



Delhi Public School, Howrah

PERIODIC ASSESSMENT II (2025-2026)

Class-X

Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence.

Subject: - Science (Code No. 086)

Time:- 3 Hours

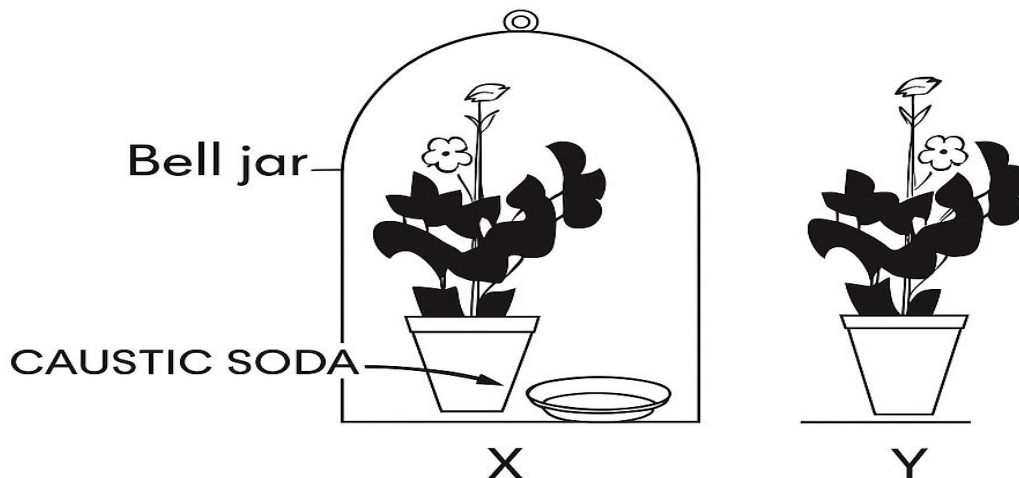
F.M.-80

General Instructions:

- This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

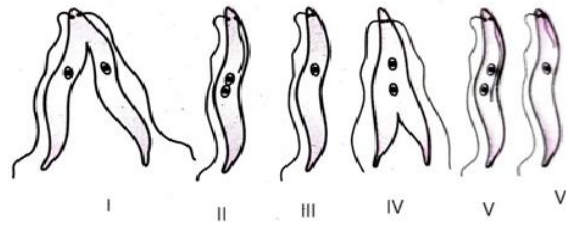
SECTION - A

- If salivary amylase is lacking in the saliva, which of the following events in the mouth cavity will be affected? **1**
 - Breakdown of proteins into amino acids.
 - Breakdown of starch into sugars.
 - Breakdown of fats into fatty acids and glycerol.
 - Absorption of vitamins.
- A student sets up an experiment to study the importance of nutrition in plants. The student takes 2 pots, X and Y each with the same healthy plant. Both the pots were placed in the garden and watered properly. Pot Y was kept as such, while pot X was kept in an airtight bell jar with caustic soda. After 2 days, the student observes that the plant kept in the garden is healthy while the plant placed in bell jar shed leaves and droops. What is the likely reason for this observation? **1**



- Lack of nutrients in the soil
 - Inability to perform photosynthesis
 - Absence of oxygen for survival
 - Absorption of light by caustic soda
- Attached earlobes in humans is an inherited condition. The allele for attached earlobes is recessive. What are the chances of parents both having attached earlobes, to have a child with attached earlobes? **1**
 - 0%
 - 25%
 - 75%
 - 100%

4. Sita, a biology student, is fascinated by binary fission in single-celled organisms. Her teacher recently discussed the binary fission of *Leishmania*, a parasitic protozoan. Sita illustrated the stage of binary fission but got confused about the correct sequence.

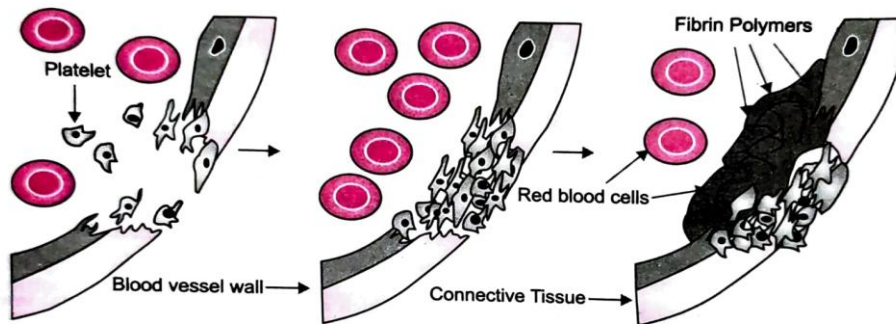


Help Sita arrange the illustrations in the correct sequence that shows the binary fission in *Leishmania*.

