SCHOLARSHIP *Cum* ADMISSION TEST

Sunday, 31st December 2023

For Grades III to XI
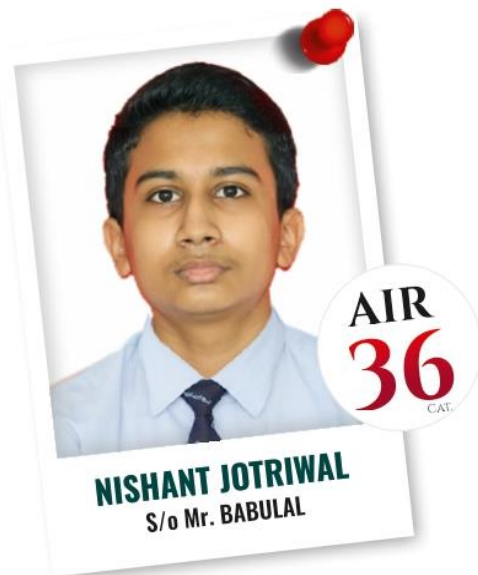
Appearing for Class X

Scholarship Aspirants Today
Victors in Life Tomorrow !

At **RPS** *Excellence is a* **HABIT**

JEE ADVANCED-2023

AIR 36 CAT.

NISHANT JOTRIWAL
S/o Mr. BABULAL

NEET -2023

700 MARKS

SHRUTI
D/o Ms. SUNITA
& Mr. KANWAL SINGH

SUPER ACHIEVEMENTS OF RPS GROUP OF SCHOOLS
Session: 2023-24

| 450+ STUDENTS NEET | 472+ STUDENTS IIT-JEE Main | 125+ STUDENTS IIT-JEE Advanced | 59+ STUDENTS CLAT | 145+ STUDENTS NDA | 39 STUDENTS CA |

(Space for rough work)

(Space for rough work)

APPEARING FOR CLASS X

| Science: 1-20 | Mathematics: 21-40 | Social Science: 41-60 | English: 61-80 |

TIME: 90 Minutes   **M.M. 80**

Student's Name: .... Father's Name: .... Mobile No.: ....

Address ....

Present School: ....

General Instructions:

1. *Duration of Test is 90 minutes and Question Paper contains 80 Questions with maximum 80 marks.*

2. *Use of gadgets is not allowed.*

3. *Student should abide by the instructions issued during the examination by the invigilator or the centre incharge.*

4. *Before attempting the question paper ensure that it contains all the pages and that no question is missing.*

5. ***There is No Negative marking.***

Correct Method   Wrong Method

Physics (7 Marks)

Q1. A particle moves along the positive part of the curve $y = \frac{x^2}{2}$, where $x = \frac{t^2}{2}$. What will be the magnitude of velocity of particle at $t = 2$ sec.

(a) $2\sqrt{3}$ m/sec   (b) $2\sqrt{5}$ m/sec   (c) $2\sqrt{6}$ m/sec   (d) $2\sqrt{10}$ m/sec

Q2. $x = A \sin \omega t$ and $y = 2A \sin \left(\omega t + \frac{\pi}{2} \right)$, then the motion of the particle is

(a) Circular   (b) Parabolic

(c) Elliptical anti clockwise   (d) Elliptical clockwise

Q3. An inclined plane makes an angle 30° with the horizontal. A groove OA = 5 m cut in the plane makes an angle 30° with OX. A short smooth cylinder is free to slide down the influence of gravity. The time taken by the cylinder to reach from A to O is (g = 10 m/s²)
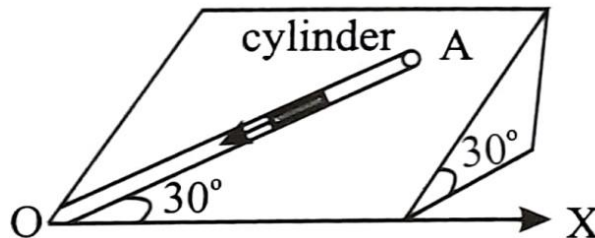

