



# Monthly Progressive Test

Class: VIII

Subject: PCMB



Test Booklet No.: MPT-01

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 MPT01 07072025.
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 scribble 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. A stone is falling from rest. The force acting here is  
 (A) Muscular                      (B) Gravitational                      (C) Electrostatics                      (D) Magnetic force
2. When is friction force less for following cases?  
 (A) On a rough surface                      (B) On a smooth surface  
 (C) It is independent of type of surface                      (D) None of these
3. Pressure exerted by water in a container does not depend on the width of container.  
 (A) false                      (B) true                      (C) may be true                      (D) data in-sufficient
4. More is the radius of holes, less is the speed of water jet at same level.  
 (A) false                      (B) sometimes true                      (C) true                      (D) we can't say
5. The envelope of air surrounding the earth is called  
 (A) upthrust                      (B) matter                      (C) atmosphere                      (D) substance
6. When a body is stationary  
 (A) There is no force acting on it                      (B) The force acting on it is unbalanced  
 (C) Balanced forces act on it                      (D) The body is in vacuum
7. A body is said to be under balanced force, when the resultant force acting on the body is  
 (A) unity                      (B) infinite                      (C) zero                      (D) all of these
8. Balanced force may produce change in  
 (A) speed                      (B) state of rest to state of motion  
 (C) direction                      (D) shape
9. An object is moving with a constant speed along a smooth straight path. Force is not required to  
 (A) increase its speed                      (B) decrease its speed  
 (C) change its direction                      (D) keep it moving with the uniform speed
10. Tyres of vehicles wear out in few months due to the  
 (A) Force of gravity                      (B) Size of the vehicle  
 (C) Their weight                      (D) Force of friction between road and tyre
11. When a 100 N force is applied on a cross-sectional area of  $10 \text{ m}^2$ , then the pressure exerted by the force is  
 (A)  $10 \text{ N/m}^2$                       (B)  $10 \text{ N/m}$                       (C)  $10 \text{ N/m}^{-2}$                       (D)  $10 \text{ N/m}^{-1}$
12. Railway tracks are laid on wooden or cemented sleepers. This is because they  
 (A) Increase the pressure of the train                      (B) Increase the speed of the train  
 (C) Increase the area to reduce the pressure                      (D) Decrease the area to increase pressure
13. The instrument used to measure the liquid pressure is called  
 (A) Manometer                      (B) Barometer                      (C) Pressure gauge                      (D) Speedometer

14. When deep sea fish are brought to the surface of the sea, their bodies burst because, the blood in their bodies flows at very
- (A) high speed                      (B) low speed                      (C) high pressure                      (D) low pressure
15. Atmospheric pressure depends on the
- (A) Temperature                      (B) Altitude                      (C) Density of air                      (D) All of these

#### ■ Assertion-Reason type Questions (Q16–Q19)

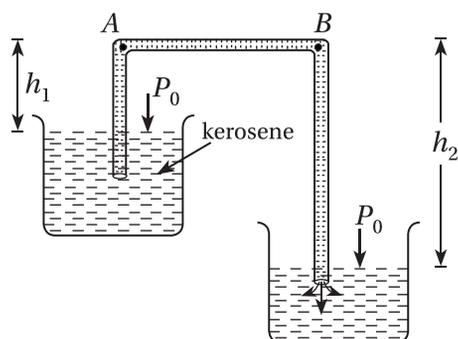
**Directions:** Read the following questions and choose any one of the following four responses.

- (A) If both Assertion and Reason are true and Reason is the correct explanation of the Assertion.  
 (B) If 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 and Reason is true.
16. **Assertion:** Deep sea divers wear armoured suits while diving.  
**Reason:** The pressure below the ocean surface is much higher than the atmospheric pressure.
17. **Assertion:** Shoulder bags are provided with broad straps.  
**Reason:** If the area of contact is increased keeping the magnitude of force constant, then the pressure decreases.
18. **Assertion:** A ball rolling on the ground gradually slows down and finally comes to rest.  
**Reason:** The friction force supports the relative motion of a body.
19. **Assertion:** Two charged bodies attract each other even when they are not actually in contact.  
**Reason:** The force acting between two objects without any physical contact between them is called a non contact force.

