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.
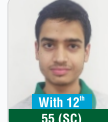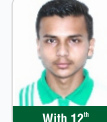
MATRIX: Where producing outstanding results is a habit!

JEE ADVANCED TOPPERS

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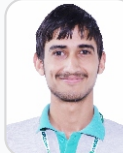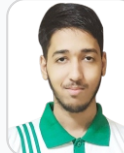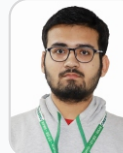
JEE MAIN TOPPERS

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

NEET (UG) Toppers

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

KVPY TOPPERS

AIR 6 (Gen.) Stream- SB Manas Jajodia	**AIR 8** (Gen.) Stream- SB Ishu	**AIR 13** (Gen.) Stream- SB Lakshaya	**AIR 17** (Gen.) Stream- SB Akshay Choudhary	**AIR 37** (Gen.) Stream- SB Chirag Indoria

STSE TOPPERS

1st State Rank Class 12th Aman Nehra	**2nd** State Rank Class 12th Aman Nehra	**2nd** State Rank Class 12th Dinesh Kumar	**2nd** State Rank Class 10th Pranshu Bharia	**2nd** State Rank Class 10th Shrishti	**2nd** State Rank Class 10th Rohit Yadav	**3rd** State Rank Class 10th Dev Kumar	**3rd** State Rank Class 10th Mohd. Farhan

OUR BOARD TOPPERS

99.20% Class 10th Pinakin Choudhary	**98.80%** Class 10th Aradhya Raina	**98.20%** Class 10th Laxmi	**98.00%** Class 10th Vishal Choudhary	**97.80%** Class 10th Preksha Singh	**97.80%** Class 12th Piyush Sagatani	**97.60%** Class 12th Khushee Binwal	**97.60%** Class 12th Reena	**97.60%** Class 12th Siddhant Lalpuria	**97.40%** Class 12th Rohit Yadav

NTSE TOPPERS

1st State Rank Aditya Jhajhria	**1st** State Rank Nayan Godara	**1st** State Rank Aman Nehra	**2nd** State Rank Aaditya Pratap	**2nd** State Rank Mayank Soni	**4th** State Rank Aditya Bijarniya	**5th** State Rank Pragati

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

Year	Students
2015	176
2016	453
2017	800
2018	832
2019	892
2020	1000
2021*	930
2022	1120
2023	1732
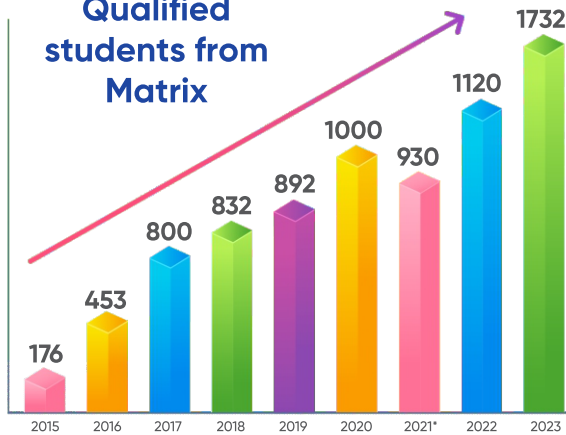
JEE Advanced Qualified students from Matrix

Year	Students
2015	51
2016	126
2017	295
2018	362
2019	402
2020	446
2021*	410
2022	434
2023	523
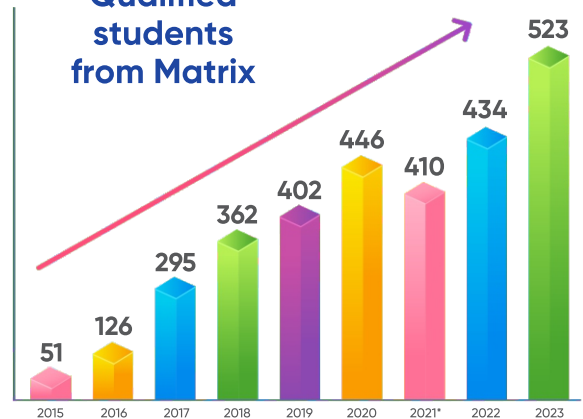
*due to covid

