

# OLYMPIAD Mock Test

# 4

Name : \_\_\_\_\_

Max. Marks : 50

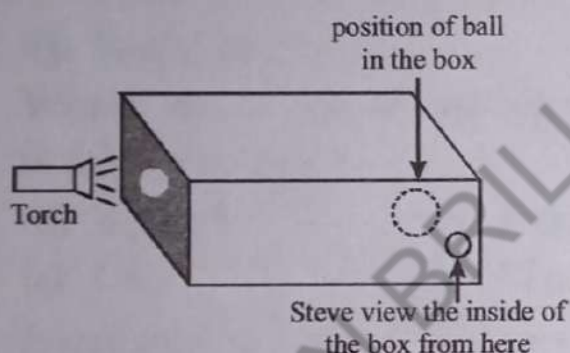
Number of Questions : 50

Time : 2 Hours

There is no negative marking in the test.

## PHYSICS

1. Steve shone a torch into a hole on the left side of a box as shown below.



A ball was placed in the position shown in the above diagram. What would Steve see when he looked into the box through the hole indicated on the diagram?

- (a) He would be able to see the whole ball.  
(b) He would be able to see the left half of the ball.

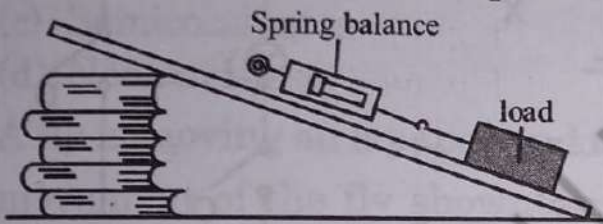
- (c) He would be able to see the right half of the ball.  
(d) He would not see anything because the inside of the box was too dark.

2. Joseph used four different brands of batteries to light up four identical torches. The table below shows the amount of time the torches stayed lit using the four different brands of batteries.

Brand	Time (minutes)
W	450
X	550
Y	520
Z	500

What can he conclude from his experiment?

- (a) Brand X is the most lasting brand.
  - (b) Brand Z has the shortest lifespan.
  - (c) Brand W is the most expensive brand of battery.
  - (d) Brand Y enables the torch to shine brighter than brand Z.
3. Betty sets up the experiment as shown below to find out whether the surface of an inclined plane affects the amount of force needed to move an object up the inclined plane.



To ensure that the test is fair, which of the following variable(s) must she keep the same?

- A. Mass of the wooden block
- B. Material of the ramp used
- C. Length of the ramp used
- D. Number of books used

- (a) C only
- (b) B and C only
- (c) A, B and D only
- (d) A, C and D only

**DIRECTION (Q. 4):** Match Column-I with Column-II and select the correct answer using the codes given below the columns.

4. **Column I**

- A. Lunar eclipse
- B. Solar eclipse
- C. Image
- D. Shadow

**Column II**

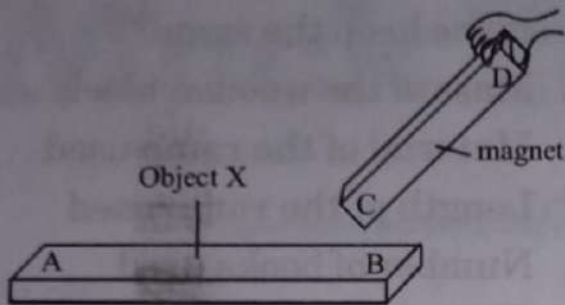
- (p) Has colour of the object
- (q) Always black
- (r) Moon between sun and earth
- (s) Earth between sun and moon.

- (a) A → (s); B → (p); C → (r); D → (q)
- (b) A → (p); B → (q); C → (r); D → (s)
- (c) A → (s); B → (r); C → (q); D → (p)
- (d) A → (s); B → (r); C → (p); D → (q)

5. The pole of a freely suspended magnet which points toward north direction is called:

- (a) North pole
- (b) South pole
- (c) East pole
- (d) West pole

6. Richard brought a bar magnet near Object X.

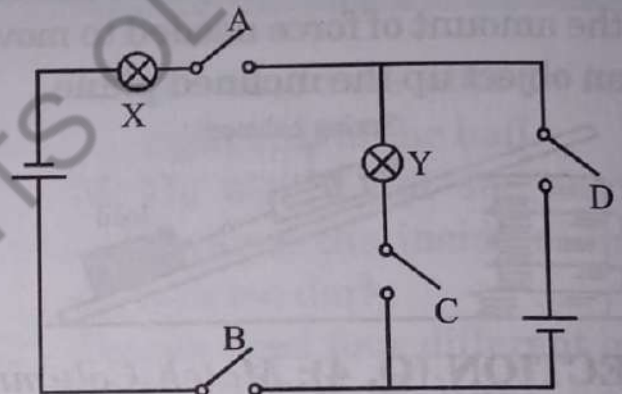


Object X moves towards the bar magnet in Richard's hand. Which of the following statements could be true?