#### Case Based Type

- (I) Otto Von Guericke, a German scientist of the 17th century, invented a pump to extract air out of a vessel with the help of this pump, he demonstrated dramatically the force of the air pressure. He joined two hollow metallic hemispheres of 51 cm diameter each and hemispheres of 51 cm diameter each and pumped air out of them. Then, he employed eight horses on each hemisphere to pull them apart. So great is the force of air pressure that the hemisphere could not be pulled apart.
20. When we press a rubber sucker on a surface
- (A) it sticks to the surface                      (B) it does not stick to the surface  
 (C) some times it sticks                      (D) none of the above
21. When we press the rubber sucker on a surface
- (A) most of the air between its cup and the surface enters inside from outside  
 (B) most of the air between its cup and the surface escapes out  
 (C) sometimes air from cup escapes out  
 (D) none of the above
22. The rubber sucker sticks to surface because
- (A) air pressure is low outside                      (B) at high altitude, pressure is high  
 (C) outside atmospheric pressure is acting on it                      (D) all of the above

23. With reference to the below setup kerosene flows (in the direction),



- (A) B to A                      (B) A to B                      (C) No flow of kerosene                      (D) Sometimes from A to B
24. Regarding pressure
- (A)  $P_A < P_B$                       (B)  $P_A = P_B$   
 (C)  $P_A > P_B$                       (D) we can not say, as data is insufficient
25. If  $\rho$  is the density of kerosene then
- (A)  $P_A = P_0 - h_1\rho g$                       (B)  $P_B = P_0 - h_2\rho g$                       (C)  $P_A > P_B$                       (D) All of the above                      I

## Chemistry

26. The highest carbon content is found in the following :
- (A) Peat                      (B) Lignite                      (C) Bituminous                      (D) Anthracite
27. Which is used in thermal power plants and produce electricity?
- (A) Petroleum                      (B) Natural gas                      (C) Coal                      (D) None of these
28. Which poisonous gas is formed as a result of incomplete combustion?
- (A) Coal gas                      (B) Carbon monoxide                      (C) Carbon dioxide                      (D) Nitrogen oxide
29. The other name for petroleum is :
- (A) coal                      (B) tar                      (C) grease                      (D) black gold
30. Acid rain can be caused by the burning of :
- (A) Petrol                      (B) CNG                      (C) Diesel                      (D) Coal
31. The variety of coal with the lowest percentage of carbon is :
- (A) Anthracite                      (B) Peat                      (C) Lignite                      (D) Bituminous
32. The calorific value of wood and coal is 20000 Kj/kg and 30000 Kj/kg respectively. Which will produce the most heat?
- (A) 500 gms of coal                      (B) 1 kg of coal                      (C) 500 gms of wood                      (D) 2 kg of wood
33. Choose the inflammable substance :
- (A) Petrol                      (B) LPG                      (C) Alcohol                      (D) All of these

34. Good fuels have :
- (A) low ignition temperature and high calorific value (B) low ignition temperature and low calorific value  
 (C) High ignition temperature and high calorific value (D) High ignition temperature and low calorific value
35. Fire may be extinguished by
- (A) Removing all the combustion substance from the site of fire  
 (B) cutting the supporter of fire  
 (C) Bringing down the ignition temperature  
 (D) All of these
36. Which byproduct is not obtained after processing of coal?
- (A) Diesel (B) Petrol (C) Both 'A' & 'B' (D) Coke
37. PCRA guidelines for meeting Energy Crisis while driving :
- (A) Drive a moderate speed  
 (B) Ensure correct tyre pressure & get the vehicle serviced regularly  
 (C) Switch off the engine at traffic light  
 (D) All of these
38. Bio-fuels are obtained from renewable biological sources such as crops and animal wastes. Bio fuels are :
- (A) ethanol (B) methanol (C) biodiesel (D) All of these
39. Separation of various fractions of petroleum is called:
- (A) Distillation (B) Refining (C) Condensation (D) None of these
40. Natural gas consists mainly of
- (A) Butane (B) Oxygen (C) Carbon monoxide (D) Methane

**Assertion and Reason: (Q. 41 - Q. 44)**

**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.

41. **Assertion (A):** Petrol is more volatile than diesel oil.

**Reason (R):** Petrol condenses near the top of the column as compared to diesel oil.

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

42. **Assertion (A):** Charcoal is better fuel than wood.

**Reason (R):** Wood is smokeless and leaves no residue

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

43. **Assertion (A):** Gases like CO<sub>2</sub>, water vapour, methane are called green house gases.

**Reason (R) :** These gases are responsible for global warming.

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

**44. Assertion (A) :** The resources are present in unlimited quantity in nature and are not likely to be exhausted by human activities are called inexhaustible resources.