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

"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

MATRIX OLYMPIAD

77 Jammu & Kashmir
181 Punjab
118 Himachal Pradesh
24 Chandigarh
200 Uttarakhand
193 Haryana
319 Delhi
181 Rajasthan
441 Uttar Pradesh
7 Sikkim
13 Arunachal Pradesh
85 Assam
4 Nagaland
3 Meghalaya
52 Bihar
39 Tripura
15 Manipur
127 Gujarat
64 Madhya Pradesh
30 Chhattisgarh
79 Jharkhand
240 West Bengal
8 Mizoram
291 Maharashtra
49 Orrisa
65 Telangana
27 GOA
70 Karnataka
16 Andhra Pradesh
33 Kerala
122 Tamil Nadu

3302
Matrixians Studied at
IITs, NITs & IIITs
across
INDIA

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.*

1. Which graph represents a state of rest for an object ?

(A)
Displacement ↑ s / t (Time →)

(B)
Velocity ↑ u / t (Time →)

(C)
Acceleration ↑ a / t (Time →)

(D)
Displacement ↑ s / t (Time →)
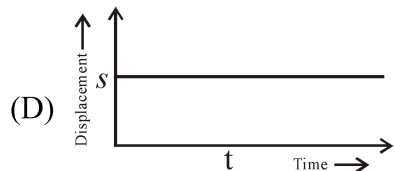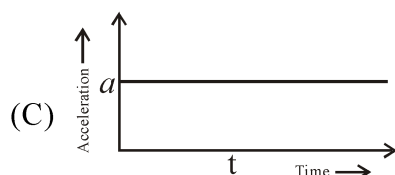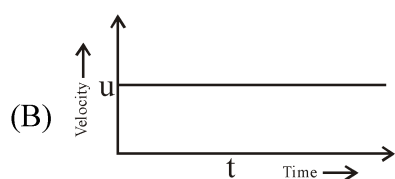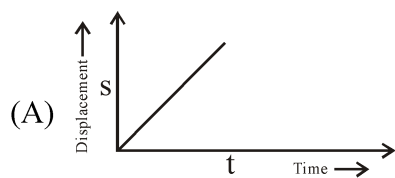
2. A boy standing at the top of a tower of 20 m height drops a stone. Assuming g = 10 ms^{-2}, the velocity with which it hits the ground is :

(A) 5.0 m/s

(B) 10.0 m/s

(C) 20.0 m/s

(D) 40.0 m/s

3. When a car driver travelling at a speed of 10m/s applies brakes and brings the car rest in 20 second then the retardation will be :

(A) +2m/s^2

(B) −2m/s^2

(C) −0.5m/s^2

(D) +0.5m/s^2

4. A force of 100 dyne acts on a mass of 5 gram for 10 sec. The velocity produced is :

(A) 2000 cm/sec

(B) 200 cm/sec

(C) 20 cm/sec

(D) 2 cm/sec

5. A gun fires a bullet of mass 50 g with a velocity of 30 m sec^{-1}. Because of this the gun is pushed back with a velocity of 1 msec^{-1}. The mass of the gun is :

(A) 15 kg

(B) 30 kg

(C) 1.5 kg

(D) 20 kg

***** C09221023 *****

Space for rough work

C09221023

6. An electric fan continue to rotate for sometimes. After current switched of :

(A) Momentum

(B) Unbalanced force

(C) Inertia

(D) Balanced force

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

Column – I	Column – II
P. Change in velocity per unit time	**1.** $Kgms^{-1}$
Q. Linear momentum	**2.** $N \times s$
R. Impulse	**3.** ms^{-2}

Code :

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

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

(i) Aeroplane always fly at low altitude.

(ii) Force is required to move a body uniformly along a circle.

(iii) Newton's third law of motion is applicable only when bodies in motion.

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

When an object is in motion, its position changes with time. So, the quantity that describes how fast is the position changes with respect to time and in what direction is given by average velocity. It is defined as the change in position or displacement (x) divided by the time interval (t) in which that displacement occurs. However, the quantity used to describe the rate of motion over the actual path is average speed. It is defined as the total distance travelled by the object divided by the total time.

9. A cyclist is moving on a circular track of a radius of 40 m and completes half a revolution in 40 s. Its average velocity (in m/s) is :

(A) zero

(B) 2

(C) 4π

(D) 8π

Space for rough work

10. Average speed of a car between points A and B is 20 m/s, between B and C is 15 m/s and between C and D is 10 m/s. What is the average speed between A and D, if the time taken in the mentioned sections is 20s, 10s and 5s, respectively ?

