



IPEC EXPLORER METICULOUS TEST-2024

(Admission Cum Scholastic Aptitude test)

For

CLASS-VIII

(For VIII to IX Moving Students)

Time : 3 Hrs.

Maximum Marks : 300

INSTRUCTIONS

1. The booklet is your Question Paper. Do not break the seal of this booklet before being instructed to do so by the invigilator.
2. Blank spaces and blank pages are provided in the question paper for your rough work. No additional sheets will be provided for rough work.
3. Blank papers, clipboards, log tables, slide rules, calculators, cameras, cellular phones, pagers and electronic gadgets are **NOT** allowed inside the examination hall.
4. The answer sheet, a machine-readable Optical Response Sheet (**ORS**), is provided separately.
5. On breaking the seal of the booklet check that it contains **12** pages and all the **75** questions.
6. A candidate has to write his / her answers in the ORS sheet by darkening the appropriate bubble with the help of **Black/Blue ball point pen** as the correct answer of the question attempted.

7. Question Paper Format :

This question paper consists of four parts.

Part - I : Physics - 15 Questions

Part - II: Chemistry - 15 Questions

Part - II: Mathematics - 15 Questions

Part - IV: Biology - 15 Questions

Part - V: Mental Ability - 15 Questions

8. Marking Scheme :

Each question carries **+4 marks** for correct answer and **-1** for wrong answer.

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PART -I [Physics]**[SINGLE CORRECT TYPE]**

Each question has four choices (A), (B), (C) and (D) out of which only one is correct.

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1. It is difficult to walk on ice because
(A) pressure is high (B) pressure is low
(C) friction is high (D) friction is low
 2. Cars and buses are able to move on the road because of _____ between the tyres and the road.
(A) walk (B) distance (C) acceleration (D) friction
 3. Fluids are
(A) gases (B) liquids (C) gases and liquids (D) none of these
 4. Ball rolling on the floor stops due to
(A) gravitational force (B) magnetic force (C) muscular force (D) frictional force
 5. The two common forces that are acting every where around us are _____.
(A) gravity and friction (B) gravity and magnetic force
(C) friction and magnetic force (D) electrostatic force and gravity
 6. The force of freely falling body is directly proportional to
(A) mass of body (B) acceleration of body
(C) velocity of body (D) both (A) and (B)
 7. A body is in the state of rest on the surface of earth. Which of the following is a correct statement?
(A) Frictional force acts on the body
(B) Only the weight of body acts on it
(C) Only the reaction of the earth acts on it
(D) The weight of body acting downward is equal and opposite to the reaction of the earth.
 8. At the centre of earth the acceleration due to gravity is
(A) infinite (B) zero (C) 9.8 ms^{-2} (D) all of these
 9. Mass differs from weight because
(A) weight is a force whereas mass is not a force
(B) the mass of an object is always more than it weight
(C) mass can be expressed only in the metric system
(D) there is no difference

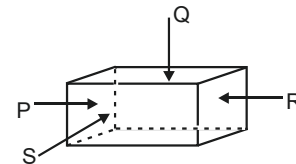
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10. Equal forces \vec{F} -act on isolated bodies A and B as shown. The mass of B is three times that of A. The magnitude of the acceleration of A is
- (A) Three times that of B (B) 1/3 that of B
(C) nine times that B (D) 1/9 that of B



11. The mass of a body
- (A) is slightly different at different places on earth
(B) is independent of the free-fall acceleration
(C) is the same for all bodies of the same volume
(D) can be measured most accurately on a spring scale
12. Which one of the following material will reflect sound better?
- (A) Thermocole (B) Curtain made from cloth
(C) Steel (D) Paper
13. The frequency of a source is 20 kHz. the frequencies of sound wave produced by it in water and air will be
- (A) same as that of source 20 kHz (B) > 20 kHz
(C) < 20 kHz (D) depends upon velocity

14. When friction is acting in the direction of P, in which direction do you think the force is applied?
- (A) P (B) Q
(C) R (D) S



