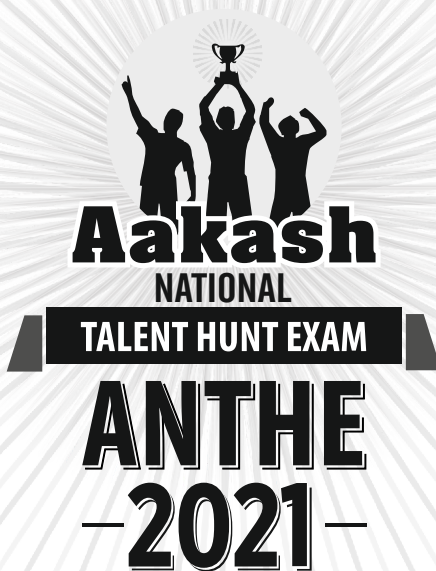


Sample Paper



(Class X Studying Moving to Class XI)

Physics, Chemistry, Biology & 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) This question paper consists of four parts (i.e., Physics, Chemistry, Biology and Mental Ability). Physics, Chemistry, Biology have **four sections** and Mental Ability has **two sections**.
 - (ii) **Section-I:** This section contains **22** multiple choice questions, which have **only one** correct answer. Each question carries **+2 marks** for correct answer.
 - (iii) **Section-II:** This section contains **7** 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 **3** 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 **3** matrix match type 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.



Aakash National Talent Hunt Exam 2021

SAMPLE PAPER

(Class X Studying Moving to Class XI)

(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

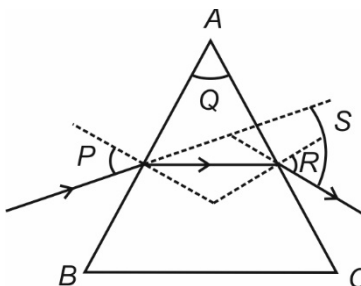
MM : 90

PHYSICS

SECTION-I : SINGLE ANSWER TYPE

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

- On reducing the focal length of a lens, its power
 - Decreases
 - Increases
 - Remains unchanged
 - May increase or decrease
- The refraction of a white light through a glass prism is shown below. Identify the angles P , Q , R and S .



	P	Q	R	S
(1)	Angle of incidence	Angle of prism	Angle of deviation	Angle of emergence
(2)	Angle of emergence	Angle of prism	Angle of incidence	Angle of deviation
(3)	Angle of incidence	Angle of deviation	Angle of prism	Angle of emergence
(4)	Angle of incidence	Angle of prism	Angle of emergence	Angle of deviation

Space for Rough Work

3. In an experiment of verification of Ohm's law, the following observations are obtained.

Potential difference V (in volt)	0.25	0.5	0.75	1.00	1.25
Current I (in ampere)	0.1	0.2	0.3	0.4	0.5

The value of current I when potential difference V is 0.85 V, is

- (1) 0.32 A
 - (2) 0.34 A
 - (3) 0.36 A
 - (4) 0.38 A
4. The resistivity of a wire is proportional to its length as
- (1) $\frac{1}{l}$
 - (2) l^2
 - (3) $\frac{1}{l^2}$
 - (4) l^0
5. Figure below shows an object OA and its image IB formed by a concave lens. The possible position of lens could be



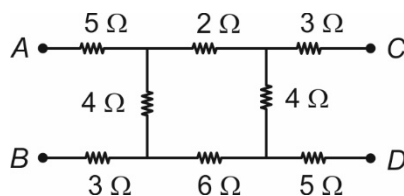
- (1) In the left of object OA
- (2) In the right of image IB
- (3) In between object OA and image IB
- (4) Either left of object OA or in the right of image IB

Space for Rough Work

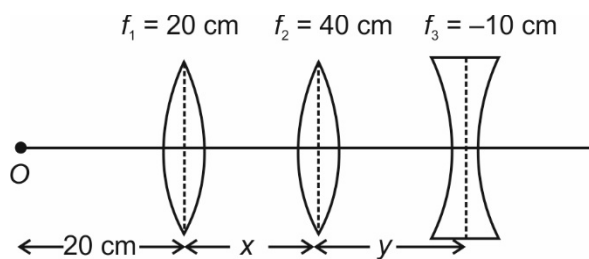
SECTION-II : MORE THAN ONE ANSWER TYPE

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.

6. Eight resistors are connected in a circuit as shown below. If R_{xy} represents equivalent resistance between any points x and y then



- (1) $R_{AB} = R_{CD}$
 (2) $R_{AC} = R_{BD}$
 (3) $R_{AC} = R_{BC}$
 (4) $R_{BD} = R_{AD}$
7. Two convex lenses of focal lengths 20 cm and 40 cm and a concave lens of focal length 10 cm are placed as shown below. An object is placed at a distance of 20 cm. The value of x and y, for which final rays comes out parallel to the principal axis, are



- (1) $x = 20 \text{ cm}, y = 40 \text{ cm}$
 (2) $x = 20 \text{ cm}, y = 30 \text{ cm}$
 (3) $x = 15 \text{ cm}, y = 30 \text{ cm}$
 (4) $x = 30 \text{ cm}, y = 20 \text{ cm}$

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.