**Reason (R) :** Forests, wildlife, minerals are examples of inexhaustible resources.

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

**Case Base Question (Q45 to Q47)**

Renewable resources are those that are present in unlimited quantity in nature. Non-renewable resources limited in nature :

**45.** Reserves of which resource are depleting fastly?

- (A) renewable resources                                      (B) inexhaustible resources  
(C) non-renewable resources                                      (D) none of these

**46.** PCRA stands for

- (A) Petroleum Control Resource Association                                      (B) Petroleum Conservation Resource Association  
(C) Petroleum Council Research Association                                      (D) Petroleum Control Research Academy

**47.** Which is not a characteristics of good fuel ?

- (A) It should leave very little ash after burning                                      (B) It should be clean and .....  
(C) It must have high cost                                      (D) It must be easily available

**Case Base Question (Q48 to Q 50)**

Calorific value is defined as the amount of heat energy produced on complete combustion of 1 kilo gram of a fuel it is expressed in a unit called kilo joule per kg. The higher the calorific value of a fuel, the more is its efficiency. Hydrogen gas has the highest calorific value.

**48.** What is unit of calorific value ?

- (A) Gm                                      (B) Joule                                      (C) Both A & B                                      (D) Kj / kg

**49.** Which has the highest calorific value ?

- (A) CNG                                      (B) Petrol                                      (C) Hydrogen                                      (D) Coal

**50.** The amount of heat energy produced by the kilogram of fuel is called

- (A) combustion                                      (B) specific heat                                      (C) latent heat                                      (D) calorific value

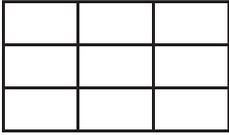
**Mathematics**

**51.** If the number  $1764 \times K$  is a perfect cube, find the least value of K

- (A) 42                                      (B) 52                                      (C) 62                                      (D) 32

**52.** A perfect square having its last 2 digits equal can have each of those digits equal to

- (A) 1                                      (B) 4                                      (C) 6                                      (D) 5

53. The least natural number that must be added to 599 so that the sum is perfect cube is  
 (A) 120 (B) 125 (C) 130 (D) 135
54. The least natural number by which  $(2^8)(3^{17})(5^{18})$  must be divided so that the product is a perfect square is  
 (A) 30 (B) 15 (C) 3 (D) 5
55. If  $2^m = 3^n = 216$ . Find  $\left(\frac{1}{m} + \frac{1}{n}\right)$   
 (A)  $\frac{1}{3}$  (B)  $\frac{1}{2}$  (C)  $\frac{1}{6}$  (D) none of these
56. The number of integral solution of  $(x - 1)^{x+1} = 1$  is  
 (A) 1 (B) 2 (C) 3 (D) 4
57. If  $9^{\frac{m}{2}} = (\sqrt{2})^{2n}$  then number of ordered pairs (m, n) is  
 (A) 1 (B) 2 (C) 3 (D) none of these
58. How many squares are there in this figure?  
  
 (A) 9 (B) 10 (C) 16 (D) none of these
59. If  $S = \left(\frac{1}{N} + 1\right)^N$  and  $N = 10$  compute S  
 (A)  $11^{10} \times 10^{-10}$  (B)  $11^{11} \times 10^{10}$  (C)  $11^{10} \times 10^{10}$  (D) none of these
60. Compute:  $[5 - 2(4 - 5)^{-1}]^2$   
 (A) 39 (B) 49 (C) 29 (D) 69
61. On simplifying,  $\frac{1}{1+x^{-2025}} + \frac{1}{1+x^{2025}} + 2$  is equal to  
 (A)  $(x + 1)^2$  (B) 2 (C) 3 (D)  $1 + x^{-2025}$
62. If a 3-digit number 'abc' is divisible by 4, then  
 (A)  $\frac{a - bc}{4}$  is an integer (B)  $\frac{a + bc}{4}$  is an integer  
 (C)  $\frac{2a - bc}{4}$  is an integer (D)  $\frac{bc + 4a}{4}$  is an integer
63.  $(64^{12} - 1)$  is divisible completely by  
 (A) 13 (B) 11 (C) 12 (D) 14
64. If  $3(x - 5)^2 = 675$ , then x can be  
 (A) 20 only (B) 10 only (C) -10 only (D) 20, -10

65. For  $a \neq 0$   $\left(\frac{a^\ell}{a^m}\right)^{(\ell^2+\ell m+n^2)} \times \left(\frac{a^m}{a^n}\right)^{(m^2+mn+n^2)} \times \left(\frac{a^n}{a^\ell}\right)^{(n^2+n\ell+\ell^2)} = ?$

- (A) 1                                      (B) -1                                      (C) 2                                      (D) 0

### Assertion-Reason Based Questions (66–69):

**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.

66. **Assertion (A):** Let  $f(x) = ax^3 + 7x^2 - 2x + 1$  has one root  $\frac{3}{5}$  then 5 divides a where a is a non-zero integer.