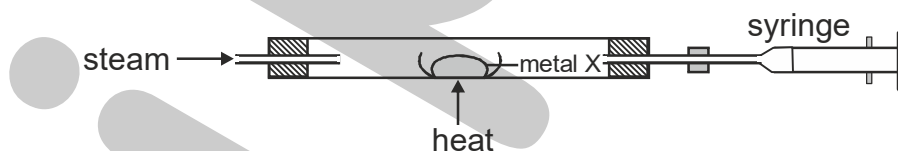
15. Sound waves were sent down from a ship and they returned after 2 seconds. What is the depth of the sea, if the speed of sound in water is 1.5 km s^{-1} ?
- (A) 150 m (B) 3 km (C) 1.5 km (D) 750 m

(Space for rough work)

PART - II [Chemistry]**[SINGLE CORRECT TYPE]**

Each question has four choices (A), (B), (C) and (D) out of which only one is correct.

16. When steam is passed through zinc then
(A) zinc oxide is formed (B) zinc hydroxide is formed
(C) HCl is formed (D) H_2O is formed
17. Mark the correct statement.
(A) Metals do not conduct electricity.
(B) Bakelite is good conductor of heat.
(C) A flexible object will never change its shape.
(D) Strength of an object refers to its ability to support a load without breaking.
18. PVC is used for making rain coats and seat covers because
(A) it can be rolled into thin sheets like polythene
(B) it can be coated on a cloth base and is tougher than polythene
(C) It has low melting point and is unreactive
(D) It has high melting point and is very reactive
19. Petrol is used as a fuel in light automobiles such as motorcycles, scooters and cars while heavy vehicles like trucks and tractors run on
(A) diesel (B) fuel oil (C) lubricating oil (D) petroleum gas
20. Ethyl mercaptan is added to LPG
(A) to give colour to it (B) to give volume to it
(C) to give smell to it (D) to make it liquid
21. Ms. Deepika, a science teacher demonstrated an activity in the science lab and the experiment was set up as shown in the figure.



- The metal 'X' reacts with steam to form a gas 'Y' which is collected in the syringe. Which of the following best describes the metal 'X' and gas 'Y'?
- (A) Metal 'X' is silver and gas 'Y' is hydrogen which burns with a pop sound.

(Space for rough work)

- (B) Metal 'X' is sodium and gas 'Y' is carbon dioxide which gives white precipitate with lime water.
 (C) Metal 'X' is iron and gas 'Y' is hydrogen which burns with a pop sound.
 (D) Metal 'X' is magnesium and gas 'Y' is carbon dioxide which gives white precipitate with lime water.

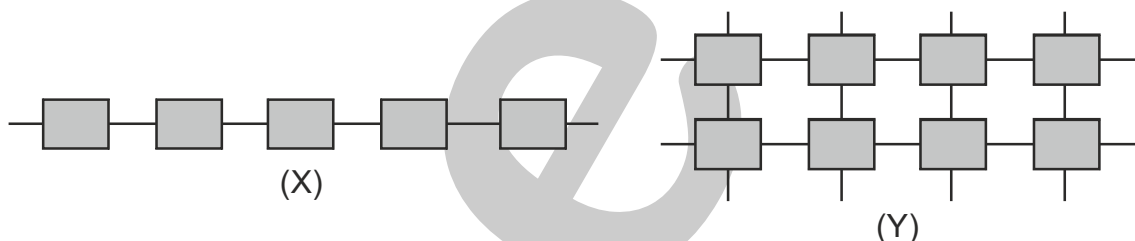
22. Which of the following materials is the best for making garments and jackets that can be used in wet or damp environment?

- (A) Polyester (B) Wool (C) Cotton (D) None of these

23. Which of the following is not a characteristic of plastics?

- (A) Plastics are poor conductors of heat.
 (B) Plastics are insoluble in water.
 (C) Plastics are non-inflammable.
 (D) Plastics do not react with water and air.

24. See the figure given below and select the correct statements regarding polymers.



- (1) Figure (X) shows structure of a monomer while figure (Y) shows structure of a polymer.
 (2) Small boxes in the structure represent monomers which are joined to give a polymer.
 (3) Figure (X) shows structure of a linear polymer while (Y) shows structure of a cross-linked polymer.