(a) 4 s   (b) 2 s   (c) $2\sqrt{2}$ s   (d) 1 s

Q4. The kinetic energy of a particle moving along a circle of radius 'R' depends on the distance covered 'x' as $K = \alpha x^2$, where α is a constant, find the net force acting on the particle as a function of 'x' is

(a) $2\alpha x \sqrt{1 + \frac{x^2}{R^2}}$ (b) $2\alpha \sqrt{1 - \frac{x^2}{R^2}}$ (c) $2x \sqrt{\alpha + \frac{x^2}{R^2}}$ (d) None

Q5. Find out $\sin \theta$ in the diagram given below :
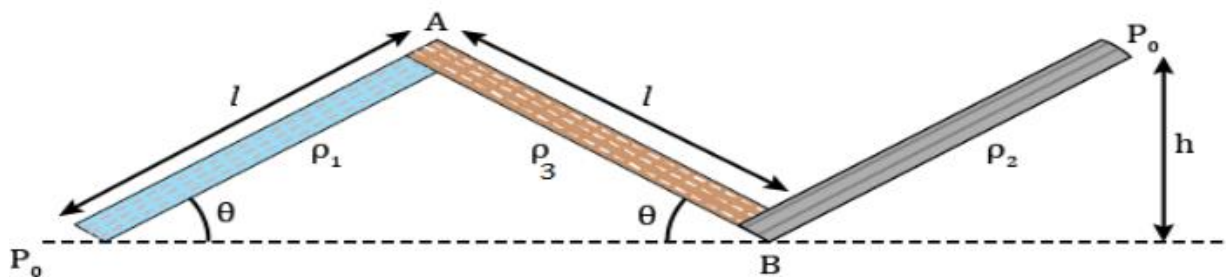
(a) $\frac{\rho_2 h}{(\rho_3 - \rho_1) l}$ (b) $\frac{\rho_1 h}{(\rho_3 - \rho_2) l}$ (c) $\frac{\rho_3 h}{(\rho_2 - \rho_1) l}$ (d) None of these

Q6. Oxygen is 16 times heavier than hydrogen. Equal volume of hydrogen and oxygen are mixed. The ratio of speed of sound in the mixture to that in hydrogen is

(a) $\sqrt{8}$ (b) $\sqrt{\frac{2}{17}}$ (c) $\sqrt{\frac{1}{8}}$ (d) $\sqrt{\frac{32}{17}}$

Q7. Two particles of mass m each are tied at the ends of a light string of length 2a. The whole system is kept on a frictionless horizontal surface with the string held tight so that each mass is at a distance 'a' from the center P (as shown in the figure). Now, the mid-point of the string is pulled vertically upwards with a small but constant force F. As a result, the particles move towards each other on the surfaces. The magnitude of acceleration, when the separation between them becomes 2x, is

(a) $\dfrac{F}{2m}\dfrac{a}{\sqrt{a^2-x^2}}$

(b) $\dfrac{F}{2m}\dfrac{x}{\sqrt{a^2-x^2}}$

(c) $\dfrac{F}{2m}\dfrac{x}{a}$

(d) $\dfrac{F}{2m}\dfrac{\sqrt{a^2-x^2}}{x}$
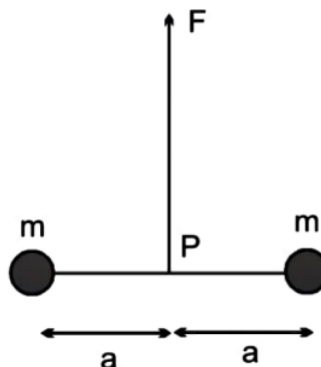
Chemistry (7 Marks)

Q8. An element with mass number 81 has 31.7% more neutrons than protons. The atomic number of the element is

(a) 35   (b) 37   (c) 38   (d) 39

Q9. Which of the following are isoelectronic species

$I = CH_3^+,$ $II = NH_2^-,$ $III = NH_4^+,$ $IV = NH_3$

(a) I, II, III   (b) II, III, IV   (c) I, II, IV   (d) I, II

Q10. 10 g of a gas at NTP occupies 5 litres. The temperature at which the volume becomes double for the same mass of gas at the same pressure is?

