

Roll No.

Booklet Code **E**

Name :

Date : 16th December 2020

ONLINE MODE



TALENT HUNT EXAM

**ANTHE
—2020—**

(Class IX Studying Moving to Class X)

Science, Mathematics & Mental Ability

INSTRUCTIONS FOR CANDIDATE

- Duration of Test is 1 hr.
- The Test booklet consists of **35** questions. The maximum marks are **90**. There is **no negative marking** for wrong answer.
- Pattern of the questions are as under:
 - The question paper consists of five parts i.e., Physics, Chemistry, Biology, Mathematics and Mental Ability. Physics, Chemistry, Biology, Mathematics have **four sections** and Mental Ability has **two sections**.
 - Section-I:** This section contains **21** multiple choice questions, which have **only one** correct answer. Each question carries **+2 marks** for correct answer.
 - 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.
 - 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.
 - Section-IV:** This section contains **4** 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 the correct answer.



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Aakash National Talent Hunt Exam 2020

(Class IX Studying Moving to Class X)

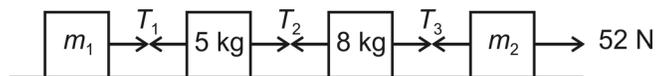
Time : 1 Hour

MM : 90

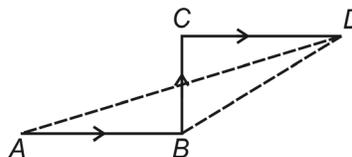
PHYSICS
SECTION-I : SINGLE ANSWER TYPE

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. Four blocks of masses m_1 , 5 kg, 8 kg and m_2 are arranged on smooth horizontal surface. A force of 52 N accelerates all blocks with 2 m/s^2 . The ratio of m_1 to m_2 is 3 : 10. Find the value of tensions T_1 , T_2 and T_3 which are shown below.



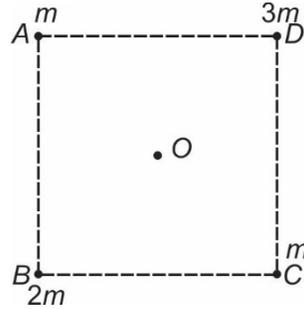
- (1) 3 N, 6 N, 16 N
 (2) 8 N, 5 N, 21 N
 (3) 6 N, 16 N, 32 N
 (4) 6 N, 18 N, 36 N
2. A particle is moving on a given path as shown in figure reaches to point D from point A . The displacement covered by particle is



- (1) $AB + CD$
 (2) $AB + BC + CD$
 (3) BD
 (4) AD

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3. Four particles of masses m , $2m$, m and $3m$ are placed on the corners A , B , C and D of a square of length a . When another particle of mass $4m$ is gently placed at centre O of the square, then $4m$ starts moving towards point

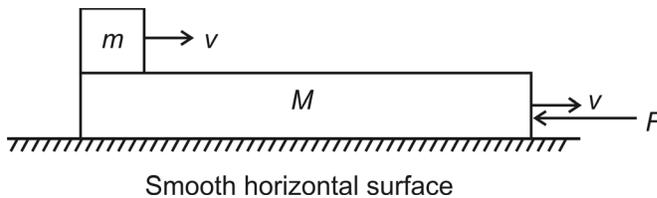


- (1) A (2) B
 (3) C (4) D
4. The weight of any object on the Earth will be maximum at
- (1) Equator (2) North pole
 (3) South pole (4) Both (2) & (3)

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 smooth small block of mass m and smooth plank of mass M moving with same velocity. If force F applied on plank in opposite direction of motion as shown in figure, then which of the following option(s) is/are correct?



- (1) Speed of plank will decrease at rate $\frac{F}{M}$
 (2) Block will move with constant speed
 (3) Speed of plank will decrease at rate $\frac{F}{(M+m)}$
 (4) Speed of block will decrease at rate $\frac{F}{m}$

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 :** An athlete is running in a circular path with constant speed have constant acceleration.
R : Change in his velocity is due to the change in direction.
- (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

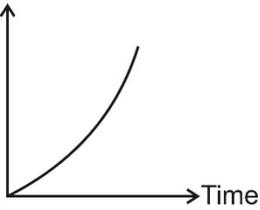
SECTION-IV : MATRIX MATCH TYPE

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.

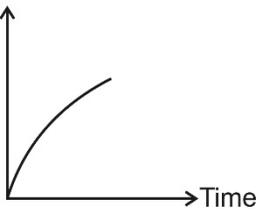
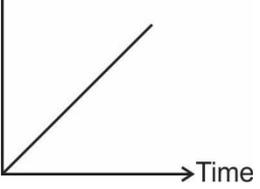
For each entry in Column I, tick the boxes of all the matching entries in Column II. For example, if entry (A) in Column I matches with entries (P) & (S) in Column II, then tick the boxes (P) & (S). Similarly, tick the boxes for entries (B), (C) and (D).

