



# 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) Maths	(II) Science	(III) Logical Reasoning & IQ
Number of Questions	30	20	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.



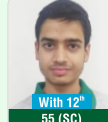



Answer Key and Video  
Solutions Kindly Scan  
QR Code and subscribe  
Matrix youtube channel

# MATRIX: Where producing outstanding results is a habit!

## JEE ADVANCED TOPPERS

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

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

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

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

 Class 12 <sup>th</sup> 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 10 <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
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## OUR BOARD TOPPERS

99.20%  Class 10 <sup>th</sup> Pinakin Choudhary	98.80%  Class 10 <sup>th</sup> Aradhya Raina	98.20%  Class 10 <sup>th</sup> Laxmi	98.00%  Class 10 <sup>th</sup> Vishal Choudhary	97.80%  Class 10 <sup>th</sup> Preksha Singh	97.80%  Class 12 <sup>th</sup> Piyush Sagatani	97.60%  Class 12 <sup>th</sup> Khushee Binwal	97.60%  Class 12 <sup>th</sup> Reena	97.60%  Class 12 <sup>th</sup> Siddhant Lalpuria	97.40%  Class 12 <sup>th</sup> 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

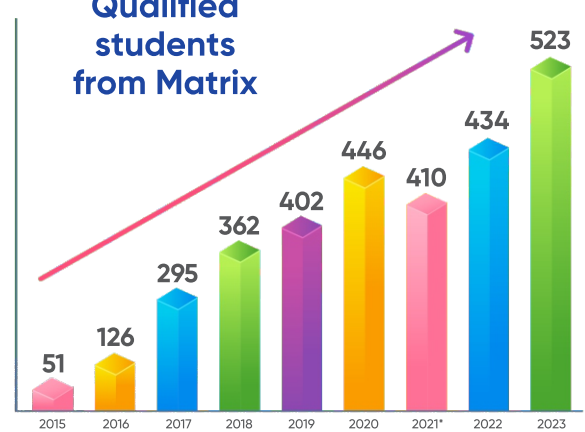
यह परिणाम मैट्रिक्स के केवल Yearlong classroom Program Students का ही है

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

## JEE Main Qualified students from Matrix



## JEE Advanced Qualified students from Matrix



Note : All results are from Matrix year long classroom program at Sikar only.

\*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

**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.

**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

Matrix System has  
produced one of  
the highest  
**NDA**  
selections in Sikar  
at a very early stage.