8. **A** : The sun and the region around sun appear reddish at the time of sunrise and sunset.
R : At the time of sunrise and sunset most of the blue colour of white light is scattered. Therefore, maximum red colour of light reaches to our eyes.
- (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).

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

9. Match the Columns.

Column I	Column II
(A) Conductors of electricity	(P) Tungsten
(B) Alloys	(Q) Nichrome
(C) Insulator	(R) Glass
(D) Filament of bulb is made of	(S) Copper

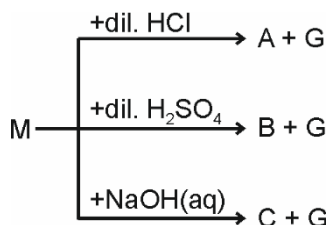
Space for Rough Work

CHEMISTRY**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.

10. Hydrogen sulphide gas reacts with oxygen gas to form solid sulphur and water. Which of the following statements is true about this reaction?
- (1) The given reaction is an example of combination reaction
 - (2) Hydrogen sulphide gas is being oxidised
 - (3) The given reaction is an example of double displacement reaction
 - (4) Oxygen gas is being oxidised
11. On balancing the given equation, $a\text{MnO}_2(\text{s}) + b\text{Al}(\text{s}) \longrightarrow c\text{Mn}(\text{l}) + d\text{Al}_2\text{O}_3(\text{s})$, the value of a, b, c and d will be
- (1) 1, 2, 1 and 1
 - (2) 2, 3, 2 and 3
 - (3) 3, 4, 3 and 2
 - (4) 2, 2, 2 and 1

12. Consider the following



If 'G' is a gas which burns with a pop sound, then identify the compounds A, B and C and choose the correct option.

- (1) $\text{A} = \text{CuCl}_2$, $\text{B} = \text{CuSO}_4$ and $\text{C} = \text{Na}_2\text{Cu}(\text{OH})_2$
- (2) $\text{A} = \text{ZnCl}_2$, $\text{B} = \text{ZnSO}_4$ and $\text{C} = \text{Zn}(\text{OH})_2$
- (3) $\text{A} = \text{CuCl}_2$, $\text{B} = \text{CuSO}_4$ and $\text{C} = \text{Cu}(\text{OH})_2$
- (4) $\text{A} = \text{ZnCl}_2$, $\text{B} = \text{ZnSO}_4$ and $\text{C} = \text{Na}_2\text{ZnO}_2$

Space for Rough Work

13. Which of the following salts has two water molecules present in its one formula unit?
- (1) Gypsum (2) Plaster of Paris
(3) Washing soda (4) Baking soda
14. Aqueous solution of barium chloride reacts with aqueous solution of aluminium sulphate to produce
- (1) Aqueous solution of barium sulphate (2) White precipitate of barium sulphate
(3) Yellow precipitate of barium sulphate (4) Blue coloured solution of barium sulphate

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.

15. Aqueous solution of which of the following turn(s) pink on addition of few drops of phenolphthalein?
- (1) Lemon juice
(2) Milk of magnesia
(3) Pure water
(4) Sodium hydroxide
16. Which of the following statements is/are correct?
- (1) Iron nail reacts with steam to evolve H_2 gas
(2) Magnesium ribbon can react with cold water to evolve H_2 gas
(3) Silver reacts with oxygen but does not react with water
(4) Gold does not react with oxygen or water even at high temperature

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.

17. **A** : Alkali metals like lithium, sodium, potassium etc. are so soft that they can be cut with a knife.
R : Alkali metals have high densities and low melting points.
- (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

Space for Rough Work

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).

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

18. Match the Column-I with Column-II.

Column I	Column II
(A) Sodium chloride	(P) Acidic salt
(B) Potassium nitrate	(Q) Basic salt
(C) Sodium acetate	(R) Neutral salt
(D) Aluminium chloride	(S) pH value more than 7

BIOLOGY**SECTION-I : SINGLE ANSWER TYPE**

This section contains 6 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

19. A cellular process required 1403 kJ of energy. How many molecules of ATP should be broken using water to provide this amount of energy?