	P	Q	R	S
A.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Column I has situations and Column II has graphs corresponding to given situations in Column I.

	Column I		Column II
(A)	Body moving in upward direction under influence of gravitational force	(P)	Displacement 

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(B)	Uniformly moving body	(Q)	Displacement 
(C)	Body moving in downward direction under influence of gravitational force	(R)	Speed 
(D)	Body moving with variable speed	(S)	Velocity 

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. Dye from ink and components of dye from it can be separated respectively by
- (1) Chromatography and evaporation
 - (2) Evaporation and chromatography
 - (3) Filtration and chromatography
 - (4) Chromatography and chromatography
9. The number of atoms of oxygen present in the same number of moles of baking soda as are present in 2.24 g of quick lime is
- (1) 0.2418×10^{22}
 - (2) 24.018×10^{23}
 - (3) 7.2264×10^{23}
 - (4) 7.2264×10^{22}

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10. 'X' and 'Y' are two different mixtures. The particles of 'X' can be seen by naked eyes but particles of 'Y' cannot be seen by naked eyes. 'X' and 'Y' respectively are
- (1) Mixture of chalk powder in water and mixture of wheat flour in water
 - (2) Mixture of ink in water and mixture of sugar in water
 - (3) Mixture of chalk powder in water and mixture of ink in water
 - (4) Mixture of milk in water and mixture of salt in water
11. 10% (by mass) solution of sugar in water means
- (1) 10 g sugar in 90 g of water
 - (2) 10 g sugar in 100 g of water
 - (3) 1 g of sugar in 100 g of water
 - (4) 10 g sugar in 10 g of water

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. The polyatomic ion(s) which contain(s) five atoms is/are
- (1) Hydrogen carbonate ion
 - (2) Phosphate ion
 - (3) Nitrate ion
 - (4) Ammonium ion

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** : Atoms combine in the ratio of small whole numbers to form compounds.
R : The relative number and kinds of atoms are variable in a given compound.
- (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

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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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Match the Columns.

	Column I		Column II
(A)	Chlorine	(P)	Metal
(B)	Sulphur	(Q)	Valency 2
(C)	Zinc	(R)	Valency 1
(D)	Magnesium	(S)	Non-metal

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 parts of our body is majorly infected by the virus which causes the disease Japanese encephalitis?
- (1) Spleen
 - (2) Brain
 - (3) Liver
 - (4) Lung

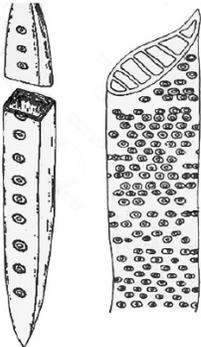
Space for Rough Work

16. The solution is said to be hypertonic solution, if
- (1) The solution has a lower water concentration than the cell
 - (2) The solution has the same water concentration as the cell
 - (3) The solution has higher water concentration than the cell
 - (4) The solution has a lower solute concentration than the cell
17. Vijay rushed to a nearby hospital after an accident which caused a lot of blood loss. His brother, who was having the same blood group refused to donate blood to him as he was suffering from the disease which spreads through blood to blood contact. The disease might be
- (1) Pneumonia
 - (2) AIDS
 - (3) Common cold
 - (4) Cholera
18. Which of the following cell organelles helps in the manufacture of lipid molecules?
- (1) Rough endoplasmic reticulum
 - (2) Golgi apparatus
 - (3) Smooth endoplasmic reticulum
 - (4) Vacuole

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.



Select the common feature(s) of the above depicted tissues.

- (1) Both are the elements of xylem tissue
- (2) Both conduct food from leaves to other parts of the plant
- (3) Both are living tissues of phloem
- (4) Both are tubular structures and contain pits

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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 :** The functional combination of nerve and muscle tissues is fundamental to most animals.
R : This combination enables animals to move rapidly in response to stimuli.
- (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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

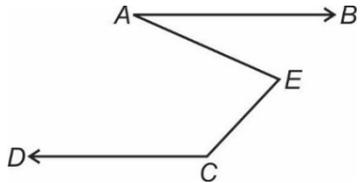
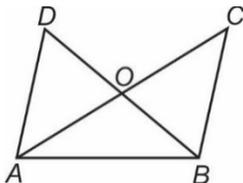
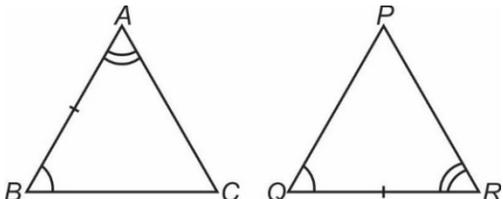
21. Column I contains cell organelles and Column II contains the functions performed by these cell organelles.