- (A) 1 and 2 only (B) 1 and 3 only (C) 2 and 3 only (D) All are correct

25. Substance X reacts with dilute HCl violently, Y reacts slowly while Z does not react at all. X, Y and Z could be respectively

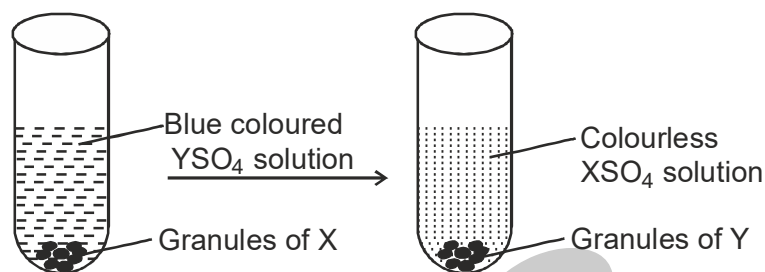
- (A) Cu, Al, Fe (B) Al, Na, Cu (C) Na, Cu, Fe (D) K, Al, Cu

26. Which of the following reactions are possible?

- (i) $\text{Mg} + \text{CuSO}_4 \rightarrow \text{MgSO}_4 + \text{Cu}$ (ii) $\text{Ca} + \text{MgSO}_4 \rightarrow \text{CaSO}_4 + \text{Mg}$
 (iii) $\text{Cu} + \text{ZnSO}_4 \rightarrow \text{CuSO}_4 + \text{Zn}$ (iv) $\text{Fe} + \text{MgSO}_4 \rightarrow \text{FeSO}_4 + \text{Mg}$
 (A) (iii) and (iv) only (B) (i) and (iv) only (C) (ii) and (iii) only (D) (i) and (ii) only

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27. Observe the given figure carefully.



X and Y respectively are

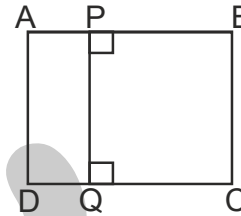
- (A) Zn and Ag (B) Au and Cu (C) Fe and Cu (D) Zn and Cu
28. When air is passed through red hot coke, a gaseous fuel is produced. The name of this gaseous fuel and its composition are respectively
 (A) Natural gas, $CO + H_2$ (B) Producer gas, $N_2 + CO$
 (C) Water gas, $H_2 + CO$ (D) None of these
29. In the oil wells X forms the topmost layer, followed by Y and finally Z. X, Y and Z are respectively
 (A) Natural gas, oil and water (B) Petroleum gas, oil and natural gas
 (C) Natural gas, water and oil (D) Petroleum gas, oil and water
30. Which of the following represents the correct decreasing order of boiling points of the given liquids.
 (A) Paraffin wax > Diesel > Kerosene > Petrol
 (B) Diesel > Kerosene > Petrol > Paraffin wax
 (C) Kerosene > Petrol > Paraffin wax > Diesel
 (D) Petrol > Paraffin wax > Diesel > Kerosene

(Space for rough work)

PART - III [MATHEMATICS]**[SINGLE CORRECT TYPE]**

Each question has four choices (A), (B), (C) and (D) out of which only one is correct.

31. ABCD is a square and $PB = 2AP$. The perimeter of the rectangle APQD is 80cm. The perimeter of ABCD in cms is
 (A) 100 (B) 120
 (C) 140 (D) 160



32. The fraction $\frac{4}{37}$ is written in the decimal form $0.a_1a_2a_3\dots$ the value of a_{2017} is
 (A) 8 (B) 0 (C) 1 (D) 5

33. If $A = \frac{5425}{1444} - \frac{2987}{3045} - \frac{493}{4284}$, then
 (A) $1 < A < 2$ (B) $2 < A < 3$ (C) $3 < A < 4$ (D) $A < 1$

34. After simplifying the fraction $\left\{ \frac{a + \frac{b-a}{1+ab}}{1 - \frac{a(b-a)}{a+ab}} \right\} \left\{ \frac{\frac{x+y}{1-xy} - y}{1 + \frac{y(x+y)}{1-xy}} \right\}$ we get a term independent of