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

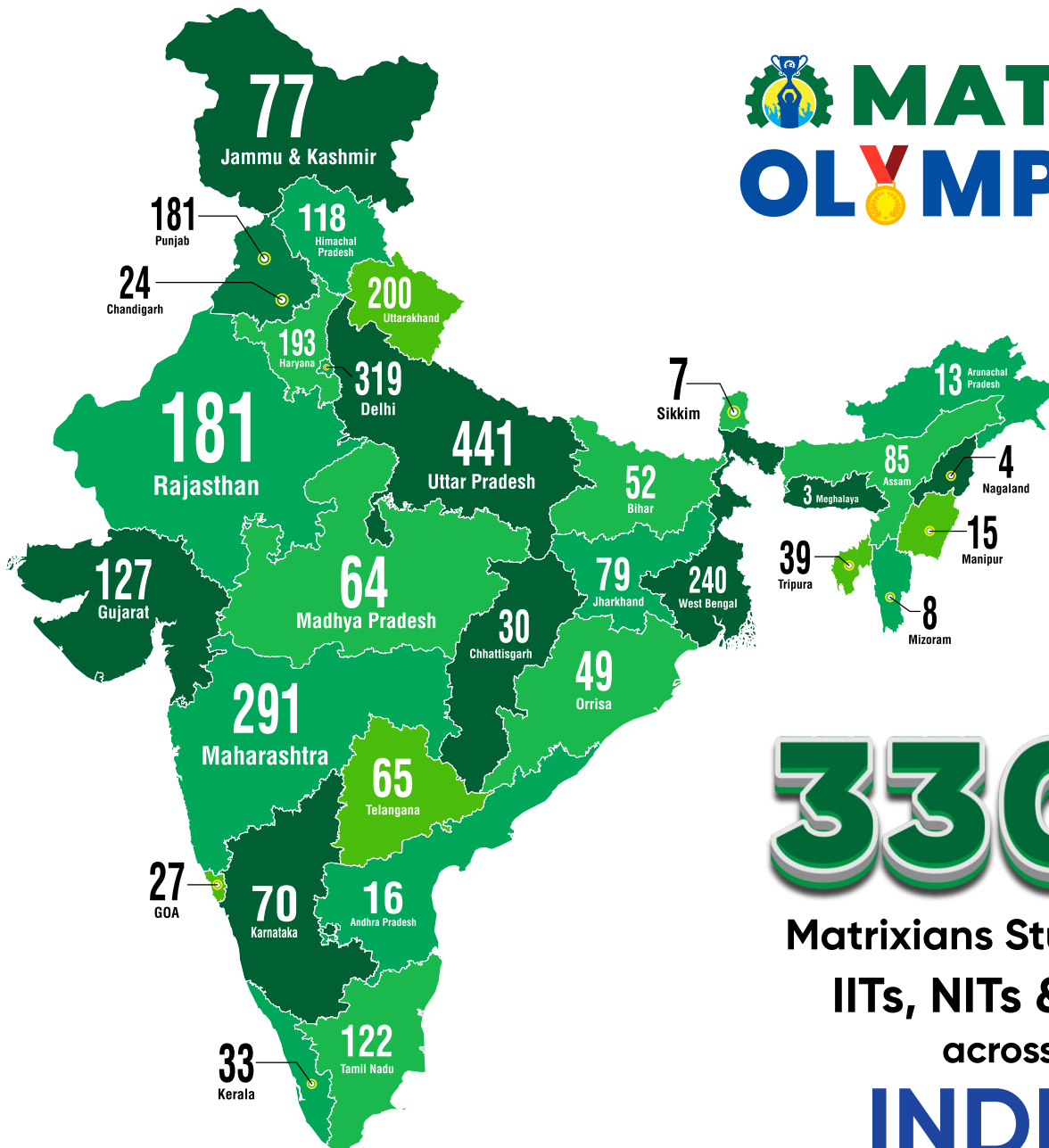
The Most  
**INNOVATIVE  
INSTITUTE** for  
**NEET, JEE &  
Pre-foundation**  
Covering & Serving

**5**  
Major State of  
the Country

Every student  
matters! Every  
student has  
potential!

Highest quality  
of management  
and student care  
for each student





# 3302

Matrixians Studied at  
IITs, NITs & IIITs  
across  
**INDIA**





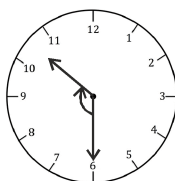
# PART I : MATHEMATICS

This section contains 30 Multiple Choice Questions (Q : 01 to Q : 30). Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

1. The longest line segment in the following figure is :



- (A)  $\overline{AB}$   
 (B)  $\overline{BE}$   
 (C)  $\overline{AE}$   
 (D)  $\overline{AF}$
2. An angle measure  $360^\circ$  is called :  
 (A) A zero angle  
 (B) A straight angle  
 (C) A reflex angle  
 (D) A complete angle
3. If the difference of two complementary angles is  $30^\circ$ , then the angles are :  
 (A)  $20^\circ, 50^\circ$   
 (B)  $40^\circ, 70^\circ$   
 (C)  $105^\circ, 75^\circ$   
 (D)  $60^\circ, 30^\circ$
4. When it is 10 : 30, what kind of angle is formed by the hands of the clock ?



- (A) Acute angle  
 (B) Obtuse angle  
 (C) Right angle  
 (D) Straight angle

5. What is the product of 100 and 10 ?  
 (A) 10000  
 (B) 100000  
 (C) 1000  
 (D) 1000000
6. Ram bought a computer for Rs. 72863. There was a defect in that computer, so he sold it for Rs. 4725. What is his loss ?  
 (A) Rs. 68138  
 (B) Rs. 68183  
 (C) Rs. 68318  
 (D) Rs. 63818
7. Neha distributes 12 bananas equally among 4 monkeys. How many bananas does each monkey get ?  
 (A) 8 Bananas  
 (B) 48 Bananas  
 (C) 16 Bananas  
 (D) 3 Bananas

