



# 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.



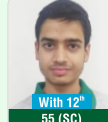



Answer Key and Video  
Solutions Kindly Scan  
QR Code and subscribe  
Matrix youtube channel

# 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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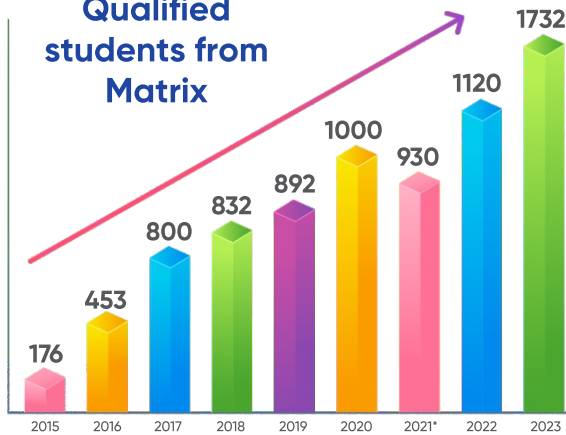
Authenticity of result, promise of Matrix!

\*cumulative result so far

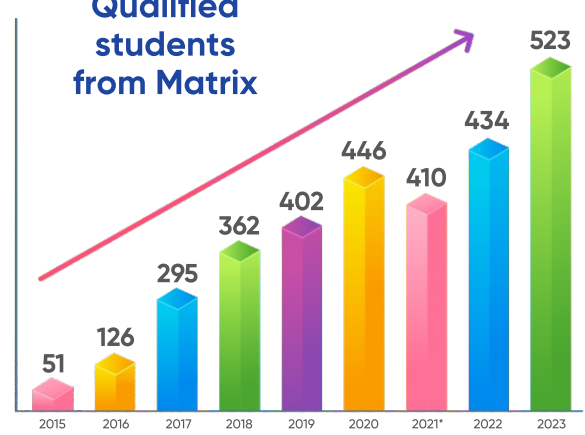
यह परिणाम मैट्रिक्स के केवल Yearlong classroom Program Students का ही है