- (A) a, y (B) b, x (C) a, b (D) x, y
35. If $(10^{2013} + 25)^2 - (10^{2013} - 25)^2 = (\sqrt{10})^n$ then the value of n is
 (A) 2030 (B) 4020 (C) 3020 (D) 4030
36. The value of $\sqrt{17 + 4\sqrt{13}} - \sqrt{17 - 4\sqrt{13}}$ is
 (A) 2 (B) 4 (C) 3 (D) 8
37. The number of digits when $(999999999999)^2$ is expanded is
 (A) 26 (B) 24 (C) 32 (D) 16

(Space for rough work)

38. If $2016 = 2^x \cdot 3^y \cdot 5^z \cdot 7^u$ where x, y, z, u are non negative integers, the value of $x + y + 2016z + 3u$ is
(A) 10 (B) 11 (C) 12 (D) 13
39. A number x is chosen at random from the number $-3, -2, -1, 0, 1, 2, 3$. The probability that $|x| < 2$ is
(A) $\frac{5}{7}$ (B) $\frac{2}{7}$ (C) $\frac{3}{7}$ (D) $\frac{1}{7}$
40. Two dice are thrown simultaneously. The probability of getting a multiple of 2 on one die and a multiple of 3 on the other is
(A) $\frac{5}{36}$ (B) $\frac{5}{12}$ (C) $\frac{11}{36}$ (D) $\frac{1}{12}$
41. The value of $\sqrt[3]{3} \left(\sqrt[3]{\frac{4}{9}} - \sqrt[3]{\frac{2}{9}} + \sqrt[3]{\frac{1}{9}} \right)^{-1}$ is
(A) $2^{\frac{1}{3}} + 1$ (B) $2^{\frac{1}{3}} - 1$ (C) 4 (D) $2^{\frac{1}{6}} + 1$
42. If the real numbers x, y, z are such that $x^2 + 4y^2 + 16z^2 = 48$ and $xy + 4xy + 2zx = 24$ then the value of $x^2 + y^2 + z^2$ is
(A) 20 (B) 24 (C) 21 (D) 25
43. The value of x which satisfies the equation $(4x - 1)^{\frac{1}{4}} = (2x - 3)^{\frac{1}{4}}$ is
(A) -1 (B) 2 (C) 1 (D) None
44. Saket added up all the even numbers from 1 to 101. Then, from the total he obtained, he subtracted all odd numbers between 0 and 100. The answer he would have obtained is
(A) 0 (B) 20 (C) 30 (D) 50
45. Consider the equation $\frac{7x}{2} - a = \frac{5x}{3} + 9$. The least positive integer for which the solution x to the equation is a positive integer is
(A) 1 (B) 2 (C) 3 (D) 4

(Space for rough work)

PART - IV [Biology]**[SINGLE CORRECT TYPE]**

Each question has four choices (A), (B), (C) and (D) out of which only one is correct.

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46. A place in environment where an organism lives is _____
(A) Home (B) Resort (C) Habitat (D) Reservoir
47. Cutting of trees an large & cade is called
(A) Deforestation (B) Reforestation (C) Afforestation (D) None of these
48. Deforestation takes place by
(A) Human activities (B) only by natural resources
(C) Both (D) None
49. The species which are at the verge of the extinction
(A) Endemic (B) Extinct (C) Endangered (D) None of these
50. The growing more & more plants is called
(A) Deforestation (B) Afforestation (C) Reforestation (D) None of these
51. Fauna indicates for
(A) Plants (B) Animals
(C) Both plants & Animlas (D) None of these
52. The places where animals recieve protection is called
(A) Zoo (B) National plarks (C) Rock shetters (D) None of these
53. Project Tiger was launched on
(A) 1st April 1973 (B) 23rd May 1973
(C) 21st September 1973 (D) 25th December 1973
54. Sanctuary is a place where
(A) Animals are protected (B) Plants are Protected
(C) Office of forest Deptt (D) None of these
55. Part of earth which supports the Biodiversity is called
(A) Biosphere (B) Sanctuary (C) Ecosystem (D) Biotic community
56. Elephant, asis is caused by which micro-organisms
(A) Bacteria (B) Virus (C) Fungi (D) Protozoa
-