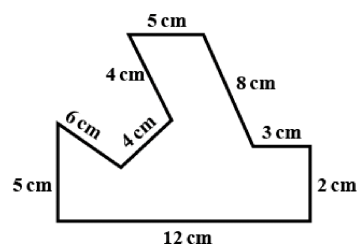
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8. The cost of a chair is Rs. 315. Find the cost of 27 such chairs.
- (A) Rs. 8505  
(B) Rs. 8055  
(C) Rs. 8550  
(D) Rs. 0855
9. Which option shows the first three common multiples of 3, 6 and 4 ?
- (A) 12, 24, 36  
(B) 12, 18, 24  
(C) 18, 24, 36  
(D) 12, 21, 24
10. Select the CORRECT statement.
- (A) A composite number is any number that has less than two factors.  
(B) A composite number has only two factors, one and itself.  
(C) A composite number is any number that has more than two factors.  
(D) A prime number is any number that has more than two factors.
11. Which of the following show the factors of 28 ?
- (A) 1, 2, 3, 5, 12  
(B) 7, 14, 21  
(C) 2, 7, 14, 18  
(D) 1, 2, 4, 7, 14, 28

12. Newport mall has a painting exhibition on every 4th day. Bell View mall has a painting exhibition on every 5th day. On what day will both the malls have a painting exhibition ?
- (A) On the 15th day  
(B) On the 20th day  
(C) On the 10th day  
(D) On the 19th day
13. Find the side of a square whose area is 36 sq. cm.
- (A) 9 cm  
(B) 12 cm  
(C) 6 cm  
(D) 10 cm
14. Find the perimeter of the given figure.



- (A) 50 cm  
(B) 94 cm  
(C) 55 cm  
(D) 49 cm

*Space for rough work*

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15. Find the area of rectangle if length and breadth of the rectangle are 32cm and 50 cm respectively.

(A)  $1600 \text{ cm}^2$   
(B)  $1060 \text{ cm}^2$   
(C)  $1605 \text{ cm}^2$   
(D)  $1506 \text{ cm}^2$

16. Find the cost of fencing a square field of side 16 m at the rate of Rs. 10 per meter.

(A) Rs. 610  
(B) Rs. 630  
(C) Rs. 640  
(D) Rs. 650

17. Find volume of cuboid with length 6cm, breadth 4 cm and height 2cm.

(A)  $24 \text{ cm}^3$   
(B)  $28 \text{ cm}^3$   
(C)  $64 \text{ cm}^3$   
(D)  $48 \text{ cm}^3$

18. Which of the following option is correct ?

(A) Volume = Length  $\times$  breadth  
(B) Height =  $\frac{\text{Volume}}{\text{length} \times \text{breadth}}$   
(C) Both (A) and (B)  
(D) None of these

19. Convert 4 litres into cubic centimeters.

(A) 400  
(B) 40000  
(C) 4  
(D) 4000

20. A fish tank 45cm by 10cm by 20cm is full of water. How many liters of water is there in the fish tank ?

(A) 9 L  
(B) 90 L  
(C) 900 L  
(D) 9000 L

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

Column – I	Column – II
P. $[109 + (48 \div 6)] \div (7 + 3 - 1)$	1. 25
Q. $16 + 7 + (20 \div 5 - 2)$	2. 24
R. $29 - (44 \div 4) + (8 - 2)$	3. 13

Code :

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

Space for rough work

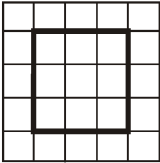
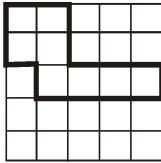
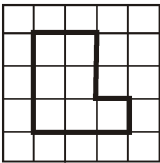
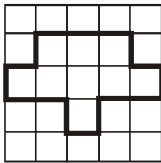
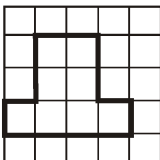
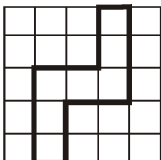
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22. Match Column – I (area of 1 small square = 1sq. unit) with Column – II (area of 1 small square = 1sq. unit) and select the correct answer using the codes given below.

Column – I	Column – II
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<p>P.</p> 	<p>1.</p> 
<p>Q.</p> 	<p>2.</p> 
<p>R.</p> 	<p>3.</p> 

Code :

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

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

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

- |   |                          |
|---|--------------------------|
| <p>P. The intersection of two planes is</p>   | <p>1. Countless</p>      |
| <p>Q. Example of parallel lines is</p>        | <p>2. Railway lines</p>  |
| <p>R. Number of points lying on a line is</p> | <p>3. Straight lines</p> |

Code :

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

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

- (i) Two parallel lines intersect each other at a point.
- (ii) Two line segment may intersect at two points.
- (iii) If two lines intersect at a point 'P', then 'P' is called the point of intersection of the two lines.

