

Please check the examination details below before entering your candidate information

Candidate Name

Class

Section

# BLOOM Science Olympiad (BSO)

Question Paper 2023-24

Class  
**7**

**Total Questions** 50+5 (Tie Breaking Section)


**Total Time Allotted :**  
60 minutes

**Total Marks**  
60

## Instructions

1. There are **50 Multiple Choice Questions** in this booklet having 4 options out of which **ONLY ONE** is correct.
2. There are two sections in the Question Paper; Section 1 having 40 Questions carrying 1 Mark each & Section 2 having 10 Higher Difficulty Order Questions carrying 2 Marks each.
3. All questions are compulsory. There is **NO negative** marking for incorrect answers.
4. Total time allotted to complete the paper is 60 minutes.
5. Please fill in your details in the space provided on this page before attempting the paper.

## OMR Sheet Instructions

1. Before starting the paper, fill in all the details in the OMR Sheet.
2. Additional 10 minutes will be provided to fill up the OMR sheet, before the start of the exam.
3. Use HB Pencil to darken the circle of the correct Option in OMR sheet. The correct way to darken the circle in OMR sheet is shown below.  

4. Use black or blue ball point pen/HB pencil to fill the information in the OMR sheet. Partially filled OMR sheet will not be checked.
5. Return the OMR sheet to the invigilator after the exam.

CODE#1

**SC7**



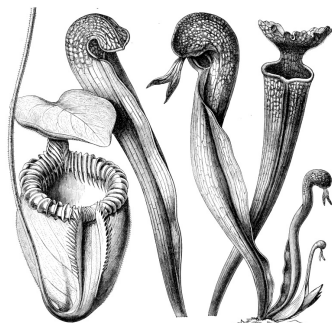
**BLOOM CAP**

Founded by |  arihant

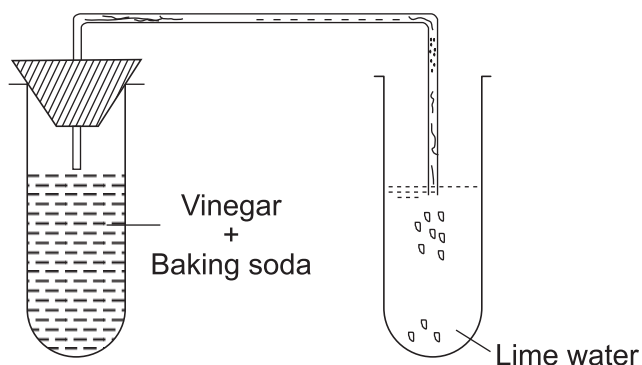
# Bloom Science Olympiad Class 7

## Section A (1 Mark)

1. Identify the plant shown in the following diagram.



- (a) *Cuscuta* plant  
 (b) Venus flytrap plant  
 (c) Pitcher plant  
 (d) Sundew plant
2. Mutually beneficial relationship between *Rhizobium* and certain plants is known as
- (a) probiotic                      (b) biogenesis  
 (c) symbiosis                    (d) photosynthetic
3. Which of the following animals do not possess lungs for respiration?
- (a) Cat                              (b) Grasshopper  
 (c) Earthworm                    (d) Both (b) and (c)
4. Look at the diagram given below.



In the above experiment a gas X is released, which turns lime water milky. Here, X is

- (a) oxygen                      (b) hydrogen  
 (c) carbon dioxide            (d) nitrogen

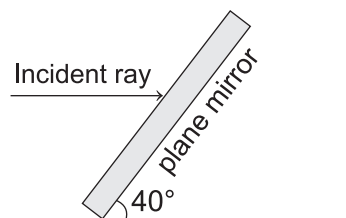
5. Some acids along with their sources are given as follows

Acids	Sources	
	Natural	Mineral
1. Lactic acid	x	✓
2. Carbonic acid	✓	x
3. Tartaric acid	✓	x
4. Sulphuric acid	x	✓

Key : ✓ (Yes)                      x (No)