(A) 17.14 m/s

(B) 15 m/s

(C) 10 m/s

(D) 45 m/s

***** C09221023 *****

Space for rough work

C09221023

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. Which of the following statement/s is /are correct ?

(i) The quality of air is expressed in ppm.

(ii) Supersaturated solutions contain more solute then the solubility of that solute at the particular temperature.

(iii) Solubility of solid solutes does not depend on temperature.

(iv) Solubility of gases in solvents depends upon the pressure acting on the solution.

(A) Only (i) and (ii) are correct

(B) Only (i) and (iii) are correct

(C) Only (i), (ii) and (iv) are correct

(D) Only (i), (ii) and (iii) are correct

12. A solution contains 5 mL of alcohol in 70 mL of water. The volume by volume percentage of solution is

(A) 6.33%

(B) 6.55%

(C) 6.66%

(D) 6.75%

13. Which of the following temperature is same whether it is expressed in the Celsius or the Fahrenheit scale.

(A) –40°

(B) –20°

(C) –10°

(D) –30°

14. Which of the following sets contains substances which undergo sublimation ?

(A) Sodium Chloride, Ammonium Chloride, Iodine

(B) Dry ice, Ammonium Chloride, Camphor

(C) Naphthalene, Camphor, Potassium Chloride

(D) Benzoic acid, Calcium chloride, Potassium Chloride

15. Tincture of Iodine has antiseptic properties. This solution is made by dissolving :

(A) Iodine in carbon tetrachloride

(B) Iodine in acetone

(C) Iodine in benzene

(D) Iodine in alcohol and water

***** C09221023 *****

Space for rough work

C09221023

16. During the separation of immiscible liquid-liquid mixture by a separating funnel, the following steps are followed. Arrange them in a proper sequence-

(i) The nozzle tap is opened slowly and the heavier component is allowed to trickle down.

(ii) The liquid-liquid mixture is poured into the separating funnel clamped vertically.

(iii) The lighter component remains in the flask.

(iv) The mixture is allowed to stand where clear layers of liquids are formed.

(v) The liquid with higher density settles down at the bottom of the flask.

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

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

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

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

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

Column – I	Column – II
P. Mixture of sand and saw dust	**1.** Separating funnel
Q. Mixture of oil and water	**2.** Fractional distillation
R. Mixture of alcohol and water	**3.** Gravity separation

Code :

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

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

(i) Melting point is the temperature at which solid and liquid phases co-exist at one atmosphere pressure.

(ii) Melting point is the measure of strength of the forces of attraction between constituent particles.

(iii) During change of state from solid to liquid, temperature remains constant.

Code :

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

Paragraph for Questions 19 & 20

Diffusion is the phenomena of intermixing of particles of two gaseous substances on their own. Evaporation is the process of conversion of a liquid into vapours at any temperature below its boiling point.

Space for rough work

19. Which one of the following sets of phenomena would increase on raising the temperature ?

(A) Diffusion, evaporation, compression of gases

(B) Evaporation, compression of gases, solubility

(C) Evaporation, diffusion, expansion of gases

(D) Evaporation, solubility, diffusion, compression of gases

20. In which of the following conditions, the distance between the molecules of hydrogen gas would increases ?

(i) Increasing pressure on hydrogen gas contained in a closed container.

(ii) Some hydrogen gas leaking out of the container.

(iii) Increasing the volume of the container of hydrogen gas.

(iv) Adding more hydrogen gas to the container without increasing the volume of the container.

(A) (i) and (iii)

(B) (i) and (iv)

(C) (ii) and (iii)

(D) (ii) and (iv)

***** C09221023 *****

Space for rough work

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. Which of the following is called "an organelle within an organelle" ?

(A) Plastid

(B) Ribosome

(C) Lysosome

(D) Microsome

22. Nucleolus was discovered by :

(A) Fontana

(B) Schleiden

(C) Altmann

(D) Robert Brown

23. Identify human cells which lack nucleus.

(A) WBC

(B) RBC

(C) Muscle cells

(D) Nerve cells

24. Xylem takes part in:

(A) Conduction of water in the plant body

(B) Conduction of food material

(C) Providing mechanical support

(D) Both (A) and (C)

***** C09221023 *****

25. Tissue that is absent in monocots is:

(A) Aerenchyma

(B) Chlorenchyma

(C) Collenchyma

(D) Sclerenchyma

26. The term tissue was given by

(A) Robert Hooke

(B) Leeuwenhoek

(C) Bichat

(D) Meyer

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

Column – I	Column – II
P. Aleuroplasts	**1.** Store lipids
Q. Elaioplasts	**2.** Store protein granules
R. Leucoplasts	**3.** Contain colourless pigments.