(a) 273K   (b) –273°C   (c) 273°C   (d) 546°C

Q11. Gelatin is mostly used in making ice creams in order to :-

(a) Prevent making of colloid   (b) Stabilise the colloid and prevent crystalisation

(c) Stabilise the mixture   (d) Enrich the aroma

Q12. 20 mL of methane is completely burnt using 50 mL of oxygen. The volume of the gas left after cooling to room temperature is:

(a) 80 mL   (b) 40 mL   (c) 60 mL   (d) 30 mL

Q13. Carbon has a covalency of 2 in CO and 4 in CO_2 and CH_4, Its valency in C_2H_2 is:

(a) 3   (b) 4   (c) 2   (d) 1

Q14. The most abundant elements by mass in the body of a healthy human adult are:

Oxygen (61.4%), Carbon (22.9%), Hydrogen (10.0%) and Nitrogen (2.6%)

The weight which a 75 kg person would gain if all the ^1H atoms are replaced by ^2H atoms is

(a) 7.5 kg   (b) 10 kg   (c) 15 kg   (d) 37.5 kg

Biology (6 Marks)

Q15. In photosynthetic prokaryotic bacteria, chlorophyll is associated with

(a) Plastids   (b) Membranous Vesicles   (c) Nucleiod   (d) Mesosomes

Q16. Which cellular organelle functions as a Cytoplasmic framework providing a surface for some biochemical activities of the cell

(a) Golgi apparatus   (b) Mitochondria   (c) Endoplasmic Reticulum   (d) Ribosomes

Q17. The main function of meristematic tissue is dividing that cause growth but sometimes it loses its dividing nature and become permanent in shape, size and function by a specific process known as

(a) differentiation   (b) dedifferentiation   (c) Both (a) and (b)   (d) None of these

Q18. The epidermis of some desert plant is covered with a thick coating of a chemical called

(a) Suberin   (b) Cutin   (c) Protein   (d) All of these

Q19. What is the common name of Cyperinus rotundus

(a) Gokhroo   (b) Gajar ghas   (c) Motha   (d) Bathua

Q20. Which of the following Vitamin is absent in cow milk

(a) Vitamin D   (b) Vitamin B_{12} (c) Vitamin E   (d) Vitamin C

Mathematics (20 Marks)

Q21. If $f(x) = \dfrac{7}{x^7} + \dfrac{5}{x^5} + \dfrac{3}{x^3} + 1 + 3x^3 + 5x^5 + 7x^7$. Now if the value of $f(2) = 1081.58$ then the value of $f\left(\dfrac{1}{2}\right)$ is :

(a) 540.79   (b) $\dfrac{1}{1081.58}$ (c) 1081.58   (d) 367.42

Q22. A rectangle of dimensions 32×49 has two circles inscribed in it. What's the maximum possible total area of the two circles ?

(a) 337π (b) 306π (c) 518π (d) 245π

Q23. If $x = 7 + 4\sqrt{3}$ and $xy = 1$, then $\dfrac{1}{x^2} + \dfrac{1}{y^2} =$

(a) 64   (b) 134   (c) 194   (d) 1/49

Q24. If $a = \sqrt{6 - \sqrt{11}}$ and $b = \sqrt{6 + \sqrt{11}}$ then the value of (a + b) is :

(a) $\sqrt{22}$ (b) $2\sqrt{11}$ (c) $\sqrt{6}$ (d) $\sqrt{12}$

Q25. If a, b, c are real numbers such that $a + \dfrac{1}{b} = \dfrac{7}{3}$; $b + \dfrac{1}{c} = 4$; $c + \dfrac{1}{a} = 1$, then value of abc is :

(a) 0   (b) 4   (c) 1   (d) 2

Q26. If $x^2 - 3x + 1 = 0$ then the value of $x^5 + \dfrac{1}{x^5}$.

(a) 87   (b) 123   (c) 135   (d) 201

Q27. Taxi fare for the first km is Rs. 10 and fare for subsequent distance Rs. 6 per km. If the distance covered is x km and total fare is Rs. y. Write a linear equation for this statement.

