm, Then  $AB = ?$   
 (A) 4 cm  
 (B) 5 cm  
 (C) 8 cm  
 (D) 2.5 cm
45. If  $AB = QR$ ,  $BC = RP$  and  $CA = PQ$  then which of the following condition holds ?  
 (A)  $\triangle ABC \cong \triangle PQR$   
 (B)  $\triangle CBA \cong \triangle PQR$   
 (C)  $\triangle CAB \cong \triangle PQR$   
 (D)  $\triangle BCA \cong \triangle PQR$

\*\*\*\*\* D09291023 \*\*\*\*\*

*Space for rough work*

D09291023

46. Each of the points  $(-2, 2)$ ,  $(0, 0)$ ,  $(2, -2)$  satisfies the linear equation :
- (A)  $x - y = 0$   
 (B)  $x + y = 0$   
 (C)  $-x + 2y = 0$   
 (D)  $x - 2y = 0$
47. Linear equation  $4x - 3y = 7xy$  and  $3x + 2y = 18xy$  intersect at  $(x, y)$  then  $(x, y) = ?$
- (A)  $\left(\frac{1}{2}, \frac{1}{3}\right)$   
 (B)  $(3, 4)$   
 (C)  $(4, 3)$   
 (D)  $\left(\frac{1}{3}, \frac{1}{4}\right)$
48.  $x = 5, y = 2$  is a solution of the linear equation :
- (A)  $x + 2y = 7$   
 (B)  $5x + 2y = 7$   
 (C)  $x + y = 7$   
 (D)  $5x + y = 7$
49. The graph of the line  $y = 3$  pass through the point :
- (A)  $(3, 0)$   
 (B)  $(3, 2)$   
 (C)  $(2, 3)$   
 (D) None of these

50. Which of the following is an irrational number ?
- (A) 3.14  
 (B) 3.141414.....  
 (C) 3.14444.....  
 (D) 3.414114111.....

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

Column – I	Column – II
<b>P.</b> Point lies on the line $y = 2x + 3$	<b>1.</b> $(0, 5)$
<b>Q.</b> Point whose ordinate is 5 and lies on y-axis	<b>2.</b> $(4, 2)$
<b>R.</b> Solution of equation $2x - y = 6$	<b>3.</b> $(3, 9)$
<b>Code :</b>	
	<b>P    Q    R</b>
(A)	1    2    3
(B)	3    2    1
(C)	3    1    2
(D)	2    3    1

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

Column – I	Column – II
------------	-------------

**P.** Zeroes of polynomial  $p(x) = 2x^2 + 5x - 3$

1.  $\left(\frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}\right)$

**Q.** Zeroes of polynomial  $p(x) = 3x^2 - 1$

2. (8, 7)

**R.** If  $(x + 1, 6) = (9, y - 1)$  then  $(x, y) =$

3.  $\left(-3, \frac{1}{2}\right)$

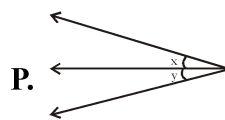
**Code :**

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

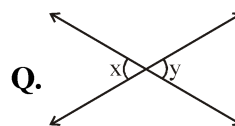
53. Match **Column – I** with **Column – II** and select the correct answer using the codes given below.

What is the relation between x and y ?

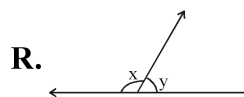
Column – I	Column – II
------------	-------------



1. Vertically opposite angles



2. Adjacent angles



3. Linear pair of angles

**Code :**

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

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

- (i) Every rational number can be represented by some point on number line.
- (ii)  $\pi$  is an irrational number.
- (iii)  $(x + 1)$  is a factor of  $(x^3 - 1)$ .

**Code :**

- |     | (i) | (ii) | (iii) |
|-----|-----|------|-------|
| (A) | T   | F    | F     |
| (B) | T   | T    | T     |
| (C) | F   | F    | T     |
| (D) | T   | T    | F     |

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D09291023

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

- (i) (2, 1) is solution of  $2x + 3y = 8$ .
- (ii) In an isosceles triangle, the altitude from the vertex bisects the base.
- (iii) The medians of an equilateral triangle are equal.

**Code :**

(i) (ii) (iii)

- (A) T F F
- (B) F T T
- (C) F F T
- (D) F T F

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

- (i) A triangle with sides of length  $3x$ ,  $4x$  and  $5x$  must be right angled triangle.
- (ii) The bisector of two adjacent supplementary angles includes a right angle.
- (iii) (0, 8) lies on x - axis.

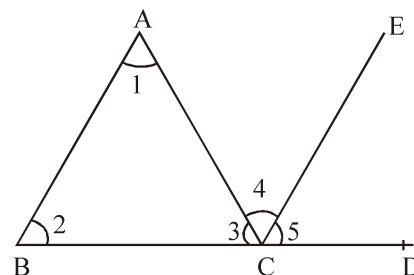
**Code :**

(i) (ii) (iii)

- (A) T F F
- (B) T T F
- (C) F F T
- (D) F T F

**Paragraph for Questions 57 & 58**

Once the maths teacher of class IX D told students that today we will prove that the sum of all three angles is  $180^\circ$ . As shown in the figure he told to draw any  $\triangle ABC$  in th notebook. further side BC was extended to D.