# 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

**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.

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

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

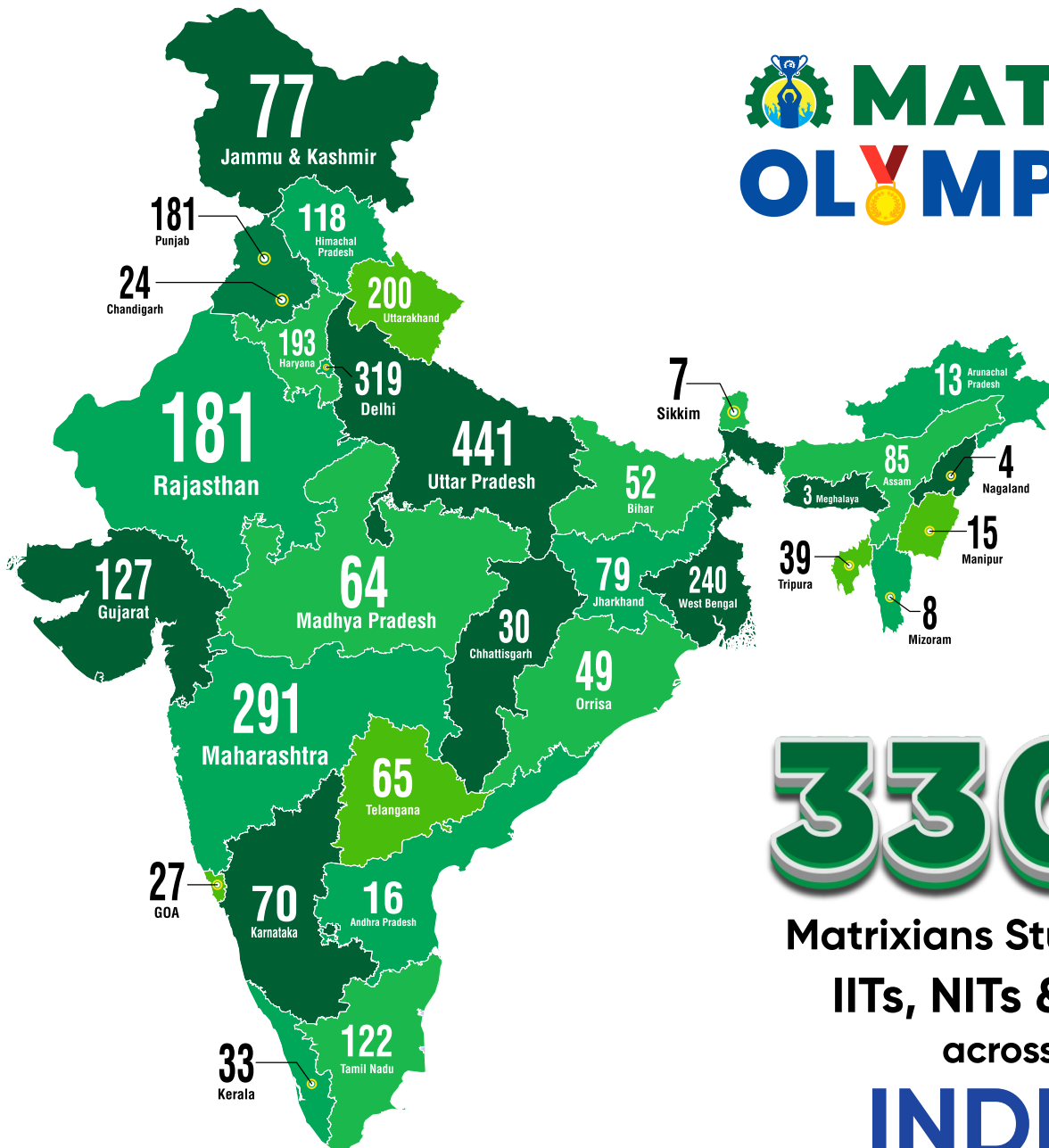
The Most  
**INNOVATIVE  
INSTITUTE** for  
**NEET, JEE &  
Pre-foundation**  
Covering & Serving

**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.

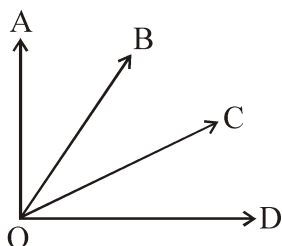
1. A \_\_\_\_\_ is a one-dimensional figure with one end point and it extends infinitely in one direction.

(A) Line segment  
(B) Line  
(C) Ray  
(D) Point

2. Which of the following geometrical figure has no end points ?

(A) A line  
(B) A plane  
(C) A ray  
(D) A line segment

3. How many angles are there in the given figure below :



(A) Five angles  
(B) Three angles  
(C) Seven angles  
(D) Six angles

4. An angle whose measure is between  $0^\circ$  and  $90^\circ$  is called :

(A) Obtuse angle  
(B) Complete angle  
(C) Acute angle  
(D) Right angle

5. Subtract 10817593 from 82754380 gives :

(A) 71936787  
(B) 4242624147  
(C) 42624147  
(D) 42424147

6. Which of the following option is correct ?

(A)  $35680 + 56925 = 91605$   
(B)  $580378 + 885646 = 1486024$   
(C)  $298745 + 745286 = 1044031$   
(D)  $64964 + 56738 = 127102$

7. Nancy's garden has 42 rows of roses with 28 roses in each row. How many roses are in her garden ?

(A) 2106  
(B) 1176  
(C) 2066  
(D) 3245

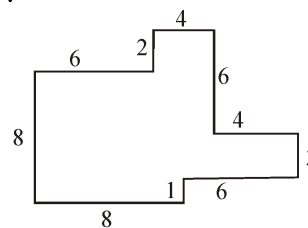
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8. Rohan has a wardrobe. If 200 shirts are there in 5 rows, then how many shirts are there in each row ?
- (A) 205  
(B) 250  
(C) 040  
(D) 1000
9. In which of the following expressions, prime factorisation has been done correctly ?
- (A)  $56 = 7 \times 2 \times 2 \times 2$   
(B)  $70 = 2 \times 5 \times 7 \times 9$   
(C)  $54 = 2 \times 3 \times 9$   
(D)  $24 = 2 \times 3 \times 4$
10. What is the divisibility rule of 4 ?
- (A) If the last digit of a number is 4.  
(B) If the last digit of a number is 0.  
(C) If the last two digits of a number are divisible by 4.  
(D) If the sum of last two digits of a number are divisible by 4.
11. The LCM of 15, 20 and 25 is :
- (A) 300  
(B) 600  
(C) 800  
(D) 900