(a) $6x - y + 4 = 0$ (b) $6x - y - 4 = 0$ (c) $6x + y + 4 = 0$ (d) $6x + y - 4 = 0$

Q28. In the following figure $QT \perp PR$ and $QS = PS$. If $\angle TQR = 40^o$ and $\angle RPS = 20^o$ then value of x is

(a) 80° (b) 25° (c) 15° (d) 35°
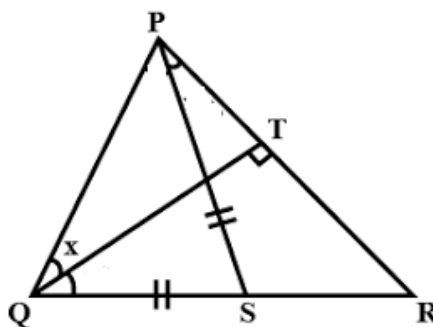
Q29. If amongst two supplementary angles, the measure of smaller angle is four times its complement, then their difference is

(a) 30° (b) 36° (c) 43° (d) 45°

Q30. A trapezium ABCD in which P and Q are the mid-points of diagonals AC and BD respectively. Then PQ =

(a) $\dfrac{1}{3}(AB + CD)$ (b) $\dfrac{1}{2}(AB - CD)$ (c) $\dfrac{1}{3}(AB - CD)$ (d) $\dfrac{1}{2}(AB + CD)$

Q31. Equilateral triangle ABC is inscribed in a circle. If side of the triangle = 24 cm, then the radius is
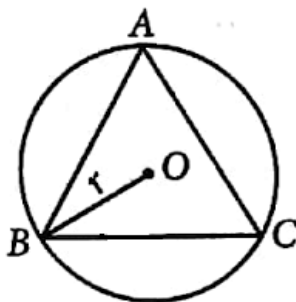
(a) $6\sqrt{3}$ cm   (b) $12\sqrt{3}$ cm   (c) $8\sqrt{3}$ cm   (d) 6 cm

Q32. The area of the figure formed by joining mid points of the adjacent sides of a rhombus with diagonals measuring 24 cm and 28 cm is –

(a) 672 cm^2 (b) 168 cm^2 (c) 144 cm^2 (d) 196 cm^2

Q33. The number of interwoven isosceles triangles in Sriyantra (in the Atharva Veda) is

(a) 7   (b) 8   (c) 9   (d) 10

Q34. The sides of an equilateral triangle are (2a – b + 5), (a + b) and (2b – a + 2). What is the area of the triangle ?

(a) $\dfrac{\sqrt{3}}{4} \times a^2$ (b) $\dfrac{\sqrt{3}}{4} \times b^2$ (c) $\dfrac{\sqrt{3}}{4} \times 49$ (d) $\dfrac{\sqrt{3}}{4} \times 81$

Q35. If $x^2 - 4$ is the factor of $2x^3 + k_1x^2 + k_2x + 12$, where k_1, k_2 are constant, then the value of $k_1 + k_2$ is

(a) 11   (b) 5   (c) –11   (d) –5

Q36. The distance of origin from the point P(3, –2) is :

(a) $\sqrt{2}$ (b) $\sqrt{15}$ (c) $\sqrt{13}$ (d) $\sqrt{11}$

Q37. Mr. Balaram picked a prime number between the integers 1 and 20. What is the probability that it will be number 13 ?

(a) $\dfrac{7}{8}$ (b) $\dfrac{1}{20}$ (c) $\dfrac{1}{8}$ (d) $\dfrac{13}{20}$

Q38. ABCD is a square and AOB is an equilateral triangle. What is the value of $\angle DOC$?
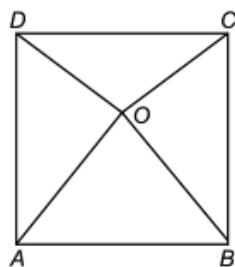
(a) 120º   (b) 150º   (c) 125º   (d) can't be determined