Code :

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

Space for rough work

\*\*\*\*\* D05291023 \*\*\*\*\*

D05291023

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

- (i) The volume of the solid is measured in square units.
- (ii) The amount of space occupied by an object is known as volume.
- (iii) We can find the volume of a 2D shape.

**Code :**

(i) (ii) (iii)

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

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

- (i) All natural number are either prime or composite.
- (ii) A number having only two factors is called a prime number.
- (iii) An even number can never be a prime number.

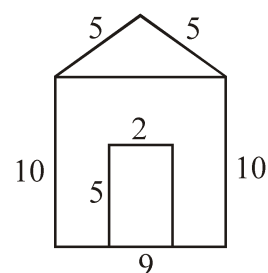
**Code :**

(i) (ii) (iii)

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

### Paragraph for Questions 27 & 28

Monika found an old wooden doll house in the attic. She wants to get it fixed and decorated. Before she buy supplies, she needs to make some measurements in order to find out what supplies she needs. Measurement is finding the amount or size something. There are many different kinds of measurements and various ways to measure it. But in Monika's case, she will be looking for the perimeter of house and area of the doll house main gate.



27. Find out the perimeter of Monika house.

- (A) 49
- (B) 39
- (C) 59
- (D) 69

28. Find out the area of Monika doll house main gate.

- (A) 10 sq. unit
- (B) 7 sq. unit
- (C) 14 sq. unit
- (D) 24 sq. unit

*Space for rough work*

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D05291023

### Paragraph for Questions 29 & 30

The school offers you and your friends an opportunity to purchase a tree sapling in support of grade V student's planting activity, which will promote tree planting practices among students and thus improve our Environment. There are 32 boys and 30 girls in the Grade V class.



29. Find the HCF of 32 and 30.

- (A) 15
- (B) 2
- (C) 10
- (D) 20

30. Find the LCM of 32 and 30.

- (A) 480
- (B) 840
- (C) 820
- (D) None of these

\*\*\*\*\* D05291023 \*\*\*\*\*

*Space for rough work*

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# PART II : SCIENCE

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

- |  |   |
|--|---|
| <p><b>31.</b> Webbed feet is an adaptation in :</p> <p>(A) Aerial birds</p> <p>(B) Aquatic birds</p> <p>(C) Ostrich</p> <p>(D) Reptilian birds</p> <p><b>32.</b> What does the term ectothermic mean ?</p> <p>(A) The temperature of the organism is regulated by the organism.</p> <p>(B) The temperature of the organism is regulated by the environment.</p> <p>(C) The temperature of the organism stays constant.</p> <p>(D) None of these</p> <p><b>33.</b> Mammals, fish, birds, reptiles and amphibians are all-</p> <p>(A) Ectothermic</p> <p>(B) Endothermic</p> <p>(C) Invertebrates</p> <p>(D) Vertebrates</p> <p><b>34.</b> Animals and birds move from one place to another in groups. What is this movement called ?</p> <p>(A) Hibernation</p> <p>(B) Aestivation</p> <p>(C) Migration</p> <p>(D) Reproduction</p> | <p><b>35.</b> Male reproductive part of a flower is made of :</p> <p>(A) Filaments</p> <p>(B) Pistil</p> <p>(C) Anther</p> <p>(D) Both (A) and (C)</p> <p><b>36.</b> Fusion of pollen grains with ovules is called _____.</p> <p>(A) Pollination</p> <p>(B) Fertilization</p> <p>(C) Germination</p> <p>(D) Fermentation</p> <p><b>37.</b> _____ have special types of stems that have buds which grow into new plants.</p> <p>(A) Sweet potato</p> <p>(B) Turmeric</p> <p>(C) Bryophyllum</p> <p>(D) Dahlia</p> <p><b>38.</b> Platypus and echidna lay eggs though they are _____.</p> <p>(A) Mammals</p> <p>(B) Birds</p> <p>(C) Reptiles</p> <p>(D) Fishes</p> |
|--|---|

