



Monthly Progressive Test

Class: VIII

Subject: PCMB



Test Booklet No.: MPT-02

Test Date:

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Time: 120 mins

Full Marks: 200

Important Instructions :

1. The Test is of 120 mins duration and the Test Booklet contains 100 multiple choice questions of single correct option only. There are four sections with four subjects. You have to attempt all 100 questions (Candidates are advised to read all 100 questions). Questions 1 to 25 contain Physics, Questions 26 to 50 contain Chemistry, Questions 51 to 75 contain Mathematics, Questions 76 to 100 contain Biology.
2. Each question carries 2 marks. For each correct response, the candidate will get 2 marks. There is no negative mark for wrong response. The maximum mark is 200.
3. Use Blue / Black Ball point Pen only for writing particulars marking responses on Answer Sheet.
4. Rough work is to be done in the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must handover the Answer Sheet to the invigilator before leaving the Room / Hall. The candidates are allowed to take away this Test Booklet with them.
6. The CODE for this Booklet is Off Line MPT02 07082025.
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your UID No. anywhere else except in the specified space. Use of white fluid for correction is NOT permissible on the Answer Sheet. **Do not scibble or write on or beyond discrete bars of OMR Sheet at both sides.**
8. Each candidate must show on-demand his/her Registration document to the Invigilator.
9. No candidate, without special permission of the Centre Superintendent or Invigilator, would leave his/her seat.
10. Use of Electronic Calculator/Cellphone is prohibited.
11. The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of this examination.
12. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
13. There is no scope for altering response mark in Answer Sheet.

Space For Rough Works



Physics

1. Pressure exerted by a liquid increases with:

(A) Decrease in depth	(B) Increase in depth	(C) Temperature	(D) Time
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2. Which of the following affects pressure at a given depth in a liquid?

(A) Shape of container	(B) Surface area	(C) Density of liquid	(D) Color of liquid
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3. Pressure in a liquid at rest depends on:

(A) Volume	(B) Depth and density	(C) Shape of container	(D) Time
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4. Atmospheric pressure is caused by:

(A) Earth's magnetic field	(B) Weight of air	(C) Gravity on oceans	(D) Rotation of Earth
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5. Which barometer is commonly used in schools?

(A) Digital barometer	(B) Aneroid barometer	(C) Mercury barometer	(D) Water barometer
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6. Which of the following has the least friction?

(A) Sliding friction	(B) Rolling friction	(C) Static friction	(D) Fluid friction
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7. The force required to overcome friction when an object just starts to move is:

(A) Rolling friction	(B) Sliding friction	(C) Static friction	(D) Kinetic friction
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8. Which is a method to reduce friction?

(A) Making surfaces rough	(B) Using sandpaper
(C) Applying lubricants	(D) Increasing load
9. Fluid friction increases with:

(A) Smoothness of object	(B) Decrease in speed
(C) Increase in speed	(D) Shape of object
10. Which shape reduces fluid friction the most?

(A) Cube	(B) Flat plate	(C) Streamlined shape	(D) Cone
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■ Assertion-Reason type Questions

Directions: Read the following questions and choose any one of the following four responses.

- | | |
|-----|--|
| (A) | Both Assertion and Reason are true and Reason is the correct explanation of the Assertion. |
| (B) | Both Assertion and Reason are true but Reason is not a correct explanation of the Assertion. |
| (C) | Assertion is true but the Reason is false. |
| (D) | Assertion is False but the Reason is true. |
11. **Assertion:** Pressure in a liquid increases with depth.
Reason: Deeper layers of liquid have to bear the weight of the liquid above them.
 12. **Assertion:** Atmospheric pressure does not affect us.
Reason: Our body fluids exert equal inward pressure balancing the external pressure.

13. Assertion: Friction always acts in the direction of motion.

Reason: Friction is a self-adjusting force.

14. Assertion: Rolling friction is less than sliding friction.

Reason: Rolling friction involves less surface contact.

■ Case Based Questions

Case 1 : A student observed that water exerts more pressure at the bottom of a tank than at the top.

15. Which factor affects this difference in pressure?

- (A) Shape of container (B) Depth (C) Volume (D) Area

16. What is the SI unit of pressure?

- (A) Newton (B) Joule (C) Pascal (D) Bar

17. If density of the water increases pressure at the bottom will be

- (A) increase (B) decrease (C) remain same (D) None of the above

Case 2 : A person drinks liquid through a straw.