12. What is the highest common factor of 36 and 84 ?
- (A) 4  
(B) 6  
(C) 12  
(D) 18
13. Length of a rectangle =  $\frac{\text{Area}}{?}$ .
- (A) Perimeter  
(B) Breadth  
(C) Length  
(D) All of these
14. Area of a triangle having base 15 cm and altitude 6 cm is:
- (A)  $45 \text{ cm}^2$   
(B)  $90 \text{ cm}^2$   
(C) 90 cm  
(D) 45 cm
15. Find the perimeter (in centimeter) of the given figure :



- (A) 57 cm  
(B) 48 cm  
(C) 37 cm  
(D) 67 cm

*Space for rough work*

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16. The perimeter of a rectangular photo frame is 30 cm. If length of rectangle is 7cm, then find its area.

(A) 56 cm  
(B) 56 sq. cm  
(C) 65 sq. cm  
(D) 65 cm

17. The sides of cuboidal box are 14 m, 9 m and 9 m, then find its volume.

(A) 1143 m<sup>2</sup>  
(B) 1134 m  
(C) 1134 m<sup>2</sup>  
(D) 1134 m<sup>3</sup>

18. How many faces does a brick have ?

(A) 8  
(B) 6  
(C) 10  
(D) 12

19. How many cubes of edge 6 cm will fill up a box of 15 cm long, 18 cm wide and 24 cm high ?

(A) 30  
(B) 60  
(C) 90  
(D) 15

20. Convert 7000 cm<sup>3</sup> into litres.

(A) 0.07 l  
(B) 70 l  
(C) 0.7 l  
(D) 7 l

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

Column – I	Column – II
P. Area of rectangle	1. side $\times$ side
Q. Area of square	2. length $\times$ breadth
R. Perimeter of rectangle	3. 2 length + 2 breadth

Code :

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

22. Match **Column – I** with **Column – II (Their representation)** and select the correct answer using the codes given below.

Column – I	Column – II
P. Line	1. $\overline{AB}$
Q. Ray	2. $\overrightarrow{AB}$
R. Line segment	3. $\overleftrightarrow{AB}$

Code :

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

Space for rough work

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23. Match **Column – I (Number)** with **Column – II (Their correct prime factorisation)** and select the correct answer using the codes given below.

Column – I	Column – II
P. 90	1. $2 \times 2 \times 3 \times 3$
Q. 96	2. $2 \times 3 \times 3 \times 5$
R. 36	3. $2 \times 2 \times 2 \times 2 \times 2 \times 3$

**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) If two lines intersect each other, then the vertically opposite angles are equal.  
(ii) Two parallel lines intersect at three points.  
(iii) Intersecting lines cut each other at one point.

**Code :**

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

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

**Areas and Perimeters**

- (i) If the area of a square is  $64 \text{ cm}^2$ , then its side is 8 cm.  
(ii) Area of a rectangle equal to the product of adjacent sides.  
(iii) If the perimeter of a square is 36 cm then its side is 10 cm.

**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) Volume of a liquids is usually measured in litres.  
(ii) Volume of a solid shape is measured in cubic units.  
(iii) Volume is the space enclosed by a 2-Dimensional object.