- A. B and C are like poles.  
 B. Object X is an iron bar.  
 C. B and C are unlike poles.  
 D. Object X is an aluminium bar.
- (a) A only  
 (b) B and C only  
 (c) B and D only  
 (d) A, C and D only
7. The pressure exerted by a column of liquid is independent of the \_\_\_\_.
- (a) density of the liquid  
 (b) weight of the liquid  
 (c) depth of the liquid  
 (d) shape of the container
8. Which one of the following substances allow the electricity to pass through it?

- (a) Air  
 (b) Water  
 (c) Glass  
 (d) All of these

9. In the circuit below, which switches should be left open and which switches should be closed so that only bulb Y lights up?

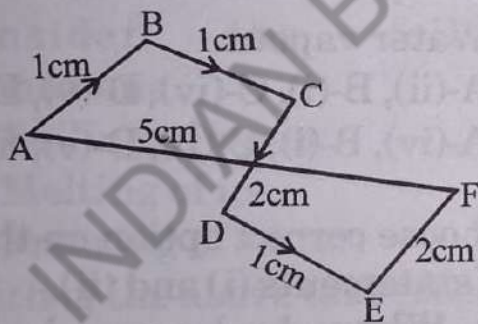


	Switch A	Switch B	Switch C	Switch D
(a)	Closed	Closed	Open	Open
(b)	Closed	Open	Open	Closed
(c)	Open	Open	Closed	Closed
(d)	Open	Closed	Closed	Open

10. Which one of the following was not used for the measurement of time in ancient world?
- (a) Sand watch  
 (b) Electronic watch  
 (c) Sundial  
 (d) Water watch

Mock Test-4

11. For the formation of shadow, essential condition is
- (a) There should be a source of light
  - (b) There should be a screen
  - (c) An opaque substance should be placed between the source of light and screen
  - (d) All of the above
12. Rubber is a / an:
- (a) Conductor
  - (b) Insulator
  - (c) Semiconductor
  - (d) None of these
13. A fly is moving on a paper and the movement of the fly shown on it. The distance travelled by fly from A to F is \_\_\_\_\_.

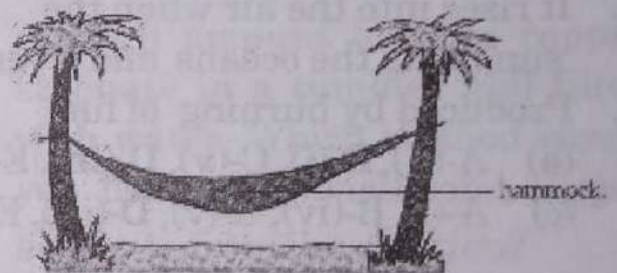


[Distances  $AB = 1\text{ cm}$ ,  $BC = 1\text{ cm}$ ,  $CD = 2\text{ cm}$ ,  $DE = 1\text{ cm}$ ,  $EF = 2\text{ cm}$ ,  $AF = 5\text{ cm}$ ]

- (a) 3 cm
  - (b) 5 cm
  - (c) 7 cm
  - (d) 2 cm
14. Ajay is running short of connecting wires. To complete an electric circuit, she may use a
- (a) glass bangle.
  - (b) thick thread.
  - (c) rubber pipe.
  - (d) steel spoon.