18. This works due to:

- (A) Air pressure inside straw (B) Atmospheric pressure outside the straw
(C) Weight of liquid (D) Density of air

19. Which instrument is based on the same principle?

- (A) Thermometer (B) Manometer (C) Barometer (D) Hydrometer

20. Pressure inside the straw _____ than atmospheric pressure

- (A) less (B) more (C) equal (D) All of the above

21. Pressure exerted by a liquid at a point increases with

- (A) Decrease in depth (B) Increase in height above the liquid
(C) Increase in the depth of the liquid (D) Increase in area of contact

22. Which of the following affects the pressure exerted by a liquid ?

- (A) Color of the liquid (B) Shape of the container (C) Density of the liquid (D) Volume of the container

23. Atmospheric pressure is measured using a :

- (A) Thermometer (B) Barometer (C) Hygrometer (D) Altimeter

24. Which type of friction is the least?

- (A) Static friction (B) Sliding friction
(C) Rolling friction (D) Fluid friction

25. Why is friction called a necessary evil?

- (A) It only causes wear and tear (B) It always increases speed
(C) It has only advantages (D) It is both useful and undesirable in situations

Chemistry

26. Charcoal burns in air to give :
- (A) Carbon dioxide (B) Heat (C) both 'A' & 'B' (D) None of these
27. Choose the inflammable substance :
- (A) Petrol (B) LPG (C) Alcohol (D) All of these
28. Water is used to extinguish fire because
- (A) It reduce the ignition temperature of burning substance
 (B) Cools the burning substance and increases ignition temperature
 (C) Make a blanket of water vapours and cut off nitrogen.
 (D) Make a blanket of oxygen and cut off air.
29. The stepwise stages for formation of coal :
- (A) Wood → Peat → lignite → Bituminous coal → Anthracite coal
 (B) Wood → Peat → Bituminous coal → lignite → Anthracite
 (C) Wood → Bituminous coal → Peat → lignite → Anthracite
 (D) Wood → Peat → lignite → Anthracite → Bituminous coal
30. Which are produced at the outermost zone of a candle flame ?
- (A) Carbon and water vapour (B) Carbondioxide and carbon
 (C) Cabondioxide and water vapour (D) Carbon monoxide and water vapour
31. Producer gas is : [Given : CO = Carbon monoxide, N₂ = Nitrogen, H₂ = Hydrogen, Cl₂ = Chlorine, O₂ = Oxygen]
- (A) [CO + N₂] (B) [CO + H₂] (C) [CO + O₂] (D) [CO + Cl₂]
32. Fuel must be heated to it's _____ before it starts burning :
- (A) Conversion temperature (B) Ignition temperature
 (C) Inversion temperature (D) Combustion temperature
33. The slow process of conversion of dead vegetations into coal is called :
- (A) Carbon dating (B) Coalization
 (C) Carbonizaion (D) None of these
34. The world's first oil well was drilled in :
- (A) Pennsylvania (B) Washington (C) New Zealand (D) India
35. Naphthalene balls are obtained from :
- (A) Coke (B) Coal (C) Coal tar (D) Coal gas

Assertion and Reason Based Questions (Q.36-39):

Directions: Read the following questions and choose any one of the following four responses.

- a: Assertion and Reason both are correct and Reason is the correct explanation of Assertion.
 b: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion.
 c: Assertion is correct but Reason is wrong.
 d: Assertion is wrong but Reason is correct.

36. Assertion (A): LPG is better fuel than diesel.

Reason (R): LPG has lower calorific value than diesel.

- (A) a (B) b (C) c (D) d

37. Assertion (A): Carbon dioxide is a thermal gas.

Reason (R): Only cabondioxide cause global warming.

- (A) a (B) b (C) c (D) d

38. Assertion (A): LPG means liquefied petroleum gas.

Reason (R): CNG means compressed natural gas.

- (A) a (B) b (C) c (D) d

39. Assertion (A): The temperature at which substance starts burning is called ignition temperature.

Reason (R): A chemical process in which a substance react with oxygen to give of heat and light is called combustion.