The correct match of acids with respective type of sources is

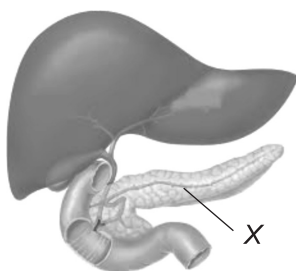
- (a) only 1                              (b) only 3  
 (c) 3 and 4                            (d) 2 and 4
6. When an ant bites us, it injects the acidic liquid 'Y' into our skin. The effect of the sting can be neutralised by rubbing 'X' on the affected part. Here, X and Y respectively are
- (a) turmeric and acetic acid  
 (b) moist baking soda and formic acid  
 (c) vinegar solution and acetic acid  
 (d) turmeric and formic acid
7. A plane mirror is inclined at  $40^\circ$  to the floor. An incident ray parallel to the floor strikes the mirror and a reflected ray is formed. What is the angle of reflection?



- (a)  $40^\circ$                               (b)  $60^\circ$   
 (c)  $70^\circ$                               (d)  $50^\circ$
8. Suppose a liquid in a container is heated at the top rather than at the bottom. What is the main process by which the rest of the liquid becomes hot?
- (a) Conduction                      (b) Convection  
 (c) Sublimation                      (d) Radiation

9. During winter, a tourist was given a choice of using either one thick blanket or two thin blankets joined together. He choose two thin blankets which were joined together. Why?
- It would have resulted in no air formation between the two blankets.
  - It would have resulted in the formation of a layer of air in between the blankets, and air is a good conductor of heat.
  - It would have resulted in the formation of a layer of air in between the blankets, and air is an insulator.
  - Two blankets are comfortable than one.

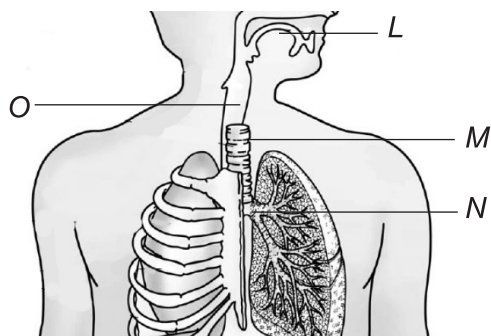
10. Examine the diagram, given below.



Choose the most appropriate function of 'X' from the options given below.

- Secretes bile
  - Acts as accessory gland
  - Secretes digestive juice
  - Absorbs fat
11. Which part of the digestive system is primarily responsible for the absorption of digested food into the bloodstream?
- Stomach
  - Large Intestine
  - Small Intestine
  - Oesophagus

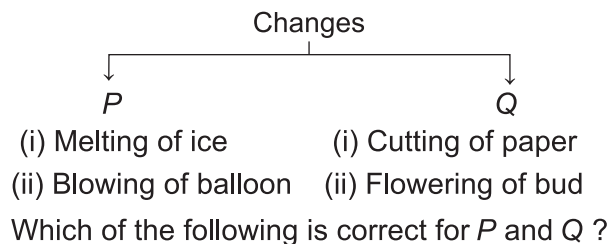
12. Examine the diagrammatic representation.



Which of the following letter represents trachea from the given options?

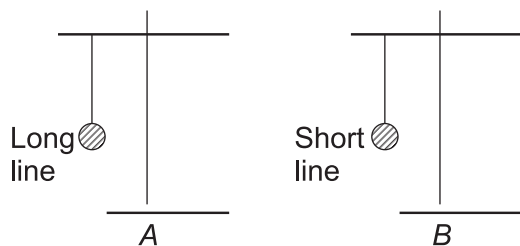
- L
  - N
  - M
  - O
13. Rajesh has went to hike Mount everest. He could sense noticable difference in air pressure. The air pressure with respect to sea level is
- greater
  - same
  - lesser
  - increasing with time
14. Which of the following types of tissue is responsible for the transportation of water and nutrients in plants?
- Guard cells
  - Phloem
  - Xylem
  - None of these
15. Which of the following is the correctly matched?
- Making a fruit salad → Physical change
  - Heating of calcium carbonate → Physical change
  - Making paper boats by cutting paper → Chemical change
  - Keeping an iron nail in moist air for a few days → Physical change
16. An acid which is very useful for our digestion and maintain which of the following acid is very useful the for digestion and the maaintainance of pH level in th stomach? The health of gut. Releases when our basic food reached to the stomach. It is found in our stomach.
- Sulphuric acid
  - Hydrochloric acid
  - Citric acid
  - Lactic acid
17. Rohan spilled curry on his shirt. When he tried to wash it with soap the colour of the shirt change from yellow to
- blue
  - colourless
  - red
  - orange

