FOUNDATIONS

Sample Paper

Aakash
NATIONAL
TALENT HUNT EXAM

ANTHE
— 2021 —

(Class IX Studying Moving to Class X)

Science, Mathematics & Mental Ability

INSTRUCTIONS FOR CANDIDATE

1. Duration of Test is 1 hr.
2. The Test booklet consists of **35** questions. The maximum marks are **90.** There is **no negative marking** for wrong answer.
3. Pattern of the questions are as under:
   (i) The question paper consists of five parts i.e., Physics, Chemistry, Biology, Mathematics and Mental Ability. Phy, Chem, Bio, Maths have **four sections** and Mental Ability has **two sections.**
   (ii) **Section-I:** This section contains **21** multiple choice questions, which have **only one** correct answer. Each question carries **+2 marks** for correct answer.
   (iii) **Section-II:** This section contains **6** multiple choice questions, in which **more than one** answer may be correct. Each question carries **+4 marks** for correct answer.
   (iv) **Section-III:** This section contains **4** multiple choice questions based on Assertion & Reason Type, which have **only one** correct answer. Each question carries **+2 marks** for correct answer.
   (v) **Section-IV:** This section contains **4** questions. Each question has two matching Columns. Column-I has four entries (A, B, C, D) and Column-II has four entries (P, Q, R, S). Each entry in Column-I may match with one or more entries in Column-II. Each question carries **+4 marks** for correct answer.

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Aakash National Talent Hunt Exam 2021
Sample paper
(Class IX Studying Moving to Class X)

(The questions given in sample paper are indicative of the level and pattern of questions that will be asked in ANTHE-2021)

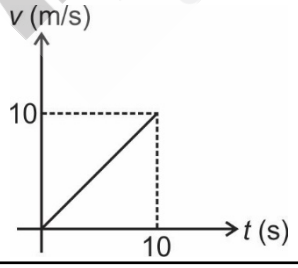
Time : 1 Hour **MM : 90**

PHYSICS

SECTION-I : SINGLE ANSWER TYPE

This section contains 4 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

1. The earth attracts the moon with a gravitational force of 10^{20} N. The moon attracts the earth with a gravitational force of
   (1) Less than 10^{20} N
   (2) Greater than 10^{20} N
   (3) Equal to 10^{20} N
   (4) Equal to 10^{-20} N
2. A moving car possesses average velocities of 5 m/s, 10 m/s and 15 m/s in the first, second and third seconds respectively. What is the total distance covered by the car in these 3 s?
   (1) 20 m
   (2) 30 m
   (3) 12 m
   (4) 15 m
3. Velocity versus time graph of a particle moving in a straight line is shown in figure. The corresponding acceleration versus time graph will be



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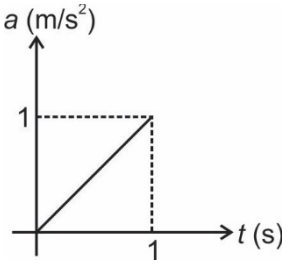
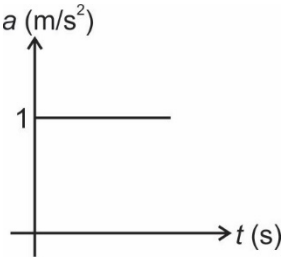
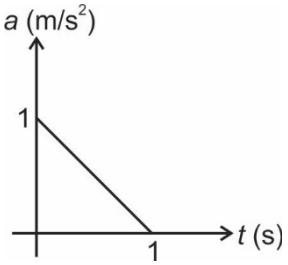
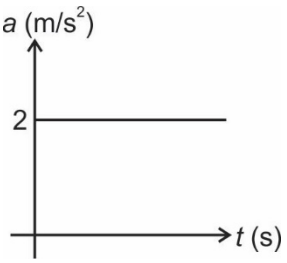
(1) 

(2) 

(3) 

(4) 

4. A player catches a ball of 200 g moving with a speed of 20 m/s. If the time taken to complete the catch is 0.4 s. The force exerted on the player's hand is

(1) 10 N (2) 8 N

(3) 12 N (4) 20 N

SECTION-II : MORE THAN ONE ANSWER TYPE

This section contains 1 multiple choice question, which has 4 choices (1), (2), (3) and (4) out of which **MORE THAN ONE** answer may be correct.