(Space for rough work)

57. One of the following is a viral disease
 (A) TB (B) Typhoid (C) Influenza (D) Dysentery
58. Winnowing is a method of
 (A) Levelling of the land (B) Sowing of the seeds
 (C) Separating grains from chaff & hay (D) Improving soil fertility
59. The plants that live for more than two years are called:
 (A) Animals (B) Perennials (C) Biennials (D) Trinnials
60. Hybrid varieties of crops
 (A) Give good yield (B) Are disease resistant
 (C) Require no pesticides (D) Are disease resistant & give good yield

PART -V [Mental Ability]

[SINGLE CORRECT TYPE]

Each question has four choices (A), (B), (C) and (D) out of which only one is correct.

Direction (Questions 61): Select the missing number from the given responses.

61.

7	8	6
4	9	5
3	2	?
25	70	29

 (A) 8 (B) 8 (C) 1 (D) 5
62. Identify the correct answer containing letters which will most appropriately fill in the blanks.
 aba_ab_b_ba_
 (A) a, a, a, b (B) b, a, b, a (C) b, a, a, b (D) a, b, b, b

Direction (Questions 63-65):

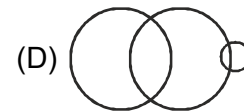
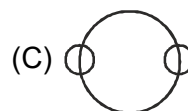
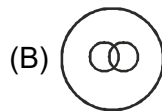
Read the information given below answer the following questions.

P is the father of R, but R is not his son. T is the daughter of R. U is the wife of P. Q is the brother of R. S is the son of Q. V is the wife of Q. W is the father of V.

63. Who is the grandmother of S?
 (A) W (B) P (C) R (D) U
64. Who is the son of U?
 (A) Q (B) R (C) T (D) S
65. Who is the father-in-law of Q?
 (A) R (B) P (C) T (D) W
66. Mrs. Sumitra starts from Gandhi square, Calcutta, drives her car towards west 6kms, and turning to her right she drives 4kms, then again turns the car to her right and moves 6kms. How far is she from the starting point?
 (A) 6kms (B) 16 kms (C) 4 kms (D) 8 kms

(Space for rough work)

67. Which represents Carrot, Food, Vegetable?



68. In a row of 16 girls, when Gitu was shifted by two places towards the left she became 7th from the left end. What was her earlier position from the right end?

(A) 7th

(B) 8th

(C) 9th

(D) 10th

Directions (Question 69): Select the related number from the given alternatives.

69. $1 : 8 :: 27 : ?$

(A) 37

(B) 47

(C) 57

(D) 64

Directions (Questions 70-71): Read the following information carefully and answer the questions.

Asha and Charu are good in Mathematics and Athletics. Deepa and Asha are good in Athletics and Studies, Charu and Beena are good in General Knowledge and Mathematics. Deepa, Beena and Ela are good in Studies and General Knowledge. Ela and Deepa are good in Studies and Art.

70. Who is good in Studies, General Knowledge, Athletics and Art?

(A) Asha

(B) Beena

(C) Charu

(D) Deepa

71. Who is good in Studies, General Knowledge and Mathematics?

(A) Asha

(B) Beena

(C) Charu

(D) Ela

72. If the code of STEADY is 931785 and that of ENTRY is 12345, what will be the code of SEDATE?

(A) 81419

(B) 94185

(C) 614781

(D) 918731

Directions (Questions 73-74): Find the missing term.

73. CIG, FLJ, IOM, ?

(A) PSU

(B) QUB

(C) LRP

(D) JLG

74. BFG, HLM, NRS, ?

(A) TYZ

(B) TXY

(C) TWX

(D) RVW

Directions (Questions 75):

In these questions, a series is given, with one or more number/letter missing. Choose the correct alternative from the given ones that will complete the series.

75. A D G J M P S V ?

(A) Y

(B) X

(C) B

(D) C

(Space for rough work)