Q39. Three coins are tossed once. Probability of getting at least two heads is

(a) $\dfrac{1}{8}$ (b) $\dfrac{5}{8}$ (c) $\dfrac{3}{8}$ (d) $\dfrac{1}{2}$

Q40. In the figure, the area of square ABCD is 4 cm^2 and E is mid point of AB, F, G, H and K are the mid points of DE, CF, DG and CH respectively. The area of ΔKDC is
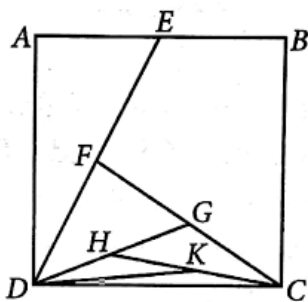
(a) $\dfrac{1}{4}$ cm^2 (b) $\dfrac{1}{8}$ cm^2 (c) $\dfrac{1}{16}$ cm^2 (d) $\dfrac{1}{32}$ cm^2

Social Science (20 Marks)

Q41. What model of government did Montesquieu propose in his book 'The Spirit of Laws'?

(a) To refute the doctrine of the divine and absolute rights of the monarch

(b) A government based on the social contract between people and their representatives

(c) Division of powers within the government among the legislative, the executive and the judiciary

(d) Concentrations of all the powers in the hands of a monarch and his group of loyal people

Q42. In which period did China face one of the worst famines that have occurred in the world ?

(a) 1932–36   (b) 1958–61   (c) 2001–2002   (d) 2004–2007

Q43. Himalayas have been divided on the basis of regions from West to East. These divisions have been demarcated by rivers valley.

Column–I	**Column–II**
A. The part of Himalayas lying between Indus and Satluj	(i) Kumaon Himalayas
B. The part of Himalayas lying between Satluj and Kali	(ii) Punjab Himalayas
C. The part of Himalayas lying between Teesta and Dihang	(iii) Nepal Himalayas
D. The part of Himalayas lying between Kali and Teesta	(iv) Assam Himalayas

(a) A–i, B–ii, C–iii, D–iv   (b) A–iv, B–iii, C–ii, D–i

(c) A–ii, B–i, C–iv, D–iii   (d) A–iii, B–ii, C–i, D–iv

Q44. What is the longitudinal extent of India?

(a) $67^o 10'$ East to $96^o 27'$ East   (b) $67^o 05'$ East to $96^o 22'$ East

(c) $69^o 05'$ East to $98^o 22'$ East   (d) $68^o 07'$ East to $97^o 25'$ East

Q45. A narrow belt of about 8 to 16 km. in width lying parallel to the slopes of the Shiwaliks is known as –

(a) Doab   (b) Bhangar   (c) Bhabar   (d) Terai

Q46. The word 'mausim' is derived from –

(a) Greek language   (b) Latin language   (c) Arabic language   (d) English language

Q47. Match Column I with column II and select the correct answer using the code given below.

Column I (Rivers)		**Column II (Origin Place)**	
A.	Narmada	(i)	Mahabaleshwar
B.	Krishana	(ii)	Chhattisgarh
C.	Godavari	(iii)	Amarkantak
D.	Mahanadi	(iv)	Maharashtra

(a) A–i, B–ii, C–iii, D–iv   (b) A–iii, B–i, C–iv, D–ii

(c) A–ii, B–i, C–iii, D–iv   (d) A–iii, B–i, C–ii, D–iv

Q48. The magnitude of population growth refers to :-

(a) The total population of an area

(b) The number of persons added to the population each year

(c) The rate at which population increase

(d) The number of females per thousand males

Q49. The Convention abolished the monarchy and declared France as Republic on –

(a) 21st September, 1790   (b) 21st September, 1791

(c) 21st September, 1792   (d) 21st September, 1793

Q50. Match the column I with column II and choose the correct option :-

Column I		**Column II**	
A.	Rousseau	(i)	Two Treaties of Government
B.	Montesquieu	(ii)	Marseillaise
C.	John Locke	(iii)	The Social Contract
D.	Roget de L'Isle	(iv)	The Spirit of Laws

(a) A–i, B–ii, C–iii, D–iv   (b) A–i, B–ii, C–iii, D–iv

(c) A–iii, B–iv, C–i, D–ii   (d) A–iv, B–iii, C–i, D–ii

Q51. Stalin's Collectivisation Programme was implemented in the USSR from the year –

(a) 1927   (b) 1929   (c) 1932   (d) 1939

Q52. Which one of the following was not included in Lenin's April Theses?