- (A) a (B) b (C) c (D) d

40. The product(s) obtained by the destructive distillation of coal is/are :

- (A) Coal tar (B) Coke (C) Coal gas (D) All of these

41. Which gas was used for street lighting in London and New York in the early 19th century :

- (A) LPG (B) CNG (C) Coal gas (D) LNG

42. Which varieties of coal contain highest carbon contain (about 98%) ?

- (A) Peat (B) Bituminous (C) Lignite (D) Anthracite

43. We can save energy by using

- (A) Bulb (B) Tube-light (C) CFLs (D) LFT

44. The heating up of the atmosphere occurs due to the trapping of infrared radiations, by the gas. This phenomenon is known as :

- (A) Conduction (B) radioactivity (C) Photoelectric effect (D) Green house effect

Case Based Question (Q.45 to Q.47)

The minimum temperature at which a combustible substance catches fire is known as ignition temperature. Low ignition temperature date indicates that the fuel is good. When water is added to a burning substance then ignition temperature decreases. In summer day wood attains ignition temperature sharply that causes unwanted forest fire. Calorific value is defined as the amount of heat is released when 1 kg of fuel is burnt completely. High

calorific value indicates that the fuel is very good. Burning of some substances cause Global warming.

45. Which of the following has the lowest calorific value?
 (A) Wood (B) Diesel (C) Petrol (D) LPG
46. Which gas is responsible for the cause of global warming?
 (A) sulphur (B) nitrogen (C) oxygen (D) carbondioxide
47. Which is not responsible for forest fire?
 (A) Carelessness of humans (B) Heat of sun
 (C) Cutting of trees (D) Lighting strike

Case Based Question (Q.48 to Q.50)

Acid rains are caused by emission of sulphurdioxide and nitrogen dioxide, which react with the water molecules in the atmosphere to produce acids. It has very harmful effect on plants, land and aquatic animals and infrastructure. The acidity in the rain is due to the reaction of oxides of nitrogen and sulphur with water vapour - forming dilute acid.

48. Which gas is not responsible for acid rain?
 (A) Sulphurdioxide (B) Carbondioxide (C) Nitrogendioxide (D) Nitrogen
49. Which of the following gas(es) is/are responsible for acid rain?
 (A) NO_2 (B) CO_2 (C) SO_2 (D) All of these
50. Which of the acids are produced by react with water and Nitrogen dioxide?
 (A) Sulphuric acid (B) Nitric acid (C) Nitrous acid (D) Both 'B' and 'C'

Mathematics

51. The factors of $x^4 + 2x^2 + 9$ are
 (A) $x^2 + 3, x^2 - 3$ (B) $x^2 + 3 - 2x, x^2 + 3 + 2x$ (C) $x^2 + 2x, x^2 - 2x$ (D) none of these
52. One of the factors of $x^2 + \frac{1}{x^2} + 8 + 3x^2 + \frac{3}{x^2}$ is
 (A) $x^2 + \frac{1}{x^2}$ (B) $\left(x - \frac{1}{x}\right)^2$ (C) $x - \frac{1}{x}$ (D) $4\left(x + \frac{1}{x}\right)^2$
53. If $x^2 - ax + bx - ab = (px + q)(mx + n)$, then $|(p+q) - (m+n)| = ?$
 (A) $|a+b|$ (B) $|a-b|$ (C) $|2+b-a|$ (D) none of these
54. Resolve into factors: $2bd - a^2 - c^2 + b^2 + d^2 + 2ac$.
 (A) $(b+d+a-c)(b+d-a+c)$ (B) $(b+d-a+c)(b+d-a+c)$ (C) $(b-d-a-c)(b+d-a-c)$ (D) $(b+d+a+c)(b-d-a-c)$
55. If $\alpha + \beta = -\frac{b}{a}$, $\alpha\beta = \frac{c}{a}$ and $D = b^2 - 4ac$, then find $|\alpha - \beta|$.
 (A) $\frac{\sqrt{D}}{a}$ (B) $-\frac{\sqrt{D}}{a}$ (C) $|b-a|$ (D) none of these

Case Study Based Question-I (Q.56 to Q.58) :

A playground is in shape of a square. The area of the square is 256 m^2 with each side $(x + 2) \text{ m}$. One day Suraj along with his two friends Ajay and Aman went to play there with bicycle. Someone stole Suraj bicycle, but Ajay and Aman helped him by contributing ₹ $(4a + 60)$ and ₹ $(6a + 10)$ respectively, to buy a new bicycle. The cost of bicycle was ₹ 4200.