- | | |
|--------|--------|
| (1) 42 | (2) 40 |
| (3) 46 | (4) 48 |

Space for Rough Work

20. Select the correct group of organisms which breakdown the food material outside their body and then absorb the digested food material.
- (1) *Cuscuta* and ticks
 - (2) Bread moulds and yeast
 - (3) Leeches and lice
 - (4) Tape-worms and mushrooms
21. Amongst the following, select the correct pathway of glucose breakdown in aerobic condition.
- (1) Glucose $\xrightarrow{\text{Cytoplasm}}$ Pyruvate $\xrightarrow{\text{Mitochondria}}$ Ethanol + Carbon dioxide + Energy
 - (2) Glucose $\xrightarrow{\text{Cytoplasm}}$ Pyruvate $\xrightarrow{\text{Mitochondria}}$ Carbon dioxide + Water + Energy
 - (3) Glucose $\xrightarrow{\text{Cytoplasm}}$ Pyruvate $\xrightarrow{\text{Cytoplasm}}$ Carbon dioxide + Water
 - (4) Glucose $\xrightarrow{\text{Cytoplasm}}$ Pyruvate $\xrightarrow{\text{Mitochondria}}$ Lactic acid + Energy
22. If a person's liver is devoid of bile duct, then which of the following processes will be affected?
- (1) Digestion of proteins
 - (2) Digestion of fats
 - (3) Digestion of carbohydrates
 - (4) Absorption of digested food
23. In humans, the percent probability of giving birth to a male child is
- (1) 100%
 - (2) 75%
 - (3) 50%
 - (4) 25%
24. In a monohybrid cross, two pea plants were crossed and produced 24 offsprings. Out of these, 18 individuals show dominant phenotype for flower colour. What was the genotype of the parents?
- (1) Vv X Vv
 - (2) vv X vv
 - (3) VV X vv
 - (4) VV X Vv

Space for Rough Work

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.

25. Which of the following changes is/are common to both males and females?
- (1) Breast size begins to increase
 - (2) Thin hair appear on legs and arms
 - (3) Skin frequently becomes oily
 - (4) Thick hair growth on the face
26. 'X' is the male reproductive part of a flower which produces pollen. Here, 'X' consists of
- (1) Anther
 - (2) Petal
 - (3) Filament
 - (4) Stigma

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** : Humans use sexual mode of reproduction.
- R** : In early teenage years, a whole new set of changes occurs that cannot be explained simply as body enlargement.
- (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

Space for Rough Work

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.

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

28. Match the columns.

Column-I

(Parts of human female reproductive system)

- (A) Uterus
(B) Placenta
(C) Oviduct
(D) Ovary

Column-II

(Their roles)

- (P) Fertilization occurs here
(Q) Embryo is implanted here
(R) It contains thousands of eggs
(S) It provides nutrition to embryo

MENTAL ABILITY
SECTION-I : SINGLE ANSWER TYPE

This section contains 6 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

29. The next term in the following pattern is

49, 925, 2549, 49121, 121169, ?

- | | |
|------------|------------|
| (1) 289361 | (2) 169289 |
| (3) 169361 | (4) 289169 |

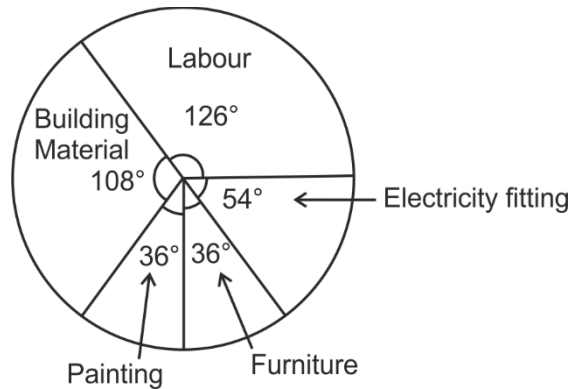
Space for Rough Work

30. The total number of triangles in the following figure is



- (1) 9 (2) 10
(3) 11 (4) 12

31. Study the given data and answer the following question.



Components of construction of a building

If the total cost of construction of building is ₹ 10,00,000 then cost of painting is

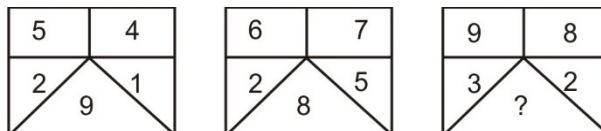
- (1) ₹ 360000
(2) ₹ 36000
(3) ₹ 10000
(4) ₹ 100000

32. If MAT → 270341, RAM → 370327 and ZEN → 531129, then TOM → ?

- (1) 413127
(2) 412127
(3) 513127
(4) 413128

Space for Rough Work

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



(1) 16

(2) 25

(3) 36

(4) 49

34. Choose odd number from the following group.

89, 97, 73, 71, 61, 53, 49, 37, 31

(1) 49

(2) 89

(3) 61

(4) 97

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.

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

$234 : 18 :: 456 : 50 :: ?$.

(1) $555 : 125$

(2) $222 : 8$

(3) $333 : 27$

(4) $666 : 72$

☐ ☐ ☐

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949 NTSE (Stage-I) 2019-2020

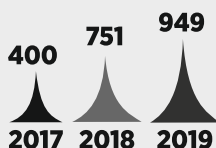
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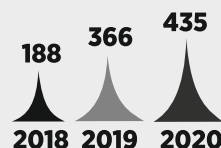


Our performance in Olympiads & Scholarship Exams Over Past 3 Years

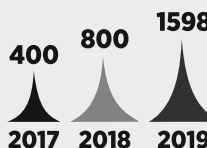
NTSE Stage-I



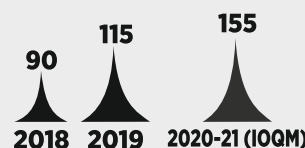
NTSE Stage-II



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NSEs
2019

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1477 Classroom +
134 Digital & Distance

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1656

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26

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