5. A car covers first half part of its journey with a velocity v_1 and the remaining part of the distance was covered in time t. The remaining distance was covered with velocity v_2 for $\frac{1}{3}$rd of time t and with velocity v_3 for the next $\frac{2}{3}$rd of time t. Then

(1) The average velocity of car of whole journey is $\frac{2v_1(v_2+2v_3)}{3v_1+v_2+2v_3}$

(2) The average velocity of car of whole journey is $\frac{v_1(v_2+v_3)}{3v_1+v_2+v_3}$

(3) The ratio of time taken by car in first half distance to time taken by car in next half distance is $\frac{v_2+2v_3}{3v_1}$

(4) The ratio of time taken by car in first half distance to time taken by car in next half distance is $\frac{2v_1+v_2}{3v_3}$

Space for Rough Work

SECTION-III : ASSERTION & REASON TYPE

This section contains 1 Assertion-Reason type question, which has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

6. **A :** Rider on a horse falls backward when horse starts running suddenly.

R : Inertia of rest keeps the upper part of body at rest whereas lower part of the body moves forward with the horse.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A)

(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)

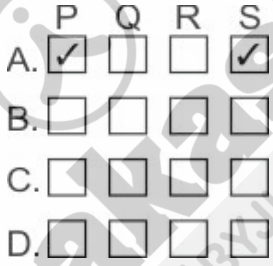
(3) (A) is true but (R) is false

(4) (A) is false but (R) is true

SECTION-IV : MATRIX MATCH TYPE

This section contains 1 Matrix Match type question, which has 2 Columns (Column I and Column II). Column I has four entries (A), (B), (C) and (D), Column II has four entries (P), (Q), (R) and (S). Match the entries in Column I with the entries in Column II. Each entry in Column I may match with one or more entries in Column II.

For each entry in Column I, tick the boxes of all the matching entries in Column II. For example, if entry (A) in Column I matches with entries (P) & (S) in Column II, then tick the boxes (P) & (S). Similarly, tick the boxes for entries (B), (C) and (D).



7. Match the Columns.

	Column I		**Column II**
(A)	Acceleration due to gravity is maximum	(P)	At centre of earth
(B)	Acceleration due to gravity is zero	(Q)	At the surface of the earth
(C)	Acceleration due to gravity is smaller than *g*	(R)	At some depth of earth
(D)	Weight of a body is zero	(S)	At some height above earth surface

Space for Rough Work

CHEMISTRY

SECTION-I : SINGLE ANSWER TYPE

This section contains 4 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

8. Consider the following box:

Cheese, Smoke, Milky glass, Automobile exhaust, Butter, Mud, Jelly, Rubber, Pumice

If x be the number of colloids having solid as dispersed phase and y be the number of colloids having solid as dispersion medium, then the value of (x + y) will be

(1) 7 (2) 10

(3) 3 (4) 4

9. The chemical symbol for potassium is

(1) P (2) Po

(3) K (4) Ko

10. Consider the following statements:

I. Ammonium ion is a polyatomic cation.

II. Chemical formula of nitric acid is HNO_3.

III. Formula unit mass of quicklime is 56 u.

IV. Number of atoms present in the molecule of ethyne is 6.

The **correct** statements are

(1) I, II and III (2) II, III and IV

(3) I, III and IV (4) I, II and IV

11. Which of the following can be separated by distillation?

(1) Colours in a dye (2) Drugs from blood

(3) Pigments from natural colours (4) Water from acetone-water mixture

SECTION-II : MORE THAN ONE ANSWER TYPE

This section contains 1 multiple choice question, which has 4 choices (1), (2), (3) and (4) out of which **MORE THAN ONE** answer may be correct.

12. Which of the following is/are example(s) of homogeneous mixture?

(1) Mixture of sand and salt (2) Mixture of water and oil

(3) Mixture of water in alcohol (4) Mixture of sulphur in carbon disulphide

Space for Rough Work

SECTION-III : ASSERTION & REASON TYPE

This section contains 1 Assertion-Reason type question, which has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

13. **A :** Properties of a compound are same as its constituent elements.