On basis of this information given in passage answer following questions.

56. Find the side of square-shaped ground?

- Ⓐ 16 m Ⓑ 18 m Ⓒ 14 m Ⓓ 12 m

57. What is the value of $(a - 400)^2$?

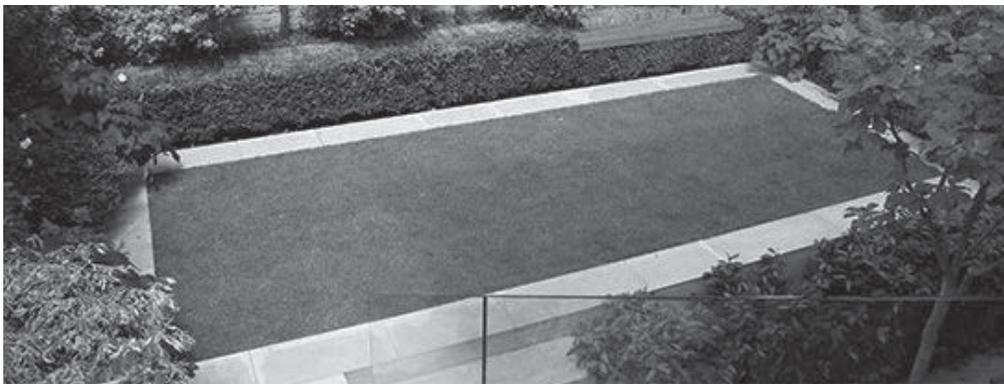
- Ⓐ 160 Ⓑ 144 Ⓒ 169 Ⓓ 196

58. What was the amount given by Ajay to Suraj?

- Ⓐ ₹1712 Ⓑ ₹2488 Ⓒ ₹2489 Ⓓ ₹1788

Case Study Based Question-II (Q.59 to Q.61) :

A rectangular garden has a length of $(x + 7)$ meters and an area of $(x^2 + 10x + 21)$ square meters.



On basis of the above information answer the following questions.

59. Find the width of the garden.

- Ⓐ $(x+3) \text{ m}$ Ⓑ $(x-3) \text{ m}$ Ⓒ $(x-7) \text{ m}$ Ⓓ $(x+5) \text{ m}$

60. If $x = 4$, what is the area of the garden?

- (A) 76 m^2 (B) 78 m^2 (C) 77 m^2 (D) 72 m^2

61. If the cost of fencing the garden is ₹ 50 per meter, what is the total cost of fencing the garden when $x = 4$?

- (A) ₹1800 (B) ₹1900 (C) ₹1700 (D) ₹1850

Assertion and Reason Based Questions (Q. 62 – 65):

Directions: In each of the questions given below, there are two statements marked as Assertion (A) and Reason (R). Mark your answer as per the codes provided below

- a. Both A and R are true and R is the correct explanation of A.
 b. Both A and R are true but R is not the correct explanation of A.
 c. A is true but R is false.
 d. A is false but R is true.

62. **Assertion (A):** $x + 5$, $2y - 7$, $5x^2$, $8xy + 9$ are examples of polynomials.

Reason (R): All Algebraic expressions are polynomials.

- (A) a (B) b (C) c (D) d

63. **Assertion (A):** $(3x^2 - 4x + 5) + (2x^2 + 3x - 1) = 5x^2 + 4$

Reason (R): Addition of algebraic expression involves adding coefficients of like terms.

- (A) a (B) b (C) c (D) d

64. **Assertion (A):** The factors of the polynomial $x^2 - 3x - m(m+3)$ are $(x + m)$ and $\{x - (m + 3)\}$

Reason (R): The factors of a polynomial $x^2 - (a+b)x + ab$ are $(x - a)$ and $(x - b)$.

- (A) a (B) b (C) c (D) d

65. **Assertion (A):** If $2x^2 - 32$ is the volume of a cuboid, then length of cuboid can be $x - 8$.

Reason (R): Volume of a cuboid = $l \times b \times h$.