	Column I		Column II
(A)	Rough endoplasmic reticulum	(P)	It is a type of plastids
(B)	Mitochondrion	(Q)	It helps in membrane biogenesis
(C)	Leucoplast	(R)	It is known as power house of cell
(D)	Chloroplast	(S)	It contains green colour pigment called chlorophyll

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- | | | | | |
|----|-------------------------------------|--------------------------|--------------------------|-------------------------------------|
| | P | Q | R | S |
| A. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| B. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| C. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| D. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

28. Match the Columns.

	Column I		Column II
(A)	<p>In the given figure, $AB \parallel CD$, $\angle BAE = 38^\circ$ and $\angle ECD = 152^\circ$, then $\angle AEC$ (in degrees) is</p> 	(P)	42
(B)	<p>In a right triangle ABC, $\angle B = 90^\circ$, D is the mid-point of AC and $AC = 16$ cm, then BD (in cm) is</p>	(Q)	A multiple of 22
(C)	<p>In the given figure, AC and BD intersect at O. If $\angle OAB = \angle OBA$, $OC = OD$ and $AC = 8$ cm, then BD (in cm) equals</p> 	(R)	$\sqrt{1764}$
(D)	<p>In the given figure, $AB = QR$, $\angle A = \angle R$ and $\angle B = \angle Q$. If $AB : BC : AC = 2 : 3 : 4$ and semi-perimeter of $\triangle ABC$ is 27 cm, then $(PQ + PR)$ (in cm) is</p> 	(S)	8

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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. Complete the following pattern.

20327, 18996, 17996, 17267, ?, 16412

- (1) 16899
- (2) 17051
- (3) 17015
- (4) 16755

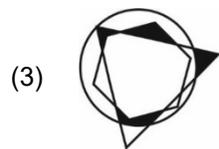
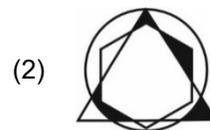
30. If $2 \star 3 = 26$, $3 \star 4 = 50$ and $6 \star 7 = 170$, then $5 \star 9 = ?$

- (1) 202
- (2) 210
- (3) 212
- (4) 195

31. If 'Jakarta' is related to Indonesia, then in the same way 'Havana' is related to

- (1) Ecuador
- (2) Haiti
- (3) Chile
- (4) Cuba

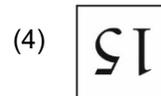
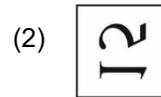
32. The water image of following figure is



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33. Complete the following figure matrix.

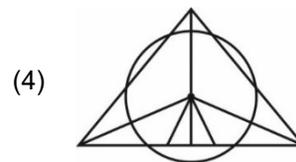
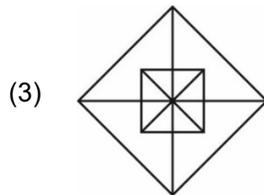
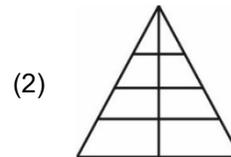
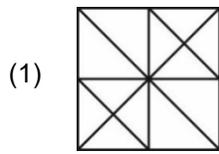
2	4	8
3	2	6
5	3	?



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. Which of the following figure/s has/have more than 16 triangles?



35. A is sister of B. B is husband of C. C is daughter-in-law of D. D is wife of E. F is brother of B. G is wife of F. The daughter-in-law/s of E is/are

(1) A

(2) C

(3) D

(4) G



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84230 in NEET-UG 2020
69759 Classroom + 14471 Distance & Digital

7581 in JEE (Main) 2020
6536 Classroom + 1045 Distance & Digital

1700 in JEE (Advanced) 2020
1560 Classroom + 140 Distance & Digital

Our Result in Olympiads / Scholarship Exams

1598

1556 Classroom + 42 Distance & Digital

in PRMO 2019

115

111 Classroom + 4 Distance & Digital

in RMO 2019

949

832 Classroom + 117 Distance & Digital

in NTSE (Stage - I) 2019-20

366

317 Classroom + 49 Distance & Digital

in NTSE (Stage-II) 2019

591

515 Classroom + 76 Distance & Digital

in KVPY Aptitude Test 2019

450

385 Classroom + 65 Distance & Digital

in KVPY Fellowship Award 2019-20

767

701 Classroom + 66 Distance & Digital

in NSEs 2019

481

466 Classroom + 15 Distance & Digital

in IMO (Level-I) 2018-19

800

728 Classroom + 72 Distance & Digital

in NSO (Level-I) 2019-20

26

20 Classroom + 06 Distance & Digital

in INO 2020



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