**CHEMISTRY**

15. Sohan wants to make a hammock. Which of the following properties of material he would choose?



- (a) Hard and strong
- (b) Strong and flexible
- (c) Insulator, flexible and opaque
- (d) Flexible, transparent and waterproof

16. It is a material that floats on the surface of water and is opaque. It is used to make chair, table etc. What material is it?  
 (a) Paper (b) Wood  
 (c) Aluminium (d) None of these
17. Car windscreens are made of glass because it is \_\_\_\_\_.  
 (a) shiny and waterproof  
 (b) strong and transparent  
 (c) flexible and waterproof  
 (d) flexible and transparent
18. Rama's grandmother wants to make yarn from fibre at home. Which of the following will she use to carry out the task?  
 (a) Powerloom  
 (b) Handloom  
 (c) Charkha  
 (d) Knitting needles
19. Given below are two columns – column I and column II. Match the two columns and choose the correct option from the codes given below the column.
- | <b>Column-I</b>   | <b>Column-II</b>    |
|---|---------------------|
| A. An odourless gas, needed by green plants to make food.         | (i) Oxygen          |
| B. Vital gas needed by all living being                           | (ii) Carbon dioxide |
| C. Most abundant constituent of air                               | (iii) Smoke         |
| D. It rises into the air when the sun heats the oceans and rivers | (iv) Nitrogen       |
| E. Produced by burning of fuel                                    | (v) Water vapour    |
- (a) A-(ii), B-(i), C-(v), D-(iii), E-(iv) (b) A-(ii), B-(i), C-(iv), D-(v), E-(iii)  
 (c) A-(i), B-(iv), C-(v), D-(iii), E-(ii) (d) A-(iv), B-(i), C-(ii), D-(v), E-(iii)
20. Artificial ripening of fruit is a /an  
 (a) reversible change  
 (b) periodic change  
 (c) irreversible change  
 (d) fast change
21. Choose correct option on the basis of statements (i) and (ii).  
 (i) When hydrogen burns in oxygen, water is formed.  
 (ii) When water is electrolysed, hydrogen and oxygen are formed.

- (a) (i) is a physical change and (ii) is a chemical change.  
(b) (i) is a chemical change and (ii) is a physical change.  
(c) Both (i) and (ii) are physical changes.  
(d) Both (i) and (ii) are chemical changes.
22. Raju is a farmer. His field has black soil and the climate is warm. Which fibre yielding plant should he grow in his field?  
(a) Jute (b) Cotton  
(c) Coconut (d) Wool
23. The components of air which are harmful to living beings are  
(a) nitrogen and carbon dioxide.  
(b) dust and water vapour.  
(c) dust and smoke.  
(d) smoke and water vapour.
24. Consider the following phenomena.  
I. Boiling of water  
II. Melting of ice.  
III. Freezing of water.  
Which of the above take place with the evolution of energy?  
(a) I and II (b) II and III  
(c) I and III (d) Only III
25. Four mixtures are given below  
(i) Kidney beans and chick peas  
(ii) Pulses and rice  
(iii) Rice flakes and corn  
(iv) Potato wafers and biscuits  
Which of these can be separated by the method of winnowing?  
(a) (i) and (ii)  
(b) (ii) and (iii)  
(c) (i) and (iii)  
(d) (iii) and (iv)
26. Which of the following is an example of solubility of gas in water?  
(a) Oxygen in air  
(b) Oxygen in ocean  
(c) Cold drink  
(d) Both (b) and (c)
27. In an activity, a teacher dissolved a small amount of solid copper sulphate in a tumbler half filled with water. Which method would you use to get back solid copper sulphate from the solution?  
(a) Decantation  
(b) Evaporation  
(c) Sedimentation  
(d) Condensation

28. Match column I and column II and choose the correct option given below the columns.

<b>Column-I</b> <b>(Objects)</b>	<b>Column-II</b> <b>(Materials)</b>
-------------------------------------	--

- |                  |               |
|------------------|---------------|
| (A) Window pane  | (i) Glass     |
| (B) Book         | (ii) Metal    |
| (C) Water bottle | (iii) Plastic |
| (D) Nail         | (iv) Paper    |

- (a) A-(i), B-(iv), C-(iii), D-(ii)  
 (b) A-(iii), B-(iv), C-(i), D-(ii)  
 (c) A-(ii), B-(iv), C-(iii), D-(i)  
 (d) A-(ii), B-(iii), C-(i), D-(iv)

29. Iron rim is made slightly smaller than the wooden wheel. The rim is usually heated before fixing into the wooden wheel, because on heating the iron rim

- (a) expands and fits onto the wooden wheel.  
 (b) contracts and fits onto the wooden wheel.  
 (c) no change in the size takes place.  
 (d) expands first, then on cooling contracts and fits onto the wooden wheel.

30. ....i..... is preferred to be worn in a hot and humid place like India

because they .....ii..... .

Complete the given statement.