- A. I, II, III, IV, V, VI
- B. III, VI, II, V, IV, I
- C. I, III, IV, V, II, VI
- D. II, III, IV, I, V, VI

5. The following image depicts the healing of a wound:

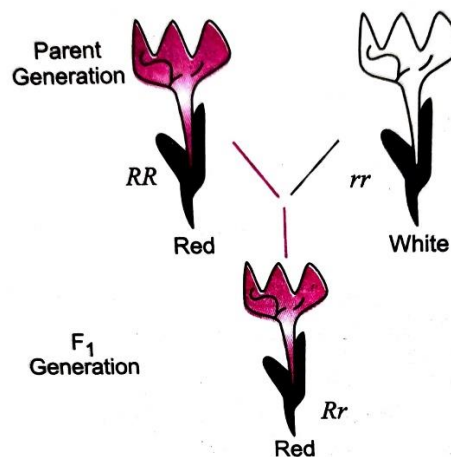
1



Based on the image, which option from the following explains the process?

- A. Platelets form clot by plugging the site of injury.
 - B. Platelets use components of broken vessels to form clot.
 - C. Red blood cells divide and replace the broken vessel at the site of injury.
 - D. Red blood cells and platelets migrate to site of injury and secrete substance that forms new vessels.
6. The inheritance of colour trait in flower is shown below:

1



R and r denote two different genes for colour. Which of the Mendel's law can be explained using the image?

- A. Only law of segregation.
- B. Only Law of independent assortment.
- C. Law of segregation and law of dominance.
- D. Law of segregation and law of independent assortment.

7. Ramesh wrote the following sentence: 'Ovaries in the females secrete testosterone, progesterone and relaxin hormones. Testosterone stimulates the formation of ova in the ovary.' What mistake has he committed? 1
- Name of hormone/(s).
 - Name of the gland.
 - Both the gland and hormone.
 - Neither gland nor hormone.

The following two questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

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

8. **Assertion(A):** Failure of testes to descend into the scrotum during development causes sterility in man. 1
Reason(R): Higher temperature in the abdomen than in the scrotum is not suitable for sperm development.

9. **Assertion (A):** Alveoli provide a large surface area for the exchange of gases in the lungs. 1
Reason (R): The alveolar walls are thick to allow more oxygen to diffuse into the blood.

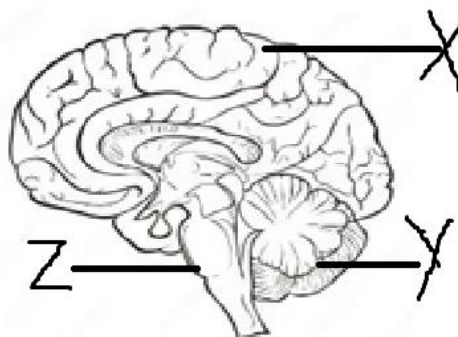
10. i. A person has low hemoglobin levels. How will it affect the functioning of the body? 2
 ii. How does the structure of arteries help them to withstand high pressure?

11. Students to attempt either option A or B. 2
 A. A person frequently feels thirsty, tired, and has high levels of glucose in the blood. Which endocrine gland may not be functioning properly? Name the hormone it secretes and explain its role in regulating blood sugar levels.

OR

B. Riya's blood tests show low levels of several hormones including those from the thyroid and adrenal glands, even though those glands are healthy. Which gland might actually be malfunctioning? Justify your answer.

12. Given below is an image of a human brain with some parts labelled as X, Y, and Z. 2



- A boxer receives a blow to the part 'Y'. Identify the part and explain the immediate impact on his body.
- Which of the labelled parts of the brain as shown in the image is responsible for involuntary activities?

13. Give reason for the following statements: 3
- Variation is beneficial to the species but not necessarily for the individual.
 - Farmers prefer vegetative propagation for growing plants like banana and sugarcane instead of growing them from seeds.
 - In some plants, seeds are not produced if pollination fails.

14. Figures A, B, C, D and E as shown below represent the tongue rolling capacity seen in a family of five. Answer the following questions based on your understanding of inheritance pattern. 3



A



B



C



D



E

- A. Is the tongue-rolling trait dominant or recessive? Give reason.
 B. What are the possible genotypes of the parents?
 C. Use a Punnett square (with R and r) to model the cross and determine the expected genotypic and phenotypic ratios.

15. A study was conducted to observe the concentration of plant hormone in different parts of a plant. The data collected are as follows:

4

PLANT PART	HORMONE X(μ M)	HORMONE Y(μ M)
Young leaves	1.2	0.5
Mature leaves	0.8	2.0
Fruits	4.5	0.6
Germinating seeds	3.5	0.4

Based on your understanding of the above data and related concepts studied, answer the following questions:

- A. Identify the hormone X and Y.
 B. Why is the concentration of hormone Y low in fruits?
Attempt either subpart C or D
 C. What would be the relevance of higher concentration of Y in mature leaves?

OR

- D. Explain the relevance of the high concentration of hormone X in fruits and germinating seeds than in other plant parts.