- (A) a (B) b (C) c (D) d

66. If $\frac{a}{b} = \frac{3}{4}$, then $\frac{(a+b)^2}{ab} = ?$

- (A) $\frac{47}{12}$ (B) $\frac{49}{12}$ (C) $\frac{67}{12}$ (D) $\frac{9}{16}$

67. If $2\frac{3}{4} - \frac{5}{8} + \frac{-5}{12} + 1\frac{1}{6} = \frac{k}{m}$, then the value of $k + m$ is

- (A) 39 (B) 93 (C) 69 (D) 24

68. Number of distinct prime factors in $(729)^{\frac{2}{5}} \times (4125)^{\frac{3}{5}} \times (605)^{\frac{1}{5}}$ is

- (A) 4 (B) 2 (C) 6 (D) 3

69. The greatest six-digit number which is perfect square is

- (A) 998036 (B) 998016 (C) 998001 (D) 999999

70. Factorise: $(x-1)(x-3)(x-5)(x-7) - 48$.
- (A) $(x^2 - 8x + 3)(x^2 - 8x + 19)$ (B) $(x^2 + 8x + 3)(x^2 - 8x + 19)$
 (C) $(x^2 - 8x + 3)(x^2 + 8x + 19)$ (D) $(x^2 - 8x + 3)(x^2 - 8x + 16)$
71. What should be added to $x^4 - 3x^3 + 2x^2 + 6x - 5$ so that the sum will be exactly divisible by $x + 2$?
- (A) 31 (B) -31 (C) 30 (D) 5
72. If $4x + \frac{1}{x} = 4$, then the value of $x^{10} + \frac{1}{x^{10}}$ is
- (A) $1024 \frac{1}{1024}$ (B) 512 (C) 1024 (D) $256 \frac{1}{256}$
73. If the least value of $\left(\frac{\sqrt{a}}{\sqrt{b}} + \frac{\sqrt{b}}{\sqrt{a}}\right)^2$ is m , then the value of 2^m is
- (A) 32 (B) 8 (C) 16 (D) 64
74. Factorise: $x^4 - 3x - 2$.
- (A) $(x^2 - x + 2)(x^2 - 8x - 1)$ (B) $(x^2 + x + 2)(x^2 - x - 1)$ (C) $(x^2 - 8x + 2)(x^2 - 8x - 1)$ (D) $(x^2 - 8x - 2)(x^2 - 8x + 1)$
75. If $p(x) = \frac{1}{x-1} + \frac{1}{x+1} + \frac{2x}{x^2+1} + \frac{4x^3}{x^4+1}$, then find $p(2)$.
- (A) $\frac{1024}{255}$ (B) $\frac{256}{255}$ (C) $\frac{255}{1024}$ (D) $\frac{255}{256}$

Biology

76. All of the following microscopic entities have both DNA and RNA in their cells, except
- (A) Bacteria (B) Virus (C) Protozoa (D) Fungi
77. *Escherichia coli* is ____
- (A) round (B) rod shaped (C) spiral (D) comma shaped
78. Select the set of only unicellular organisms from the list given below and choose the correct option:
- I. Yeast II. Mould III. *Treponema* IV. *Trypanosoma* V. *Chlamydomonas*
- (A) I, II and III (B) II only (C) I, II, III and IV (D) I, III, IV and V
79. Which of the following is not responsible for food poisoning?
- (A) *Salmonella* (B) *Rhizobium* (C) *Campylobacter* (D) *E.coli*
80. Majority of plant diseases are caused by:
- (A) Bacteria (B) Algae (C) Protozoa (D) Fungi
81. Which of the following diseases require a vector for transmission?
- (A) Cholera (B) Ringworm (C) Small pox (D) None of the above
82. Which of the following is not a pathogen?
- (A) *Salmonella typhi* (B) *Candida albicans* (C) *Spirogyra* (D) *Plasmodium*