- (a) i-Cotton; ii-have more air space inside them  
 (b) i-Cotton; ii-have less air space inside them  
 (c) i-Wool; ii-have no air space inside them  
 (d) i-Wool; ii-have lot of air space inside them

31. Study the table.

	Object	Properties of object	Materials used for making object
I	Shirt	Hard and flexible	Plastic
II	Brick	Strong and can float	Clay
III	Iron	Flexible and strong	Rubber
IV	Frying pan	Strong and hard	Metal

Which of the following is correctly matched?

- (a) I (b) II  
 (c) III (d) IV

### BIOLOGY

32. Which type of leaves are present in submerged plants?

- (a) Spinous  
 (b) Narrow, long and thin  
 (c) Thick  
 (d) Having layer of wax like substance

33. Which of the following is not an example of response to stimulus?
- Watering in mouth when we see delicious food items.
  - Closing of leaves of *Mimosa* plant when touched.
  - Shutting our eyes when an object is suddenly thrown in our direction.
  - A chick hatching out of an egg.

34. Below are names of some animals:
- Cow
  - Sheep
  - Horse
  - Ox

Which of the above are sources of milk for human beings?

- (i) and (iii)
  - (i) and (ii)
  - (ii) and (iii)
  - (iii) and (iv)
35. Which of the following combination of features would you observe in grass?

- Parallel venation and fibrous root
- Parallel venation and tap root
- Reticulate venation and fibrous root
- Reticulate venation and tap root

36. Read the following statements about diseases.

- They are caused by germs.
- They are caused due to lack of nutrients in our diet.

- They can be passed on to another person through contact.
- They can be prevented by taking a balanced diet.

Which pair of statements best describe a deficiency disease?

- (i) and (ii)
- (ii) and (iii)
- (ii) and (iv)
- (i) and (iii)

37. How many muscles work together to move a bone?

- One
- Two
- Three
- Four

38. The plant given below shows sensitivity to the touch of human finger or any other animal. The name of the plant is:



- Mimosa*
- Tuber
- Cotton
- Climber



39. Based on the following statements, which one of the following options is correct?

**Statement A:** The top part of a pistil is called stigma

**Statement B:** The bottom part of a pistil is called stigma

- (a) Statement A is False and Statement B is True  
 (b) Both, Statement A and Statement B are True  
 (c) Both, Statement A and Statement B are false  
 (d) Statement B is False and Statement A is True
40. The plant given in the figure below can survive in the areas with scarcity of water and has root system that penetrate deep in the soil in search of water. Name the plant.



- (a) Cactus                      (b) Plum  
 (c) Strawberry                (d) Rose

41. An animal that live in grasslands, has strong teeth for chewing hard plant stems and has long ears to hear movement of predators is

- (a) Lion  
 (b) Tiger  
 (c) Deer  
 (d) All of these

42. Which of the following is correct:

**Rahul:** Living things are biotic components of environment.

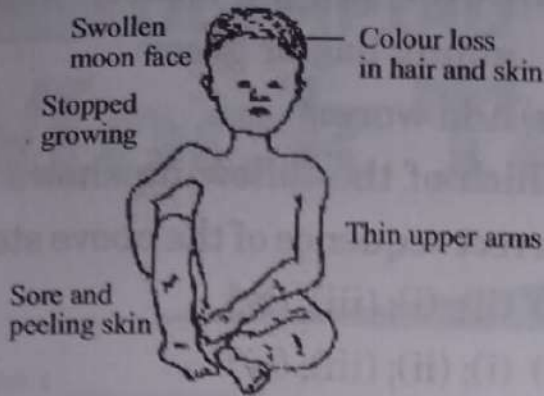
**Rajesh:** Non-living things are abiotic components of environment.

- (a) Rahul  
 (b) Rajesh  
 (c) Both are correct  
 (d) Both are incorrect

43. Incidences of disease like skin cancer increases if \_\_\_\_\_

- (a) oxygen in air decreases  
 (b) nitrogen in air decreases  
 (c) carbondioxide in air increases  
 (d) ozone layer decreases

44. The child in the given figure is suffering from a deficiency disease. This disease is caused due to deficiency of



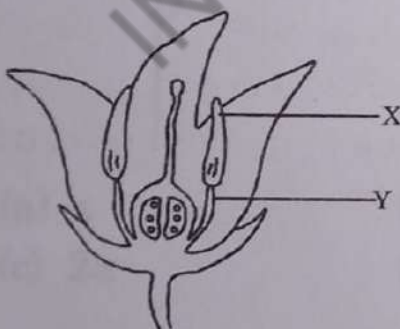
- (a) carbohydrates
- (b) proteins
- (c) fats
- (d) vitamins

45. Fruit A is dispersed by animals. Which of the following are possible characteristics of fruit A?

- A. It is sweet and fleshy.
- B. It splits open when ripe.
- C. It has a wing-like structure.
- D. It has brightly coloured skin.