57. If  $BA \parallel CE$  and AC is transversal so  $\angle 1$  is equal to-

- (A)  $\angle 2$
- (B)  $\angle 3$
- (C)  $\angle 4$
- (D)  $\angle 5$

58. Value of  $\angle 3 + \angle 4 + \angle 5$

- (A)  $120^\circ$
- (B)  $90^\circ$
- (C)  $180^\circ$
- (D)  $360^\circ$

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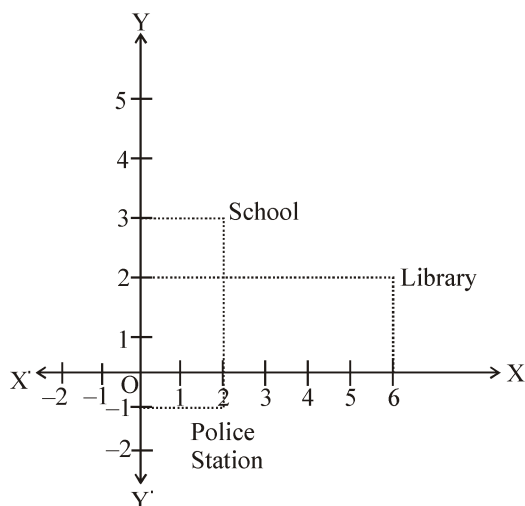
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**Paragraph for Questions 59 & 60**

Aditya is a class IX student residing in a village. One day, he went to a city hospital along with his grandfather for general checkup. From there he visited three places school, library and police station.

After returning to his village he plotted a graph by taking hospital as origin and marked three places on the graph as per his direction of movement and distance. The graph is shown below :



**59.** What are the coordinates of police station ?

- (A) (2, -1)
- (B) (2, 1)
- (C) (-2, 7)
- (D) (-2, 1)

**60 .** Distance between school and police station is \_\_\_\_\_ unit.

- (A) 4
- (B) 3
- (C) 2
- (D) 1

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**PART V : LOGICAL REASONING & IQ**

*This section contains 10 Multiple Choice Questions (Q : 61 to Q : 70). Each question has four choices (A), (B), (C) and (D) out of which ONLY ONE is correct.*

- |   |                             |   |
|---|-----------------------------|---|
| <p><b>61.</b> What is the 12<sup>th</sup> term of the series : <math>-2, -4, -6</math><br/>..... <math>-100</math> ?</p> <p>(A) <math>-28</math><br/>(B) <math>-24</math><br/>(C) <math>-26</math><br/>(D) <math>-20</math></p> <p><b>62.</b> Find the missing number of the given series :<br/><math>2, 5, 12.5, ?, 78.125, 195.3125</math></p> <p>(A) <math>31.25</math><br/>(B) <math>40.25</math><br/>(C) <math>32.50</math><br/>(D) <math>21.00</math></p> <p><b>63.</b> An ant moves 10 cm towards east and turns to the right and moves 3 cm. Then it turns to its right and moves 3 cm. Then turns to his left and moves 2 cm. Finally it turns to his right and moves 7 cm. How far and in which direction it is now from the starting point ?</p> <p>(A) 10 cm, East<br/>(B) 9 cm, North<br/>(C) 8 cm, West<br/>(D) 5 cm, South</p> | *****<br>D09291023<br>***** | <p><b>64.</b> A school bus driver starts from the school and drives 2 km towards North. Then driver takes a left turn and drives for 5 km, then he takes a left turn and drives for 8 km, again taking a left turn again and driving for further 5km. The driver finally takes a left turn and drives 1 km before stopping. How far and towards which direction should the driver drive to reach the school again ?</p> <p>(A) 5 km towards North<br/>(B) 7 km towards East<br/>(C) 6 km towards South<br/>(D) 6 km towards West</p> <p><b>65.</b> In the class of Reeta, the boys are twice than of girls. Reeta ranked at 17<sup>th</sup> place from the top and 20<sup>th</sup> place from the last in the class. If there are 7 girls ahead of Reeta. How many girls are there after Reeta ?</p> <p>(A) 4<br/>(B) 1<br/>(C) 9<br/>(D) None of these</p> |
|---|-----------------------------|---|

*Space for rough work*

66. 10 boys are sitting in a line facing in the same direction. Abhijit who is at 7<sup>th</sup> place from the left end is just to the right of Sushant who is at 5<sup>th</sup> place from the right end. Sushant is at 3<sup>rd</sup> place to the right of Rupin. How many children are between Abhijit and Rupin ?

- (A) 1
- (B) 2
- (C) 3
- (D) Data inadequate

67. What will be difference between the original value of equation  $(3 \times 4 \div 2 - 5)$  and its changed value after replacing the mathematical signs ' $\times$ ' to '+', ' $\div$ ' to '-', '-' to ' $\times$ ' and '+' to ' $\div$ ' ?

- (A) 1
- (B) 2
- (C) 3
- (D) 4

68. In the question below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and give answer.

**Question :** On which date in March was Praveen's father's birthday ?

**Statement-I :** Praveen correctly remembers that his father's birthday is after 14<sup>th</sup> but before 19<sup>th</sup> March.

**Statement-II :** Praveen's sister correctly remembers that their father's birthday is after 17<sup>th</sup> but before 21<sup>st</sup> march.

- (A) The data in statement-I alone is sufficient to answer the question.
- (B) The data in statement-II alone is sufficient to answer the question.
- (C) The data in statement-I and statement-II together are sufficient to answer the question.
- (D) The data in neither statement-I nor statement-II are sufficient to answer the question.

**Direction (69-70) :** Read the following information carefully and answer the questions given below:

*Six persons A, B, C, D, E, and F are sitting in two rows, three in each.*

*E is not at the end of any row.*

*D is second to the left of F.*

*C, the neighbor of E, is sitting diagonally opposite to D.*

*B is the neighbor of F.*

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69. Which of the following pair is sitting diagonally opposite each other?
- (A) F and C
  - (B) A and C
  - (C) D and A
  - (D) A and F
70. Which of the following persons are in the same row?
- (A) A and E
  - (B) E and D
  - (C) C and B
  - (D) A and B

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*Space for rough work*

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