Space for rough work

- |   |  |
|---|--|
| <p><b>39.</b> Planaria reproduce by which type of asexual reproduction ?</p> <p>(A) Regeneration</p> <p>(B) Budding</p> <p>(C) Fission</p> <p>(D) Spore formation</p> | <p><b>44.</b> The heavy particles that settle down are called _____.</p> <p>(A) Solute</p> <p>(B) Solvent</p> <p>(C) Sediments</p> <p>(D) All of these</p>   |
| <p><b>40.</b> What is a fertilised egg called ?</p> <p>(A) Embryo</p> <p>(B) Baby</p> <p>(C) Gametes</p> <p>(D) None of these</p>                                     | <p><b>45.</b> _____ is the energy of an object has because of change in its motion or its position.</p> <p>(A) Mechanical energy</p> <p>(B) Light energy</p> <p>(C) Heat energy</p> <p>(D) None of these</p> |
| <p><b>41.</b> The amount of space each thing occupies is called its :</p> <p>(A) Volume</p> <p>(B) Weight</p> <p>(C) Area</p> <p>(D) All of these</p>                 | <p><b>46.</b> Electric gadget work because of _____ energy.</p> <p>(A) Sound</p> <p>(B) Electrical</p> <p>(C) Light</p> <p>(D) None of these</p>   |
| <p><b>42.</b> There are _____ states of matter.</p> <p>(A) Three</p> <p>(B) One</p> <p>(C) Two</p> <p>(D) All of these</p>  | <p><b>47.</b> Our main source of energy is the _____.</p> <p>(A) Sun</p> <p>(B) Petrol</p> <p>(C) Coal</p> <p>(D) Wood</p>   |
| <p><b>43.</b> Sugar is _____ in water.</p> <p>(A) Insoluble</p> <p>(B) Soluble</p> <p>(C) Can't say</p> <p>(D) None of these</p>                                      |  |

\*\*\*\*\* D05291023 \*\*\*\*\*

*Space for rough work*

D05291023

48. Canning, dehydration and pickling are methods of \_\_\_\_\_ food.
- (A) Preserving  
(B) Cooking  
(C) Garnishing  
(D) None of these
49. Kwashiorkor occurs because of deficiency of \_\_\_\_\_ in the diet.
- (A) Fats  
(B) Carbohydrates  
(C) Proteins  
(D) All of these
50. Butter, Carrot, milk, tomato are good source of:
- (A) Vitamin D  
(B) Vitamin A  
(C) Vitamin C  
(D) All of these

\*\*\*\*\* D05291023 \*\*\*\*\*

*Space for rough work*

D05291023



### PART III : 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.

**51.** Find the missing number which will complete the given series.

18, 22, 30, 42, ?, 78

- (A) 52
- (B) 56
- (C) 58
- (D) 68

**52.** Find the missing number which will complete the given series.

10, 20, 31, ?, 56, 70

- (A) 42
- (B) 43
- (C) 44
- (D) 45

**53.** Find the missing letter in the given series.

A, B, E, ?, Q, Z

- (A) I
- (B) J
- (C) K
- (D) L

**54.** Vivek walked 2 km North, took a right turn and walked 1 km. Then he took a left turn and walked 2 km. In which direction is he facing now ?

- (A) North
- (B) South
- (C) East
- (D) West

**55.** Mohan started walking straight facing West. After walking a distance of 16 m, he took a left turn. After walking 12 m, he took a left turn again and cover 8 m distance. Which direction is he facing now ?

- (A) North
- (B) South-West
- (C) East
- (D) South

**56.** Rahul ranks 7<sup>th</sup> place from the top and 26<sup>th</sup> place from the bottom in a class. How many students are there in the class ?

- (A) 31
- (B) 32
- (C) 33
- (D) 44

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*Space for rough work*

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57. What is the value of the given expression by using BODMAS :

$$32 \times 2 + 40 \div 8 - 52$$

- (A) 39  
(B) 21  
(C) 17  
(D) 27

58. Select the correct mirror image of the given combination of letters. If the mirror is placed at the line AB.

DKJM  
A  
B

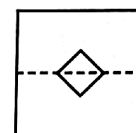
- (A) MLKD  
(B) DKJM  
(C) MLKD  
(D) DKJM

59. Find the correct water-image of the given word :

ANT

- (A) ANT  
(B) ANT  
(C) ANT  
(D) ANT

60. A square transparent sheet (X), with a pattern and a dotted line on it is given. Find the figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.



Sheet (X)

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

Space for rough work