R : A compound is a substance composed of two or more different types of elements.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A)

(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)

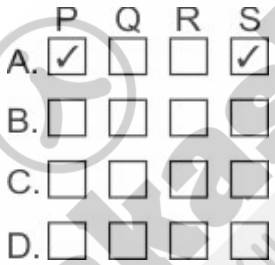
(3) (A) is true but (R) is false

(4) (A) is false but (R) is true

SECTION-IV : MATRIX MATCH TYPE

This section contains 1 Matrix Match type question, which has 2 Columns (Column I and Column II). Column I has four entries (A), (B), (C) and (D), Column II has four entries (P), (Q), (R) and (S). Match the entries in Column I with the entries in Column II. Each entry in Column I may match with one or more entries in Column II.

For each entry in Column I, tick the boxes of all the matching entries in Column II. For example, if entry (A) in Column I matches with entries (P) & (S) in Column II, then tick the boxes (P) & (S). Similarly, tick the boxes for entries (B), (C) and (D).



14. Column I contains some compounds and Column II contains the ratio by mass of their constituting elements.

	Column I		**Column II**
(A)	Magnesium sulphide	(P)	3 : 8
(B)	Calcium oxide	(Q)	3 : 4
(C)	Carbon dioxide	(R)	14 : 3
(D)	Ammonia	(S)	5 : 2

Space for Rough Work

BIOLOGY

SECTION-I : SINGLE ANSWER TYPE

This section contains 4 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

15. Which of the following is a multicellular organism?

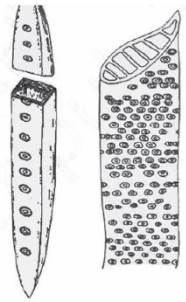
(1) Bacterium (2) *Paramecium*

(3) *Chlamydomonas* (4) *Penicillium*

16. The disease __(a)__ is transmitted by sexual contact whereas the disease __(b)__ spreads through the bite of infected dogs. Here, (a) and (b) respectively are

(1) Typhoid and syphilis (2) AIDS and rabies

(3) Pneumonia and AIDS (4) Syphilis and tuberculosis

17. 

X Y

Identify the above depicted tissues 'X' and 'Y' and select the correct option.

	X	Y
(1)	Vessel	Xylem parenchyma
(2)	Sieve tube	Companion cell
(3)	Tracheid	Vessel
(4)	Tracheid	Companion cell

18. Amongst the following, who coined the term protoplasm for the fluid substance of the cell?

(1) Robert Hooke (2) Robert Brown

(3) Purkinje (4) Virchow

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SECTION-II : MORE THAN ONE ANSWER TYPE

This section contains 1 multiple choice question, which has 4 choices (1), (2), (3) and (4) out of which **MORE THAN ONE** answer may be correct.

19. Sieve tubes of phloem tissue

(1) Have tubular structures with dead cells

(2) Allow transportation of food

(3) Have perforated walls with living cells

(4) Help in transportation of water

SECTION-III : ASSERTION & REASON TYPE

This section contains 1 Assertion-Reason type question, which has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

20. **A :** Good economic conditions and jobs are the needs for individual's health.

R : Public cleanliness is important for individual's health.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A)

(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(3) (A) is true but (R) is false

(4) (A) is false but (R) is true

SECTION-IV : MATRIX MATCH TYPE

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	P	Q	R	S
A.	☑	☐	☐	☑
B.	☐	☐	☐	☐
C.	☐	☐	☐	☐
D.	☐	☐	☐	☐

Space for Rough Work

21. Match the Columns.

	Column I (Animal tissues)		**Column II (Features of these animal tissues)**
(A)	Bone	(P)	It connects bones to muscles
(B)	Cartilage	(Q)	It is strong and non-flexible
(C)	Ligament	(R)	It smoothens bone surfaces at joints
(D)	Tendon	(S)	It connects bones to bones

MATHEMATICS

SECTION-I : SINGLE ANSWER TYPE

This section contains 4 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

22. If one of the zeroes of the polynomial $p(x) = 2x^2 - Kx - 3$ is 3, then the other zero is

(1) 2 (2) –2

(3) $-\frac{1}{2}$ (4) $\frac{1}{2}$

23. If $3x - \frac{1}{4y} = 24$, then the value of $8x\left(6x - \frac{1}{y}\right) + \frac{1}{12y^2}\left(4 - 3y + 36xy^2\right)$ (where $y \neq 0$) is