(a) Formation of Duma   (b) Banks should be nationalized

(c) Land to be transferred to peasants   (d) First World War to be brought to close

Q53. When did Germany withdraw it from the League of Nations?

(a) 1930   (b) 1931   (c) 1932   (d) 1933

Q54. When was the 'Tripartite Pact' was signed among Germany, Japan and Italy?

(a) September, 1940   (b) September, 1938   (c) September, 1939   (d) September, 1932

Q55. Hitler assigned the responsibility of economic recovery to –

(a) Herbert Spancer   (b) Hjalmar Schacht   (c) W. Shirer   (d) Robert Lay

Q56. The National Human Rights Commission was constituted on –

(a) 14th Dec., 1993   (b) 13th Aug., 1993   (c) 12th Oct., 1993   (d) 11th April, 1993

Q57. Match the following column I with column II.

Column I		**Column II**	
A.	Kanchenjunga	(i)	8598 meters
B.	Nanga Parbat	(ii)	8126 meters
C.	Nanda Devi	(iii)	7817 meters
D.	Kamet	(iv)	7756 meters

(a) A–i, B–ii, C–iii, D–iv   (b) A–ii, B–i, C–iii, D–iv

(c) A–iv, B–iii, C–ii, D–i   (d) A–iii, B–iv, C–i, D–ii

Q58. What does Indian Constitution start with?

(a) Fundamental Rights   (b) Preamble

(c) Fundamental Duties   (d) Document of Freedom

Q59. Which of the following statements about Liberals in 19th Century Europe are correct?

(i) They favoured the Catholic Church

(ii) They opposed the dynastic rule with unlimited power

(iii) They were democrats

(iv) They did not want any voting rights for women

(a) i, ii and iii   (b) i, ii and iv   (c) ii and iv   (d) ii, iii and iv

Q60. When was the meeting of Estate General held to pass proposals for new taxes?

(a) 5 May, 1789   (b) 6 May, 1789   (c) 8 May, 1789   (d) 12 May, 1789

English (20 Marks)

Q61. The children of the man who works with me .... the window pane.

(a) has broken   (b) have broken   (c) has broke   (d) had broke

Q62. Age and experience .... wisdom to man.

(a) bring   (b) brings   (c) is bringing   (d) did bring.

Q63. The price of mangoes .... from place to place.

(a) vary   (b) varies   (c) had vary   (d) is vary

Q64. When I went to the hospital, neither of the doctors........... present there.

(a) was   (b) were   (c) is   (d) are

Q65. She went to .... European country last month.

(a) a   (b) an   (c) the   (d) no article

Q66. I can give all the answers. Ask me if you have .... question.

(a) some   (b) many   (c) any   (d) enough

Q67. Out of these two boxes, this blue one is ....better.

(a) a   (b) an   (c) the   (d) no article

Q68. There were only .... students in the class so the teacher went away.

(a) few   (b) a few   (c) the few   (d) a number of

Q69. I know I will have to wait until ....

(a) he came   (b) he comes   (c) he will come   (d) he will have come

Q70. I would have come to attend the ball if he ....

(a) invited me   (b) had invited me   (c) has invited me   (d) would invite me

Q71. One of the most important things which are generally observed by others, ... your way of talking.

(a) is   (b) are   (c) were   (d) have been

Q72. As you sow, ...

(a) so shall you reap   (b) so should you reap (c) so can you reap   (d) so did you reap

Q73. If you violate the law, you .... be arrested.

(a) shall   (b) could   (c) need   (d) had to

Q74. .... you mind moving that side ?

(a) Can   (b) Would   (c) May   (d) Shall

Q75. I have to run fast lest I ....miss the train.

(a) should   (b) could   (c) can   (d) ought to

Q76. We breathe so that we .... live.

(a) may   (b) might   (c) could   (d) would

Q77. Mr. James said to his daughter, "Where did you go yesterday?"

(a) Mr. James said to his daughter where did she go yesterday.

(b) Mr. James asked his daughter where she had gone the previous day.

(c) Mr. James asked his daughter where she went the previous day.

(d) Mr. James told his daughter where she went the previous day.