**Reason (R):** If  $x = \alpha$  is a root of  $f(x) = 0$  then  $f(\alpha) = 0$ .

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

67. **Assertion (A):** Let  $n_1, n_2 \in \mathbb{N}$  such that square of  $n_1$  is equal to twice the square of  $n_2$ . Then number of such pairs  $(n_1, n_2)$  is infinitely many.

**Reason (R):** Set of natural number  $\mathbb{N} = \{1, 2, 3, \dots\}$

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

68. **Assertion (A):** Let  $x = 21978$  and  $y = 4x$ . Then  $(x, y)$  is a pair of palindromes.

**Reason (R):** A palindromic number is a number that remains the same when its digits are reversed.

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

69. **Assertion (A):** If  $x$  and  $y$  are natural numbers such that  $(y^x + y^{x+1} + y^{x+2})$  is always divisible by 14, then the minimum possible value of  $y$  is 2

**Reason (R):** If  $a$  divides  $b$  then there exist a unique integer  $c$  such that  $b = ac$ . (where  $a, b, c \in \mathbb{I}$  and  $a \neq 0$ )

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

### Case Study-I (Q70–Q72)

Rajiv and Sanjiv went camping. They took their own water in big plastic bottles. Rajiv got thirsty and drank half the water in his bottle. A bottle later on he drank  $\frac{1}{3}$  of what was left. Sometimes afterwards he drank  $\frac{1}{4}$  of what remained and so on.

Sanjiv also had a bottle of the same size. He drank half the bottle at the first instance, half of what remained when he drank next and so on.

On the basis of this answer the following questions.

70. How much water Rajiv had left after ten drinks?

- (A)  $\frac{1}{11}$                                       (B)  $\frac{1}{2^{10}}$                                       (C)  $\frac{1024}{11}$                                       (D) none of these

71. How much water Sanjiv had left after ten drinks?

- (A)  $\frac{1}{11}$                                       (B)  $\frac{1}{2^{10}}$                                       (C)  $\frac{1024}{11}$                                       (D) none of these

72. After each took ten drinks, the water Rajiv had left was how many times greater than the water Sanjiv had left?

- Ⓐ  $\frac{1}{11}$                       Ⓑ  $\frac{1}{2^{10}}$                       Ⓒ  $\frac{1024}{11}$                       Ⓓ none of these

### Case Study-II (Q73-Q75)

Aarav designed a 3-digit secret number lock based on a special number puzzle. He gave the following clues to his friend Siya.

- (i) The number is a 3-digit number divisible by both 3 and 9 but not divisible by 6.  
 (ii) The unit digit is twice the hundred's digit and all digits are different.  
 (iii) The sum of the digit is 18.

Based on these clues, answer the following questions:

73. What can you infer from the condition: "the number is divisible by 3 and 9, but not divisible by 6"?

- Ⓐ The number is odd                      Ⓑ The number is even  
 Ⓒ The number ends in 0                      Ⓓ The number must be divisible by 2

74. If the unit digit is twice the hundred's digit and all digits are different, which of the following could be valid digits for hundred's and units place?

- Ⓐ 2 and 4                      Ⓑ 3 and 6                      Ⓒ 4 and 8                      Ⓓ all of the above

75. If the sum of the digits 18 and the number is divisible by 9, which property of divisibility is being used?

- Ⓐ A number is divisible by 9 if its last digit is 9  
 Ⓑ A number is divisible by 9 if its first digit is 9  
 Ⓒ A number is divisible by 9 if it is also divisible by 3 and even  
 Ⓓ None of these

## Biology

76. The monsoons are important for which type of crop ?

- Ⓐ Kharif                      Ⓑ Rabi                      Ⓒ Zaid                      Ⓓ All of the above

77. Livestock farming is also called

- Ⓐ Animal husbandry                      Ⓑ Horticulture                      Ⓒ Deep sea fishing                      Ⓓ None of the above

78. Which of the following mineral is mainly obtained from sea food?

- Ⓐ Iodine                      Ⓑ Iron                      Ⓒ Zinc                      Ⓓ Boron

79. Eggs of which of the following birds is most widely consumed in our country?

- Ⓐ Fowls                      Ⓑ Ducks                      Ⓒ Quails                      Ⓓ Peacock

80. Crops like alfalfa and clover are mainly grown as

- Ⓐ Cash crops                      Ⓑ Plants for providing flowers  
 Ⓒ Oil seeds providing crops                      Ⓓ Fodder crops

81. Which of the following cannot be achieved by ploughing?  
 (A) Loosening the soil (B) Turning the soil (C) Weeding (D) Uniformly levelled field
82. With which farming practice is the given diagram associated?