(1) 382 (2) 1032

(3) 3096 (4) 746

24. Which of the following cannot be the solution of the equation $4x + 5y = k$, where k is a whole number?

(1) (–4, 5) (2) (5, –4)

(3) (2, –1) (4) (8, –7)

25. If $y = \frac{4}{\sqrt{8} + \sqrt{16} - \sqrt{50} + \sqrt{72}}$, then the value of $y^2 + 15y$ is

(1) $16 - 6\sqrt{2}$ (2) $8 + 3\sqrt{2}$

(3) $8 - 3\sqrt{2}$ (4) $16 + 6\sqrt{2}$

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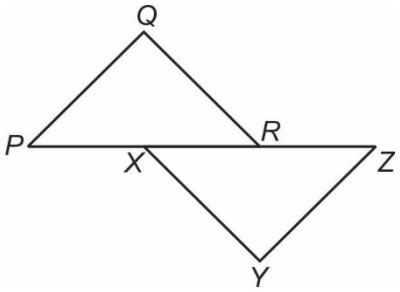
SECTION-II : MORE THAN ONE ANSWER TYPE

This section contains 1 multiple choice question, which has 4 choices (1), (2), (3) and (4) out of which **MORE THAN ONE** answer may be correct.

26. In the given figure, ΔPQR is an isosceles triangle such that $PQ = QR$. If perimeter of ΔPQR is equal to perimeter of ΔXYZ and $\angle YXZ = \angle XZY$ where X and R are two points on PZ which divides it into three equal parts, then which of the following option(s) is/are always correct?



(1) $XY = QR$

(2) $PQ \parallel YZ$

(3) $XY = XZ$

(4) $XY = YZ$

SECTION-III : ASSERTION & REASON TYPE

This section contains 1 Assertion-Reason type question, which has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

27. **A :** If (a, b) are the coordinates of a point lying on y-axis, then the value of $\frac{a}{b}K+1$ (where $K \in N$) is 1.

R : Every point lying on x-axis is of the form of $(a, 0)$.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A)

(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(3) (A) is true but (R) is false

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SECTION-IV : MATRIX MATCH TYPE

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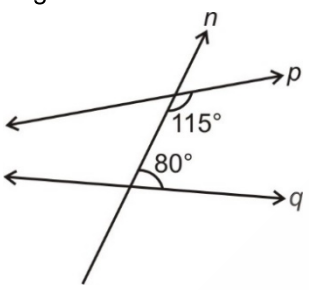
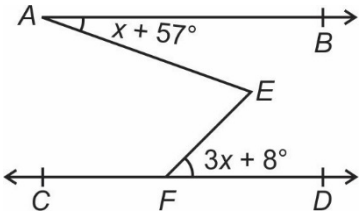
	P	Q	R	S
A.	☑	☐	☐	☑
B.	☐	☐	☐	☐
C.	☐	☐	☐	☐
D.	☐	☐	☐	☐

28. Match the Columns.

	Column I		**Column II**
(A)	In the given figure, lines p and q intersect at angle of 	(P)	Complement of 28°
(B)	The measure of $\frac{2}{5}$ of supplement of complement of 65° is	(Q)	Supplement of 165°
(C)	In the given figure, $AB \parallel CD$ and $\angle AEF = 85°$. Then, the measure of $\angle BAE$ equals 	(R)	99°

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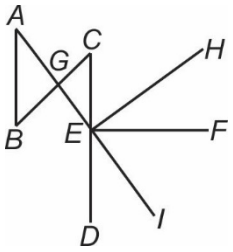
(D)	In the given figure *AGEI* is a straight line, *AB* || *CD* and *BC* || *EH*. If *EF*⊥*CD*, ∠*BAE* = 48° and ∠*GCD* = 39°, then ∠*HEF* + ∠*DEI* equals 	(S)	Supplement of 118°

MENTAL ABILITY

SECTION-I : SINGLE ANSWER TYPE

This section contains 5 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

29. The mirror image of the following figure is

(1)

(2)

(3)

(4)