18. Study the flow chart carefully.



(P)	(Q)
(a) Reversible change	Reversible change
(b) Irreversible change	Reversible change
(c) Irreversible change	Irreversible change
(d) Reversible change	Irreversible change

19. Consider the two pendulums A and B shown below and choose the correct option showing the relationship between their time periods.



- (a) Both will have the same time period  
 (b) A will have longer time period  
 (c) B will have longer time period  
 (d) Relation between the time periods cannot be established

20. Among these options, which one of them significantly contributes to water scarcity issue?

- (a) Scanty rainfall  
 (b) Overpopulation  
 (c) Deforestation  
 (d) All of these

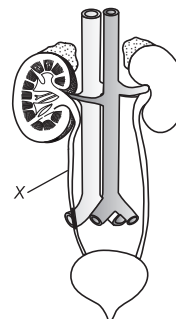
21. Two thermometer A and B have fundamental interval of  $60^\circ$  and  $75^\circ$ . The lower points of A and B are  $0^\circ$  and  $30^\circ$  respectively. If B reads  $110^\circ$ , then find the reading of A.

- (a)  $24^\circ$     (b)  $20^\circ$     (c)  $37^\circ$     (d)  $64^\circ$

22. A man wants to cover 50 km on his bicycle. His speed is 12.5 km/hr. After every 12.5 km, he takes rest for 20 minutes. How long will he take to cover the whole distance?

- (a) 5 h                      (b) 8 h  
 (c) 10 h                    (d) 7 h

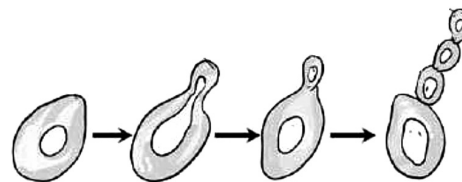
23. Carefully examine the following diagram.



Choose the most appropriate option which represents 'X' among the following.

- (a) Ureter                      (b) Urethra  
 (c) Main artery              (d) Main vein

24. Can you identify the type of reproduction depicted in the following diagram?



- (a) Spore formation        (b) Regeneration  
 (c) Budding                    (d) Fragmentation

25. Which component of a flower holds the male sex cells among the options provided?

- (a) Ovary    (b) Stigma    (c) Anther    (d) Style

26. When a switch is in OFF position.

- (i) Circuit starting from the positive terminal of the cell stops at the switch.  
 (ii) Circuit is open.  
 (iii) No current flows through it.  
 (iv) Current flows after some time.

Choose the combination of correct option from the following.

- (a) (i) and (ii) are correct    (b) (ii) and (iii) are correct  
 (c) Only (iv) is correct        (d) All are correct

27. Which layer of the forest acquire the most amount of sunlight?

- (a) Under storey              (b) Shrub layer  
 (c) Canopy                      (d) None of these

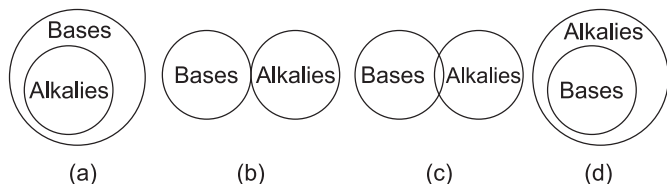
28. In the forest, what do decomposers consume?

- (a) Dead plants              (b) Animal dungs  
 (c) Dead animals            (d) All of these

29. Sneha's mother stored all oily snacks for a long period of time in a container. Due to prolonged storage, which of the following type of change would you observe?