Q78. Mr. Jack said to his wife, "Don't buy this article."

(a) Mr. Jack asked his wife don't buy that article.

(b) Mr. Jack asked his wife not to buy that article.

(c) Mr. Jack prohibited his wife not to buy that article.

(d) Mr. Jack ordered his wife not to bought that article.

Q79. Mohit says to his friend, "He went to school."

(a) Mohit says to his friend he went to school.

(b) Mohit tells his friend that he went to school.

(c) Mohit told his friend that he had gone to school.

(d) Mohit told his friend that he went to school.

Q80. He said to his father, "He does well every time in his exam."

(a) He told his father that he did well every time in his exam.

(b) He said his father that he did well every time in my exam.

(c) He told his father that he did well every time in my exam.

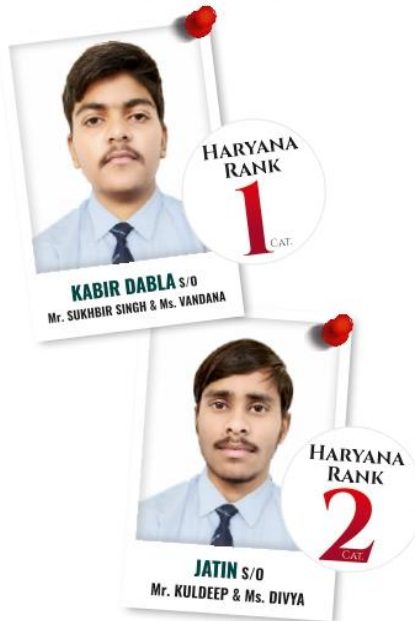(d) He told his father if he did well every time in his exam.

(Space for rough work)

RPSians Add Another Glorious Chapter to the Spectacular Saga of

## JEE ADVANCED-2023

NISHANT JOTRIWAL
S/o Mr. BABULAL
AIR 36 CAT.

VIVEK
S/o Mr. SHAILENDER
AIR 56 CAT.

CLAT-2023

KABIR DABLA S/o
Mr. SUKHBIR SINGH & Ms. VANDANA
HARYANA RANK 1 CAT.

JATIN S/o
Mr. KULDEEP & Ms. DIVYA
HARYANA RANK 2 CAT.

NEET -2023

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700 MARKS

TANIYA SINGHAL
D/o Ms. MANJU SINGHAL & Mr. SUNIL KUMAR
690 MARKS

RIYA SHARMA
D/o Ms. KAVITA SHARMA & Mr. MAHENDRA SHARMA
690 MARKS

RAHUL
S/o Ms. SHASHI & Mr. KRISHAN KUMAR
690 MARKS

98.4% MARKS
AAYUSH GARG
S/o Mr. SANJAY GARG
Ms. REKHA
Class XII Topper

CBSE Class XII -2023

| 97% & ABOVE | 37+ STUDENTS | 95% & ABOVE | 144+ STUDENTS |
| 90% & ABOVE | 484+ STUDENTS | 80% & ABOVE | 1316+ STUDENTS |

CBSE Class X -2023

| 97% & ABOVE | 96+ STUDENTS | 95% & ABOVE | 311+ STUDENTS |
| 90% & ABOVE | 918+ STUDENTS | 85% & ABOVE | 1429+ STUDENTS |

99% MARKS
DEEKSHA YADAV
D/o Mr. HEMANT K. YADAV
Ms. SARITA
Class X Topper
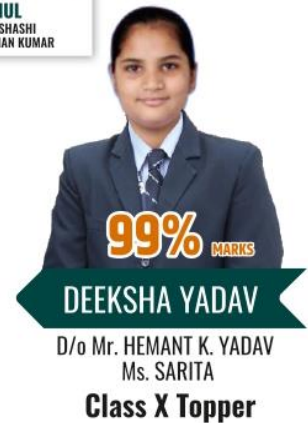
SPORTS ACHIEVEMENTS

1st Position
CBSE Cluster XV Athletics

2nd Position
CBSE Volleyball Cluster

2nd Position (Girls)
CBSE Basketball Cluster

SUPER ACHIEVEMENTS OF RPS GROUP OF SCHOOLS
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