- (a) A and D only
- (b) B and C only
- (c) A, B and C only
- (d) A, C and D only

46. Study the diagram given below.



Which of the following statements about the flower above is true?

- (a) The flower would be able to develop into a fruit.
- (b) Structure Y holds the petals together.
- (c) Structure labelled X receives pollen.
- (d) It is a female flower.

47. The table below shows the descriptions of four pupils.

Pupil	Description
Jack	has attached earlobes
Kenny	has dark skin
Lisa	has black hair
Meg	has blue eyes

Whose descriptions refer to inherited characteristics?

- (a) Jack and Lisa only
- (b) kenny and Meg only
- (c) Jack, Kenny and Meg only
- (d) Jack, Kenny, Lisa and Meg

48. Which one of the following food item does not provide dietary fibre?

- (a) Whole grains
- (b) Whole pulses
- (c) Fruits and vegetables
- (d) Milk

49. Which of the following terms constitute the female part of the flower.

- (a) Sepals, petal and stamen
- (b) Stigma, style and ovary
- (c) Ovary, stamen and stigma
- (d) Ovary, style and stamen

50. The steps required for conversion of kitchen garbage into manure are given below in a jumbled form.

- (i) Put garbage in a pit
- (ii) Cover the bottom of the pit with sand

(iii) Cover the pit loosely with a gunny bag or grass

(iv) Add worms

Which of the following shows the correct sequence of the above steps?

- (a) (ii); (i); (iii); (iv)
- (b) (i); (ii); (iii); (iv)
- (c) (ii); (iv); (i); (iii)
- (d) (iv); (i); (ii); (iii)

## MOCK TEST-4

### ANSWERS KEY

1	(b)	11	(d)	21	(d)	31	(d)	41	(c)
2	(a)	12	(b)	22	(b)	32	(b)	42	(c)
3	(d)	13	(c)	23	(c)	33	(d)	43	(d)
4	(d)	14	(d)	24	(d)	34	(b)	44	(b)
5	(a)	15	(b)	25	(d)	35	(a)	45	(a)
6	(b)	16	(b)	26	(d)	36	(c)	46	(a)
7	(d)	17	(b)	27	(b)	37	(b)	47	(d)
8	(b)	18	(c)	28	(a)	38	(a)	48	(d)
9	(c)	19	(b)	29	(d)	39	(d)	49	(b)
10	(b)	20	(c)	30	(b)	40	(a)	50	(a)

### PHYSICS

1. (b) The inside of the box is dark.

The only light allowed into the box comes from the torch placed at the left side of the box. Light travels to the ball and is reflected into our eyes. Since light travels in straight lines, only the left half that is illuminated can be seen. The right half is in darkness and does not reflect any light, thus it cannot be seen.

2. (a) Brand X lasts for longest time.

3. (d) For experiments and investigations, besides the factors or condition to be tested, all other factor and conditions must remain the same. In the above experiment, the objective is to test if the surface of the inclined plane affects the amount of force needed to move the object up the inclined plane.

The material that is used for the ramp would determine the surface of the inclined plane. Therefore, the material of the ramp used must be the only variable that is changed and all the other variables must be kept the same.

4. (d) A → (s); B → (r); C → (p); D → (q)

5. (a) North pole points towards geographic north

6. (b) Since Object X moves towards the magnet in Richard's hand, it means that either Object X is a magnetic object or B and C are unlike poles of two different magnets.

7. (d) Pressure  $P = h\rho g$

8. (b) Water is a good conductor of electricity

9. (c) On closing switch 'C' and 'D' the circuit becomes closed.

10. (b) Electronic watch is a modern day technology

11. (d) The essential conditions for the formation of shadow are:  
 (i) A source of light  
 (ii) An opaque substance  
 (iii) A screen behind the obstacle
12. (b) Rubber is bad conductor of electricity
13. (c)  $1 + 1 + 2 + 1 + 2 = 7$  cm
14. (d) Steel spoon is good conductor of electricity.