- (a) Physical change
- (b) Chemical change
- (c) No change
- (d) Physical and chemical change both

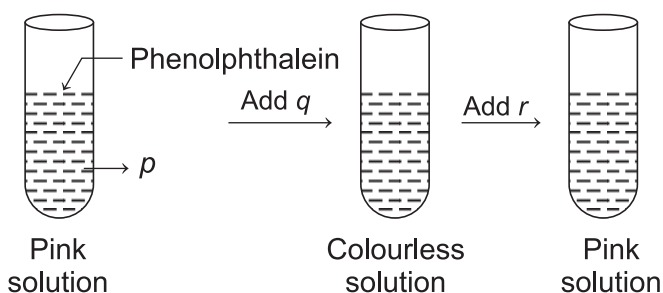
30. Which of the following diagrams represents alkalis and bases in the correct form?



31. A person looks into the mirror by placing it close to his face. The image of his face was erect, laterally inverted and of the same size. Then, the mirror must be

- (a) plane
- (b) concave
- (c) convex
- (d) plane or concave

32. Kartik performed the following experiment by taking few solutions and phenolphthalein as an indicator.



Identify  $p$ ,  $q$  and  $r$  in his experiment.

- (a)  $p \rightarrow$  acid,  $q \rightarrow$  acid,  $r \rightarrow$  base
- (b)  $p \rightarrow$  base,  $q \rightarrow$  acid,  $r \rightarrow$  base
- (c)  $p \rightarrow$  base,  $q \rightarrow$  base,  $r \rightarrow$  acid
- (d)  $p \rightarrow$  base,  $q \rightarrow$  acid,  $r \rightarrow$  acid

33. When we talk about changes in our environment, there are two types of changes that can occur. One is, i.e. a physical change and other is a chemical change.

Which of the following is a physical reversible change?

- (a) Grinding of wheat
- (b) Shredding of paper
- (c) Chopping vegetables
- (d) Dissolving sugar in water

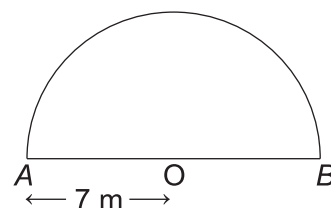
34. Study the given table carefully.

Substances	Colour with the turmeric solution
W	Yellow
X	Red
Y	Yellow

W, X, Y could be respectively.

- (a) baking soda, citric acid and sugar
- (b) washing soda, vinegar and salt
- (c) common salt, washing soda and vinegar
- (d) washing soda, baking soda and citric acid

35. What is distance and displacement while going from A to B in the figure below?

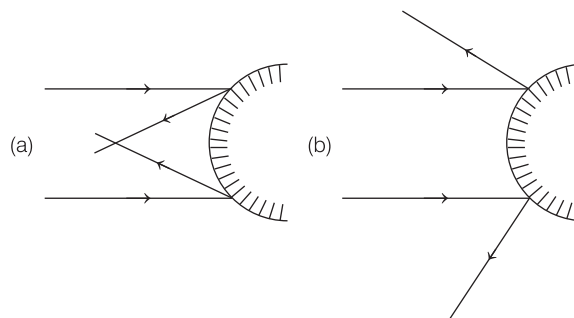


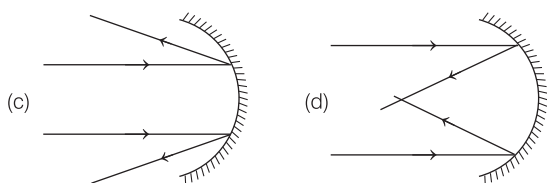
- (a) 5 m, 7 m
- (b) 22 m, 22 m
- (c) 7 m, 14 m
- (d) 22 m, 14 m

36. Which of the following do not represent a chemical change?

- (a) A gas is produced.
- (b) Precipitate is formed.
- (c) Change of state of a substance.
- (d) A new odour is produced.

37. Two parallel rays of light falls on a convex mirror. Which of the following diagram correctly shows the passage of rays after striking the convex mirror?





38. A car travels a distance of 6 km in 6 min. The car is travelling with a speed (in m/s) of
- (a) 7.2 m/s (b) 11.1 m/s  
(c) 13.8 km/h (d) 13.8 m/s
39. There are three items which have different heat absorption power. Which of the following choices shows that the items are arranged in ascending order of heat absorption power?