83. Which of the following is concerned with restoring soil fertility?
 (A) *Rhizobium* (B) *Clostridium*
 (C) *Chlamydomonas* (D) *Amoeba*
84. Which of the following will have the longest shelf life, if stored properly?
 (A) Wheat (B) Milk (C) Fruits, like Mango (D) Leafy vegetables
85. A leguminous plant has
 (A) Carbon fixing bacteria (B) Nitrogen fixing bacteria
 (C) Both (A) and (B) (D) Neither (A) nor (B)
86. Why do we boil milk?
 (A) To kill the bacteria in it (B) To slow down the growth of bacteria
 (C) To change the chemical nature of milk (D) To convert milk to curd
87. Name the pathogen and vector of sleeping sickness, respectively.
 (A) *Trypanosoma*, tse tse fly (B) *Plasmodium*, *Anopheles* mosquito
 (C) Zika virus, *Aedes* mosquito (D) *Vibrio cholerae*, housefly
88. Who named microorganisms as 'animalcules'?
 (A) Anton van Leewenhoek (B) Robert Hooke
 (C) Robert Koch (D) Louis Pasteur
89. Which is the simplest, most primitive and smallest of living organisms?
 (A) Virus (B) Bacteria (C) Protozoa (D) Algae
90. Mycology is the study of
 (A) Bacteria (B) Fungi (C) Algae (D) Virus

The questions 91 to 94 have two statements – Assertion (A) and Reason (R). Of the two statements, mark the correct answer from the options given below:

- A. Both A and R are true and R is the correct explanation of A.
 B. Both A and R are true but R is not the correct explanation of A.
 C. A is true but R is false.
 D. A is false but R is true.

91. **Assertion :** In response to an attack by a pathogen, our bodies produce vaccines to fight it.

Reason : Vaccines are effective against both bacterial and viral diseases.

- (A) A (B) B (C) C (D) D

92. **Assertion:** All fungi are parasites.

Reason : Yeast is used in bakeries to make bread soft and fluffy.

- (A) A (B) B (C) C (D) D

93. **Assertion :** Virus can reproduce only inside a suitable host cell.

Reason : Viruses are unicellular.

- (A) A (B) B (C) C (D) D

94. **Assertion:** We should refrigerate perishable food items.

Reason : Cold temperatures slow down the growth of microbes.

- (A) A (B) B (C) C (D) D

Read the following passage and answer the given questions (95-97) :

The greyish fuzzy growth on stale bread and the bluish growth on rotting oranges are due to moulds. If we look carefully at the bread mould with a hand lens, we will see a tangled mass of threadlike structures. The tangled mass is called mycelium, while the threadlike structures are called hyphae.

95. Mould is a

- (A) Unicellular fungi (B) Multicellular fungi (C) Unicellular algae (D) Multicellular algae

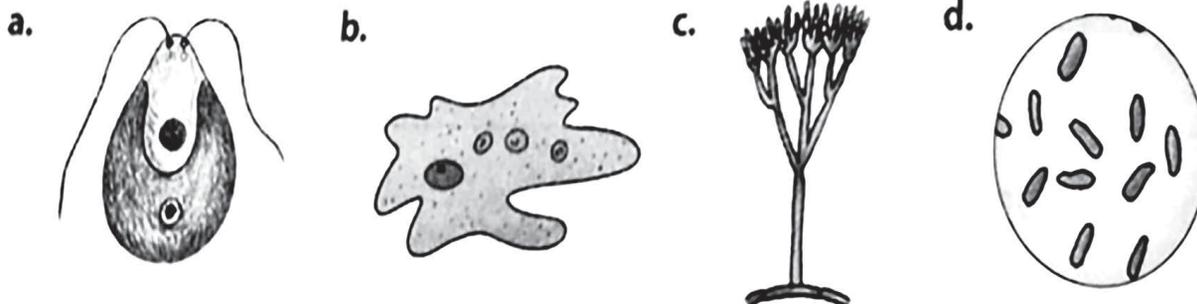
96. Mushroom is an

- (A) Edible unicellular fungi (B) Edible multicellular fungi
(C) Edible unicellular algae (D) Antibiotic producing multicellular algae

97. Select the incorrect statement about moulds:

- (A) The first antibiotic, Penicillin, was discovered from a mould
(B) Moulds do not include yeasts
(C) Moulds do not have chlorophyll
(D) None of the above

Study the given picture and answer the following questions (98-100):



98. The correct sequence of a, b, c and d is

- (A) Algae, Protozoa, Fungi, Bacteria (B) Bacteria, Fungi, Algae, Protozoa
(C) Bacteria, Fungi, Protozoa, Algae (D) Algae, Bacteria, Fungi, Protozoa

99. Which of these organisms are acellular?

- (A) a (B) b (C) All of them (D) None of them

100. Which of these organisms are not pathogenic?

- (A) a (B) b (C) All of them (D) None of them