30. A faulty compass shows northwest as east and east as southwest. The direction which shown by compass as south is

(1) Northwest

(2) North

(3) Northeast

(4) Southeast

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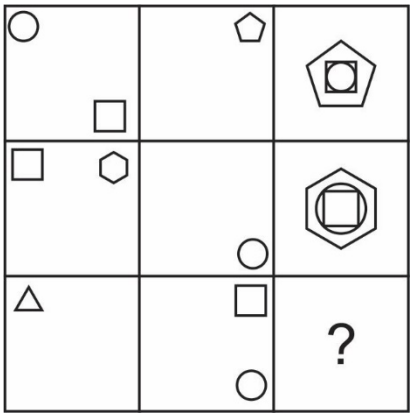
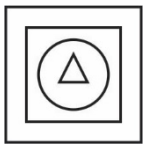
31. Complete the following figure matrix.



(1) 

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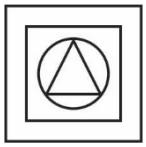
(3) 

(4)

32. Choose the correct number in place of '?'.

5	2	7	3	60
4	3	8	9	144
6	5	2	9	112
5	4	2	1	?

(1) 114 (2) 35

(3) 36 (4) 100

33. The next term in following pattern is

521, 612, 343, 215, ?

(1) 927 (2) 729

(3) 125 (4) 200

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SECTION-II : MORE THAN ONE ANSWER TYPE

This section contains 2 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **MORE THAN ONE** answer may be correct.

34. Choose correct pair/s in place of '?'

TWO : 33 : : ?

(1) ONE : 5 (2) SIX : 7777

(3) FOUR : 257 (4) FIVE : 3126

35. If 2 % 3 = 24, 3 % 4 = 48, 7 % 9 = 255 and 1 % 3 = 15, then which of the following is/are also correct?

(1) 4 % 5 = 82 (2) 9 % 2 = 122

(3) 3 % 5 = 63 (4) 9 % 3 = 143

❑ ❑ ❑

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4 Year Classroom
Highest Scorer 352/396
AIR 1

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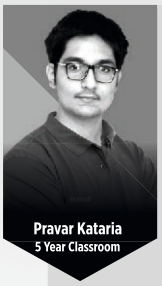
4 Year Classroom
AIR 65

JEE (Main) 2021 PHASE-III



Pravar Kataria
5 Year Classroom
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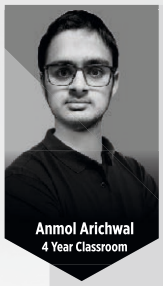

Anmol Arichwal
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Our Result in Scholarship Exams /Olympiads

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Our 1st Rankers from Classroom Programs

Animesh Kumar Jha
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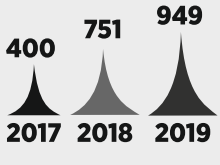
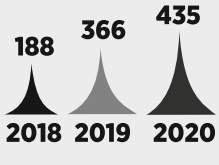
Our performance in Olympiads & Scholarship Exams Over Past 3 Years

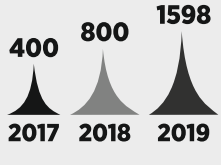
NTSE Stage-I



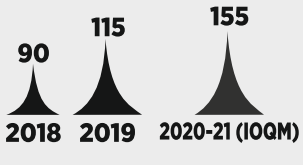
NTSE Stage-II



PRMO



RMO



AAKASHIANS OUTSHINE IN CBSE CLASS X BOARD EXAM 2020

Glimpse of our top performers

P Harini
99.8% (499/500)

Rishit Agarwal
99.6% (498/500)

Sneha Barman
99.4% (497/500)

1598 1556 Classroom + 42 Digital & Distance PRMO 2019	**155** 151 Classroom + 04 Digital & Distance IOQM 2020-21	**620** 533 Classroom + 87 Digital & Distance KVPY Aptitude Test 2019	**521** 435 Classroom + 86 Digital & Distance KVPY Fellowship Award 2020-21
771 705 Classroom + 66 Digital & Distance NSEs 2019	**1611** 1477 Classroom + 134 Digital & Distance IMO (Level-I) 2020-21	**1656** 1528 Classroom + 128 Digital & Distance NSO (Level-I) 2020-21	**26** 20 Classroom + 06 Digital & Distance INO 2020

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