- (i) Transparent glass block  
(ii) Glass block painted black  
(iii) Glass block painted silver

Choose the correct option.

- (a) (i), (ii) and (iii) (b) (i), (iii) and (ii)  
(c) (iii), (i) and (ii) (d) (ii), (i) and (iii)
40. Image formed by a plane mirror is
- (i) of same size as that of object  
(ii) at the same distance behind the mirror as the object in front  
(iii) erect, virtual

Choose the correct statement from the options given below.

- (a) (i) and (ii) (b) (ii) and (iii)  
(c) (i) and (iii) (d) All of these

## Section B (2 Marks)

41. Read the following statements.
- (i) Trachea is a part of human respiratory system.  
(ii) Earthworm do not have lungs for breathing.  
(iii) In *Amoeba* exchange of gases takes place through its moist skin.  
(iv) Tracheae are found in cockroach.  
(v) The roots of a plant do not need air for respiration.

Choose the correct statements from the options given below.

- (a) (i), (ii) and (iv) (b) (ii), (iii) and (v)  
(c) (i) and (v) (d) Only (i)

42. Match the column I with column II and select the correct option given below.

Column I	Column II
A. Distance	(i) Meter
B. Speed	(ii) m/s
C. Time	(iii) Second
D. Time period	(iv) Pendulum

Choose the correct answer from the options given below.

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

43. Given below are two statements, one is labelled as Assertion (A) and other is labelled as Reason (R).

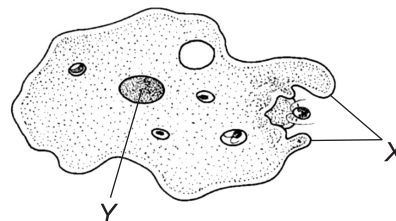
**Assertion (A)** Flowers are essential for sexual reproduction in most of the plants.

**Reason (R)** Stems contain reproductive organs, which are necessary for fertilisation.

Choose 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

44. Examine the following microscopic organism, and read the given statements.



- (i) It is a multicellular organisms and letter Y in the figure represents nucleus.



- (ii) It can change its shape.
- (iii) It can be found in pond water.
- (iv) The projection of its body, marked by letter X is called pseudopodia.
- (v) It is found in all environment.

Choose the correct statements from the options given below.

- (a) (ii), (iii) and (iv)      (b) (i), (ii) and (v)
- (c) (i), (iii) and (v)      (d) (iii) and (v)

45. Match columns I with II and select the correct option from the given codes.

Column I	Column II
A. Tartaric acid	(i) Orange
B. Oxalic acid	(ii) Tamarind
C. Malic acid	(iii) Spinach
D. Ascorbic acid	(iv) Apple

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

46. Which of the following statements are correct?

- (i) The tangy taste of cold drinks is due to carbonic acid which is an organic acid.
- (ii) Inorganic acids are prepared artificially in the industries and are extremely corrosive.
- (iii) Generally organic acids are weak acids and occur naturally in plants and animals.

Choose the correct option.

- (a) (i), (ii) and (iii)      (b) (i) and (iii) only
- (c) (ii) and (iii) only      (d) (i) and (ii) only

47. Read the assertion and reason carefully and choose the correct option accordingly.

**Assertion (A)** When we cut fruits, it turns brown if kept in open for a long period of time.

**Reason (R)** Browning of fruits is due to a chemical change.

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

48. Read the following statements and choose the correct option.

**Statement I** The heating up of a thin conducting wire on passing an electric current through it is known as heating effect of current.

**Statement II** Various electrical appliances that are based on heating effect of current contain a coil of wire called element.

- (a) Statement I is true but Statement II is false.
- (b) Statement II is true but Statement I is false.
- (c) Both Statements are true.
- (d) Both Statements are false.