Code :

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

Space for rough work

C09221023

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

(i) Ribosomes are involved in protein synthesis.

(ii) All cells have cell wall.

(iii) Fluid mosaic model of cell membrane was proposed by Singer and Nicolson

Code :

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

Paragraph for Questions 29 & 30

Below diagram show four types of tissues, one of them is skeletal connective tissue two are dense connective tissue.
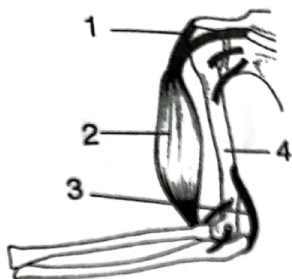
29. Label the part marked 1 to 4 in figure.

(A) 1 Tendon, 2 Muscle, 3 Ligament, 4 Bone

(B) 1 Ligament, 2 Muscle, 3 Tendon, 4 Bone

(C) 1 Tendon, 2 Bone, 3 Ligament, 4 Muscle

(D) 1 Ligament, 2 Bone, 3 Tendon, 4 Muscle

30. Ligament connects a bone with-

(A) Skin

(B) Muscle

(C) Bone

(D) Both (B) and (C)

Space for rough work

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.*

31. An irrational number between 2 and 2.5 is :

(A) $\sqrt{11}$

(B) $\sqrt{5}$

(C) $\sqrt{22.5}$

(D) $\sqrt{12.5}$

32. Find the value of x, if $5^{2x+1} = 6(5^x) - 1$.

(A) -1

(B) 0

(C) 1

(D) Both (A) and (B)

33. If x = $2 + \sqrt{3}$, then find the value of $x^2 + \dfrac{1}{x^2}$.

(A) 16

(B) 14

(C) 18

(D) 20

34. The distance between the graph of the equation y = –1 and y = 3 is :

(A) 2 units

(B) 4 units

(C) 3 units

(D) 1 unit

35. Students of a class are made to stand in rows. If one student is extra in a row, there would be 2 rows less. If one student is less in row, there would be 3 rows more. Find number of students in the class.

(A) 17

(B) 60

(C) 120

(D) 75

36. The value of k for which the system of equation has no solution is :

2x – 8y = 3, kx + 4y = 10

(A) –2

(B) 1

(C) –1

(D) 2

37. The area of triangle formed by the points P (0,1), Q (0,5) and R (3, 4) is :

(A) 16 sq. unit

(B) 8 sq. unit

(C) 4 sq. unit

(D) 6 sq. unit

Space for rough work

*****C09221023 *****

C09221023

38. The equation of a line that is parallel to x-axis and passing through the point (2, –5) is :

(A) y –5 = 0

(B) x + y –5 = 0

(C) y + 5 = 0

(D) 2x + 5y = 0

39. If the point (a, 0), (0, b)and (1, 1) are collinear then the value of $\frac{1}{a}+\frac{1}{b}$ is :

(A) 1

(B) 2

(C) 0

(D) –1

40. In the given figure, if 'a' is greater than 'b' by one third of a right angle then find the value of 'a'.
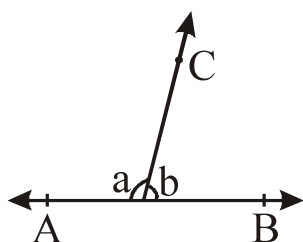
(A) 100°

(B) 75°

(C) 70°

(D) 105°

41. In the given figure, which of the following is correct ?
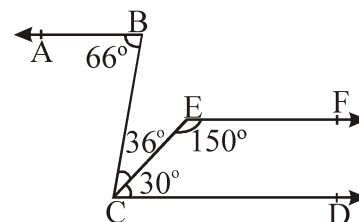
(A) AB || CD

(B) EF || CD

(C) Both (A) and (B)