- (A) Irrigation (B) Application of manure (C) Weeding (D) Seed sowing
83. What is not true about manure?  
 (A) Improves soil health (B) Nutrient specific (C) Enriches soil organically (D) Helps to recycle wastes.
84. Why are herbicides used in farming?  
 (A) To kill rats (B) To control fungi (C) To destroy weeds (D) All of the above
85. Trampling of crops by animals refers to which process?  
 (A) Winnowing (B) Threshing (C) Mechanical harvesting (D) Pest control
86. Which of the following is a means of water wastage in irrigation?  
 (A) Surface run off (B) Percolation through soil (C) Evaporation from soil. (D) All of the above
87. Which of the following processes help in maintaining the amount of elemental nitrogen in atmosphere?  
 (A) Nitrification (B) Ammonification (C) Denitrification (D) All of the above
88. Which of the following cannot be used to make compost?  
 (A) Dry leaves (B) Dead animals (C) Fragments of rocks (D) Husk of grains
89. A silo is a structure for :  
 (A) storing grains (B) producing compost  
 (C) storing fruits and vegetables (D) storing the chaffs obtained from the grains
90. Which method of irrigation delivers water directly to the plant roots in a controlled manner?  
 (A) Flood irrigation (B) Sprinkler irrigation (C) Drip irrigation (D) Subsurface irrigation

#### Assertion and Reason :

**Directions:** 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 (A):** Milk is called an ideal food.

**Reason (R):** Milk does not contain fats

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

92. **Assertion (A)**: Appropriate distance between seeds is necessary while sowing.

**Reason (R)**: It protects the seeds from being picked by birds.

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

93. **Assertion (A)**: It is necessary to dry harvested grains before storing them.

**Reason (R)**: Drying prevents spoilage by microbes.

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

94. **Assertion (A)**: Bacteria are present in the root nodules of some plants.

**Reason (R)**: They help to fix atmospheric nitrogen and making it available for the plants.

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

**Case Base Question (Q. 95 to Q. 97)**

Read the given passage and answer the following questions:

The process of providing water to the crops is called irrigation. All crops do not require the same amount of water. Besides, different crops require water at different times of growth. Wheat, for example, requires water before ploughing, at the time of flowering and when the grains develop.

95. Water logging is mainly caused by \_\_\_\_\_  
 (A) Untimely irrigation    (B) Over irrigation    (C) Under irrigation    (D) Drip irrigation
96. What is being shown in the above picture?



- (A) Process of transplantation in rice                      (B) Furrow irrigation  
 (C) Harvesting                      (D) Removal of weeds by hand
97. What method of irrigation is generally not practiced for such crops?  
 (A) Furrow irrigation    (B) Sprinkler irrigation    (C) Drip irrigation    (D) All of the above

**Case Base Question (Q 98 to 100)**

Read the given passage and answer the following questions:

When crops are grown in fields, year after year, the soil becomes deficient in nutrients and less fertile. Several methods may be adopted to restore the fertility of the field. These include application of manure and fertilisers and certain methods of farming.

98. A farmer grows the following crops in his field in the sequence shown below:

Rice - Pulses - Jute. Choose the correct statement regarding the method:

- Ⓐ The crops are grown randomly.
- Ⓑ The sequence of the crops is pre planned.
- Ⓒ Fertilisers have to be added in large amounts when crops are grown by this method.
- Ⓓ This method encourages the growth of weeds.

99. What is the significance of growing pulses between rice and jute?

- Ⓐ Pulses add nitrogen to the soil.
- Ⓑ Pulses make the soil rich in proteins.
- Ⓒ Growing pulses make the soil less prone to erosion.
- Ⓓ Pulses encourage the growth of earthworms in the field.

100. Name another crop that can substitute pulses in the given sequence.

- Ⓐ Peas
- Ⓑ Wheat
- Ⓒ Maize
- Ⓓ None of the above