### CHEMISTRY

15. (b) Sohan will use material which is strong and flexible. It is because, a hammock should be strong enough to take the weight of person on it and also it should be flexible.
16. (b) Wood floats on water, is opaque and is used to make table, chair etc.
17. (b) One important property of the car windscreen is its degree of transparency. In other words, it is the ability of the material to allow light to pass through. We need to see where we are going when driving. Therefore, the windscreen needs to be transparent. The windscreen needs to be strong so that it does not break easily.
18. (c) Charkha (spinning wheel) is used to spin cotton to make yarn. Handloom and powerloom are used for weaving yarn to make fabric.
19. (b) A-(ii); B-(i); C-(iv); D-(v); E-(iii)
20. (c) Artificial ripening is an irreversible change as this process cannot be reversed.
21. (d) Both are chemical changes as new substances are formed.
22. (b) Cotton crop grow at places having black soil and warm climate.
23. (c) Dust and smoke are harmful to living beings.
24. (d)
25. (d) Winnowing method is based on the difference in weight of the component of a mixture. Lighter component of a mixture can be separated from heavier one with the help of wind.
26. (d) Oxygen dissolved in ocean is important for life of aquatic animals. Cold drinks have dissolved carbon dioxide in it.
27. (b) Evaporation is used to obtain a solid substance that has dissolved in water.
28. (a) A-(i), B-(iv), C-(iii), D-(ii)
29. (d) Metals expands on heating and contracts on cooling that is why iron rim is usually heated before fixing into the wooden wheel.
30. (b) Cotton fibres have less air

spaces inside them, therefore they conduct the body heat, whereas woollen fibres have lot of air spaces inside them. Air being a very bad conductor of heat does not allow the body heat to escape and hence keeps us warm.

31. (d) Frying pan is strong and hard and is made up of metal. Hence, it is correctly paired.

### BIOLOGY

32. (b) Narrow, long and thin leaves are present in submerged plants.
33. (d) Watering in mouth, closing of *Mimosa* leaves and shutting the eyes are example of response to stimulus. But a chick hatching out of an egg is phenomenon of reproduction.
34. (b) Cow and sheep provide milk for us.
35. (a) Grasses have parallel venation and fibrous roots. Due to this characteristic features they survive better in adverse conditions.
36. (c) Deficiency diseases are caused due to lack of balanced diet in our food. They can be controlled by taking carbohydrate, fats, protein, vitamins and minerals in proper ratio.
37. (b) Two muscles work together to move a bone one for contraction and other for relaxation.
38. (a) *Mimosa* (touch-me-not) is a very sensitive plant. When it is touched, its leaves fold inwardly.
39. (d) In a flower, stigma is situated at the upper part of a pistil and the bottom part of a pistil is called ovary.
40. (a) Cactus is a desert plant that can survive in scarcity of water and high temperature conditions.
41. (c) Lion and tiger are predators.
42. (c) Biotic components include living things such as plants, birds and insects etc. Abiotic components include non-living things such as air, water and soil etc.
43. (d) Skin cancer increases if thickness of ozone layer decreases.
44. (b)
45. (a) Sweet and fleshy fruits having bright colour of outer covering are preferred by all animals for their food. So they carry such fruits to different places and cause dispersal of seeds.
46. (a) The diagram shows a bisexual flower. The structure labelled X is the anther and the structure labelled Y is the filament. Thus, options (b) and (c) are false. This

is because only the stigma receives pollen and the sepals hold the petals together.

Structures labelled X and Y make up the male reproductive part of a flower. Thus, option (d) is false because it is a bisexual flower with both stamens and pistil present.

Option (a) is true since it is a bisexual flower and has an ovary, it would be able to develop into a fruit.

**47. (d)** Inherited characters are called traits which pass from one generation to the other. For e.g. colour of hair, skin and eyes, and shape of nose.

**48. (d)** Milk has no dietary fibre.

### Hints & Explanations

Besides it, fruits, vegetables, grains and whole pulse provide us dietary fibre.

**49. (b)** The female part of a flower consists of stigma, style and ovary. Collectively these make pistil.

**50. (a)** To prepare manure from kitchen garbage first of all we dig a pit then cover the bottom with sand, then put garbage into it. After this we cover the pit loosely with grass or gunny bag and in the last we add worms into the pit.