**Code :**

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

*Space for rough work*

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**Paragraph for Questions 27 & 28**

Order of operations :

<b>B</b> Bracket	<b>O</b> Of	<b>D</b> Divide	<b>M</b> Multiply	<b>A</b> Add	<b>S</b> Subtract
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27. Solve the following :  $13 + 12 \times 9 \div 3 - 6$
- (A) 69  
(B) 43  
(C) 34  
(D) 42
28. Solve the following :  $-1 \times [(3 - 4 \times 7) \div 5]$   
 $- 2 \times 24 \div 6$
- (A) -3  
(B) 3  
(C) 8  
(D) -4

**Paragraph for Questions 29 & 30**

A school organised an educational trip to the Taj Mahal. The Mathematics teacher took 5th standard students to the Taj Mahal. The teacher had interest in history as well. The teacher told to students that the length and width of a rectangular marble tile is 80 cm by 20cm respectively, that were used to form it.



29. Find the perimeter of a marble tile that were used to form it.
- (A) 100 cm  
(B) 120 cm  
(C) 200 cm  
(D) 250 cm
30. Find the area of a marble tile.
- (A)  $1600 \text{ m}^2$   
(B)  $1600 \text{ cm}^2$   
(C)  $1250 \text{ cm}^2$   
(D)  $2600 \text{ cm}^2$

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.

**31.** Animals with backbones or spinal cord are called :

- (A) Invertebrates
- (B) Vertebrates
- (C) Insects
- (D) Ants

**32.** A butterfly has \_\_\_\_\_ wings to fly.

- (A) 2
- (B) 4
- (C) 6
- (D) 8

**33.** Which disease is/are spread by mosquitoes:

- (A) Dengue
- (B) Yellow fever
- (C) Malaria
- (D) All of these

**34.** Which kind of an animal is a deer ?

- (A) Diurnal
- (B) Nocturnal
- (C) Crepuscular
- (D) None of these

**35.** The seeds of plants need to disperse to:

- (A) Ensure the continuity and survival of the species.
- (B) Avoid overcrowding in one place.
- (C) Prevent the competition of parent plants with offspring for water, nutrients and sunlight.
- (D) All of these

**36.** A group of brightly coloured petals is called

- (A) Corolla
- (B) Calyx
- (C) Stamen
- (D) Pistil

**37.** The pollen grains must reach the \_\_\_\_\_ of the flower for pollination to occur.

- (A) Stigma
- (B) Filament
- (C) Style
- (D) Ovule

*Space for rough work*

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38. The body of the parent breaks down into fragments and each piece can grow into a new offspring. This mode of asexual reproduction is called \_\_\_\_\_.

- (A) Budding
- (B) Regeneration
- (C) Fragmentation
- (D) Fission

39. Which of following type of animals give birth directly to young ones ?

- (A) Birds
- (B) Fish
- (C) Mammals
- (D) Reptiles

40. The device used for artificial incubation is a/an-

- (A) Incubator
- (B) Desiccator
- (C) Oven
- (D) Microwave

41. Example of immiscible liquids:

- (A) Ink in water
- (B) Milk in water
- (C) Oil in water
- (D) Vinegar in water

42. Alum is a chemical that helps in sedimentation as it increases the rate of sedimentation this process is called \_\_\_\_\_.

- (A) Decantation
- (B) Loading
- (C) Distillation
- (D) Filtration

43. Liquids changes into gases by increase in temperature or decrease in pressure. This process is called \_\_\_\_\_.

- (A) Sublimation
- (B) Freezing
- (C) Evaporation
- (D) Condensation

44. The gravity on the moon is \_\_\_\_\_ of that on the Earth.

- (A) Same
- (B) One third
- (C) One-Sixth
- (D) One tenth

45. Which type of simple machine uses a slanted surface that connects a lower level to a higher level ?

- (A) Inclined plane
- (B) Lever
- (C) Screw
- (D) Wedge

*Space for rough work*

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46. Energy associated with the movement of the object is called \_\_\_\_\_.

- (A) Kinetic
- (B) Potential
- (C) Solar
- (D) Geothermal

47. Non-Renewable sources of energy is/are:

- (A) Nuclear energy
- (B) Hydro energy
- (C) Solar energy
- (D) Wind energy

48. Plants make their food by \_\_\_\_\_.

- (A) Photosynthesis
- (B) Respiration
- (C) Transpiration
- (D) Excretion

49. All living organisms need \_\_\_\_\_ to carry out different life processes.

- (A) Milk
- (B) Curd
- (C) Rice
- (D) Energy

50. The first food pyramid was published in Sweden in \_\_\_\_\_.

- (A) 1979
- (B) 1974
- (C) 1985
- (D) 1970

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*Space for rough work*

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### 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.