(D) None of these

42. Supplementary angles are also called :

(A) Adjacent angles

(B) Linear pair

(C) Vertically opposite angles

(D) None of these

43. If AD is an altitude of an isosceles triangle ABC in which AB = AC. Then :

(A) BD = CD

(B) BD > CD

(C) BD < CD

(D) None of these

Space for rough work

***** C09221023 *****

C09221023

44. In the given figure, with the help of both diagram, the measure of $\angle B'A'C'$ is :
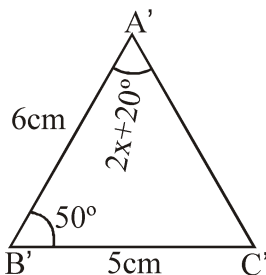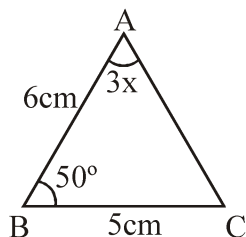
(A) 50°

(B) 60°

(C) 70°

(D) 80°

45. In a $\triangle ABC$, if $AB = AC$ and BC is produced to D such that $\angle ACD = 100^\circ$, then the value of $\angle A$ is :

(A) 20°

(B) 40°

(C) 60°

(D) 80°

46. If $p(x) = x - 4$, then $p(x) + p(-x)$ is equal to :

(A) -8

(B) 8

(C) $2x - 8$

(D) $2x + 8$

47. If $x^{51} + 51$ is divided by $x+1$, then the remainder is :

(A) 0

(B) 1

(C) 49

(D) 50

48. $(x + 1)$ is a factor of the polynomial

(A) $x^4 + 3x^3 + 3x^2 + x + 1$

(B) $x^3 + x^2 + x + 1$

(C) $x^3 + x^2 - x + 1$

(D) $x^4 + x^3 + x^2 + 1$

49. If $\dfrac{x}{y} + \dfrac{y}{x} = -1 \,(x, y \neq 0)$, then the value of $x^3 - y^3$ is :

(A) 1

(B) 0

(C) -1

(D) $\dfrac{1}{2}$

***** C09221023 *****

Space for rough work

C09221023

50. The graph of y = p (x) is given below the number of zeros of polynomial p (x) is :
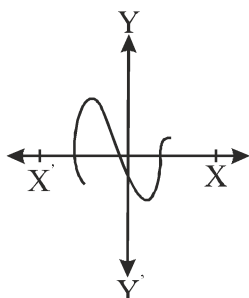
(A) 0

(B) 1

(C) 2

(D) 3

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

Column – I	Column – II
P. Factors of $9x^2 - 3x - 20$	**1.** $(2x - 7)(3x + 5)$
Q. Factors of $6x^2 - 11x - 35$	**2.** $(3x - 5)(3x + 4)$
R. Factors of $(x^4 - 81)$	**3.** $(x+3)(x-3)(x^2+9)$

Code :

	P	Q	R
(A)	2	1	3
(B)	3	1	2
(C)	3	2	1
(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. If $\left(a + \dfrac{1}{a}\right)^2 = 9$ then the value of $a^3 + \dfrac{1}{a^3}$ is :	**1.** 8^{-1}
Q. $\sqrt[5]{32^{-3}}$	**2.** 1
R. $(2^0 + 7^0)^0$	**3.** 18

Code :

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

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

Column – I	Column – II
P. Degree of x in polynomial $5x^4 + x^3 - 4x^2 - 2x + 1$ is :	**1.** 0

Space for rough work

Q. Distance of point   **2.** 4
A $(3, 8)$ from
y – axis is

R. If $\dfrac{x}{y} + \dfrac{y}{x} = 2$,   **3.** 3
then the value
of $(x–y)^2$ is :

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) The sum of a rational and an irrational number is always irrational.

(ii) Square root of negative number does not exist.

(iii) The degree of a quadratic polynomial is 3.

Code :

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

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

(i) $\sqrt{2}$ is greater than $\sqrt[3]{3}$.

(ii) The line $y = k$ is parallel to y-axis.

(iii) 41 and 43 are twin prime numbers.

Code :

	(i)	(ii)	(iii)
(A)	T	F	F
(B)	T	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) Any point on y-axis is of the form $(0, y)$.

(ii) $(x - 2y)$ is an example of binomial polynomial.

(iii) $(x - 2)$ is a factor of $(x^2 + 2)$.