49. Match the following columns.

A. RBC	(i) Formation of blood clot
B. Platelets	(ii) Carries oxygenated blood
C. Plasma	(iii) Carries deoxygenated blood
D. Pulmonary artery	(iv) Yellowish in colour
E. Pulmonary vein	(v) Carries oxygen

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

50. Read the Assertion and Reason carefully and choose the correct option accordingly.

**Assertion (A)** Heat energy is transferred from one body to another due to a temperature difference between them.

**Reason (R)** Heating a substance causes a rise in temperature.

In the light of above statements choose the correct answer from the options given below.

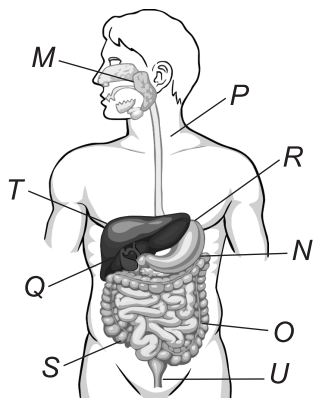
- (a) Both the A and R are true and R is the correct explanation of A
- (b) Both the A and R are true but R is not the correct explanation of A
- (c) A is true, but R is false
- (d) A is false, but R is true

## Tie-Breaking Section

### Instructions

1. This section consists of 5 questions.
2. The score achieved in this section will not be included in the total marks.
3. If overall marks of two or more students are same, winner will be decided based on the score in this section.
4. Participation in this section is optional, and students may choose to attempt it or not.

1. Evaluate the represented diagram and choose the correct option.



- (a) *N*-Pancreas, *O*-Gall bladder, *P*-Oesophagus, *Q*-Small intestine, *R*-Liver, *S*-Rectum.
- (b) *P*-Stomach, *Q*-Gall bladder, *R*-Large intestine, *S*-Small intestine, *T*-Liver, *U*-Rectum.
- (c) *P*-Oesophagus, *Q*-Gall bladder, *R*-Stomach, *S*-Large intestine, *T*-Liver, *U*-Rectum.
- (d) *P*-Gall bladder, *Q*-Stomach, *R*-Oesophagus, *S*-Liver, *T*-Rectum.

2. Seema conducted an experiment to test the nature of four different samples (i.e. *W*, *X*, *Y* and *Z*) in different indicators. Then, she noted down her observations in a table. Which is shown below.

Sample	Effect on different indicators		
	Turmeric solution	China rose indicator	Methyl orange indicator
<i>W</i>	Red	Green	Yellow
<i>X</i>	Yellow	Magenta	Red
<i>Y</i>	Yellow	Light pink	Orange
<i>Z</i>	Red	Green	Yellow

Which of the following conclusions can be drawn from this experiment?

- (a) *W* and *Z* are basic, *X* is acidic and *Y* is neutral in nature.

- (b) *W* is acidic, *X* is basic, *Y* and *Z* are neutral.
- (c) *W* and *Z* are acidic, *X* is basic and *Y* is neutral.
- (d) *Y* is natural, *W* and *X* are basic and *Z* is acidic in nature.

3. In synthesis of biogas, first the organic waste is collected into a large pit. Then, anaerobic bacteria converts this waste into biogas (Process I). This biogas is then supplied to home where it is used as a fuel (Process II).

The process I and II are

- (a) physical change and chemical change respectively
- (b) chemical change and physical change respectively
- (c) both chemical changes
- (d) both physical changes

4. An electric kettle is commonly used to heat up water at home. The heating element used is nichrome wire and not copper. Which of the following reasons best explains why nichrome is used instead of copper?

- (a) Nichrome conducts more current than copper, so more heat can be generated
- (b) Nichrome has higher resistance than copper, so more heat can be generated
- (c) Nichrome has higher voltage than copper, so more heat can be generated
- (d) Nichrome are cheaper than copper, so it is more economical

5. An electric bell has a resistance of  $5\ \Omega$  and requires a current of  $0.25\ \text{A}$  to work it. Assuming that the resistance of the bell wire is  $1\ \Omega$  per  $15\ \text{m}$  and that the bell is  $90\ \text{m}$  distance from the power source. How many cell each of emf  $1.4\ \text{V}$  and internal resistance  $2\ \Omega$ , will be required to work the circuit ?

- (a) 3
- (b) 4
- (c) 5
- (d) Can't be determined