**Direction (51 – 52) :** Choose the correct alternative that will continue the same pattern and replace the question mark in the given series.

51. 84, 78, 72, 66, 60, 54, 48, ?

- (A) 44
- (B) 42
- (C) 46
- (D) 34

52. 2, 3, 5, 7, 11, ?, 17

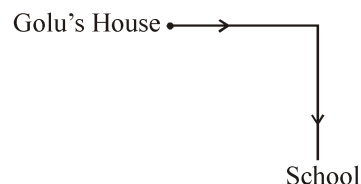
- (A) 12
- (B) 13
- (C) 14
- (D) 15

53. In the given question, various terms of an alphabet series are given with one term missing as shown by (?). Choose the missing term out of the given alternative.

H, I, K, N, ?

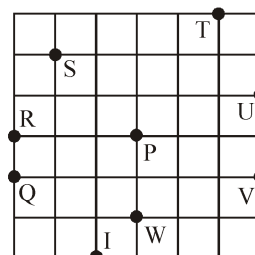
- (A) O
- (B) Q
- (C) R
- (D) S

54. The picture given below present the Golu's route to school from his house. What is the directions sequence of his route ?



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

55. In the given question which point is in North-West of P ?



- (A) R
- (B) S
- (C) T
- (D) V

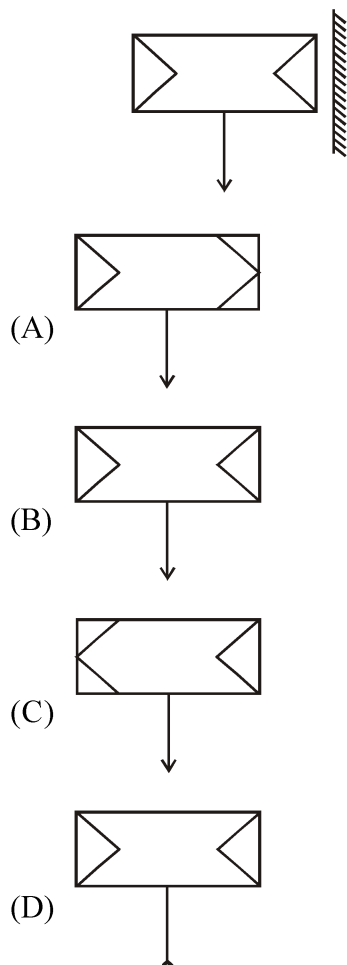
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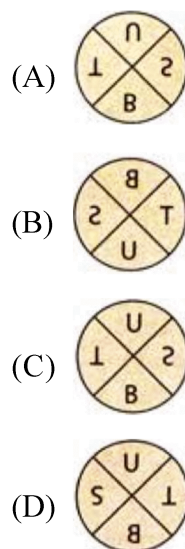
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56. Choose the correct mirror image of the given figure (X) amongst the four alternatives :



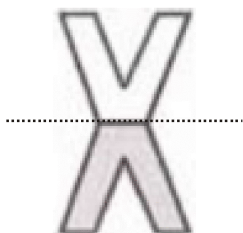
57. Choose the correct water image of the given figure (X) from amongst the four alternatives :



58. Rahul is 14<sup>th</sup> place from the right end in a row of 40 boys. What is his position from the left end ?
- (A) 24<sup>th</sup>
- (B) 25<sup>th</sup>
- (C) 26<sup>th</sup>
- (D) 27<sup>th</sup>
59. What is the value of given expression by using BODMAS :
- $$(5 - 3) \times (8 + 4) \div 6 = ?$$
- (A) 2
- (B) 3
- (C) 4
- (D) 6

Space for rough work

60. How does the given shape look like when the shaded part is folded in ?



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

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*Space for rough work*

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