Code :

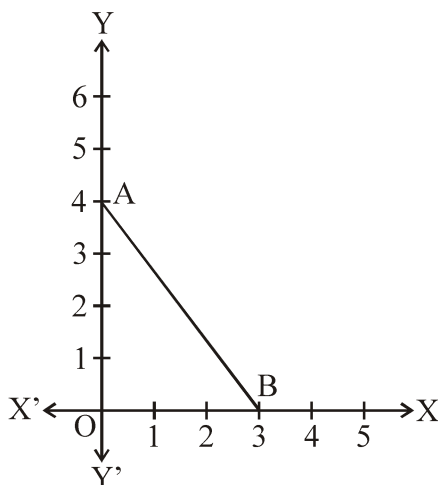|	(i)	(ii)	(iii)
(A)	T	T	F
(B)	T	T	T
(C)	F	F	T
(D)	F	T	F

***** C09221023 *****

Space for rough work

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Paragraph for Questions 57 & 58

From the given graph, answer the following questions.

57. Area of ΔAOB is :

(A) 12 sq. unit

(B) 18 sq. unit

(C) 24 sq. unit

(D) 6 sq. unit

58. An equation of a line AB which passes through the points A (0, 4) and B (3,0) is :

(A) $4x - 3y - 12 = 0$

(B) $4x - 3y + 12 = 0$

(C) $4x + 3y - 12 = 0$

(D) $x + y - 4 = 0$

Paragraph for Questions 59 & 60

For a polynomial p (x) of degree n ≥ 1, where n is natural number, p (a) = 0 and a is a real number then (x–a) is a factor of polynomial p (x).

59. P (x) = $x^3 - 3x^2 + 4x - 12$, then the value of p (3) is :

(A) 0

(B) 1

(C) –1

(D) 2

60 . Find the value of k if (x–1) is a factor of $4x^3 + 3x^2 - 4x + k$.

(A) 0

(B) 1

(C) –3

(D) 2

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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.

Direction (61-62) : 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.

61. 1.5, 2.3, 3.1, 3.9, ?

(A) 4.2

(B) 4.4

(C) 4.7

(D) 5.1

62. 2, 22, 32, 42, 57, 87, 162, ?

(A) 387

(B) 356

(C) 365

(D) 378

63. Reena walked 10 feet from A to B in the East. Then she turned to the right and walked 3 feet. Again she turned to the right and walked 14 feet. Now how far is she from A ?

(A) 4 feet

(B) 5 feet

(C) 24 feet

(D) 27 feet

64. If South-East becomes North, North-East becomes West and so on. What will West become ?

(A) North-East

(B) North-West

(C) South-East

(D) South-West

65. In a row, Mukesh is at 6th place from the left end and Pardeep is at 10th place from the right end in a row of boys. If there are 3 boys between Mukesh and Pardeep, then what could be the minimum number of boys in the row ?

(A) 21

(B) 23

(C) 11

(D) 25

66. Ram and Shyam are ranked 13th and 14th respectively is a class of 23 students. What are their ranks from the last respectively ?

(A) 10th, 11th

(B) 11th, 12th

(C) 11th, 10th

(D) 12th, 13th

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Space for rough work

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67. If L denotes '÷', M denotes '×', P denotes '+' and Q denotes '−', then which of the following statements is true ?

(A) $32 \text{ P } 8 \text{ L } 16 \text{ Q } 4 = -\dfrac{2}{3}$

(B) $9 \text{ P } 9 \text{ L } 9 \text{ Q } 9 \text{ M } 9 = -71$

(C) $11 \text{ M } 34 \text{ L } 17 \text{ Q } 8 \text{ L } 3 = \dfrac{38}{3}$

(D) $6 \text{ M } 18 \text{ Q } 26 \text{ L } 13 \text{ P } 7 = \dfrac{173}{13}$

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 : How much was the total sale of the company ?

Statement-I : The company sold 8000 units of product A, each costing Rs. 25.

Statement-II : This company has no other product line.

(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 questions.

(D) The data in neither statement-I nor statement-II are sufficient to answer the questions.

Direction (69-70) : *Six friends are sitting in a circle and are facing the centre of the circle. Deepa is between Prakash and Pankaj. Preeti is between Mukesh and Lalit. Prakash and Mukesh are opposite to each other. Deepa is right to prakash.*

69. Who is sitting immediate left to Prakash ?

(A) Mukesh

(B) Deepa

(C) Pankaj

(D) Lalit

70. Who is sitting immediate right to Pankaj ?

(A) Mukesh

(B) Lalit

(C) Prakash

(D) Preeti

Space for rough work