16. Attempt either option A or B.

5

- A. I. A farmer wants to grow plants that are genetically identical to the parent plant for high yield and better quality. Which method of reproduction would be best suited for this purpose? Write one disadvantage of this method in the long term?
 II. Draw the structure of the female reproductive system and label the following parts:
 a. Site of egg production
 b. Site of fertilization
 c. Elastic bag-like structure
 d. External genitalia

OR

- B. I. a. Why is sexual reproduction considered advantageous over asexual reproduction in the context of genetic variation? Mention one contraception method that prevents STDs.
 II. Draw the structure of the male reproductive system and label the following parts:
 a. Site of germ cell formation
 b. Gland that forms the semen
 c. Common passage for both urine and germ cell
 d. External genitalia

SECTION - B

- 17 Analyse the following statements about the properties of oxides and determine which are correct.

1

- I. Aluminium oxide reacts with both acids and bases.
 II. Sodium oxide reacts with acids to form salt and water.
 III. Zinc oxide reacts only with acids.
 IV. Carbon dioxide reacts with water to form carbonic acid.

- A. I, II and IV
 B. I, III and IV
 C. II and III only
 D. I and II only

- 18** Barium chloride reacting with ammonium sulphate forms barium sulphate and ammonium chloride. Classify the given reaction into one of the following types. **1**
- I. Displacement reaction II. Precipitation reaction
III. Combination reaction IV. Double displacement reaction
- A. I. and IV.
B. II. and III.
C. IV. only
D. II. and IV.
- 19** Identify which of the following salts does not contain water of crystallisation. **1**
- A. Blue vitriol
B. Baking soda
C. Washing soda
D. Gypsum
- 20** Interpret the following reaction sequence and infer the most and least reactive elements. **1**
- $P + QX \rightarrow PX + Q$
 $R + PY \rightarrow RY + P$
- A. Most reactive: R; Least reactive: Q
B. Most reactive: Q; Least reactive: R
C. Most reactive: P; Least reactive: Q
D. Most reactive: Q; Least reactive: P
- 21** Predict which of the following acids possesses highest hydrogen ion concentration. **1**
- A. pH = 2.5
B. pH = 1.8
C. pH = 7
D. pH = 10
- 22** Identify the constituent metals of the alloy bronze. **1**
- A. Copper and zinc
B. Aluminium and tin
C. Copper, tin and zinc
D. Copper and tin
- 23** Refer to the following equation and determine the correct values of X and Y. **1**
- $Cu + X HNO_3 \rightarrow Cu(NO_3)_2 + Y NO_2 + 2H_2O$
- A. 3 and 5
B. 8 and 6
C. 4 and 2
D. 7 and 1

The following question consists of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

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

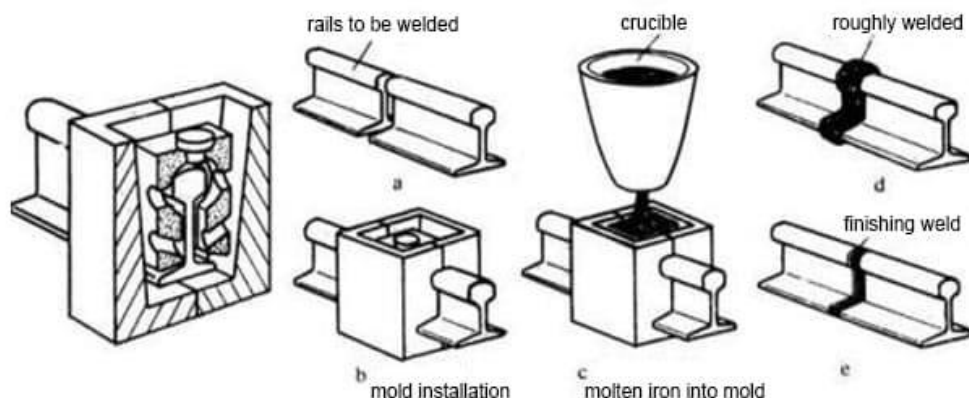
24 Assertion (A): During electrolysis of concentrated aqueous solution of sodium chloride, chlorine gas is given off at the cathode and hydrogen gas at the anode.

1

Reason (R): Ions in electrolytes are attracted to the oppositely charged electrodes.

25 Refer to the given picture & answer the following questions:

2



A. Identify the process shown.

B. Write the name of the compound used to extract iron using this process.

26 Attempt either option A or B.

3

A. In one of the industrial processes used for manufacture of sodium hydroxide, a gas X is formed as a by-product. Gas X reacts with lime water to give a compound Y which is used as a bleaching agent in chemical industry.

I. Identify gases X and Y.

II. Write the balanced chemical reactions involved.

OR

B. Anirban made the following observations during the reaction of some metals with diluted sulphuric acid.

(a) Silver metal does not show any change.

(b) The temperature of the reaction mixture rises when aluminium is added.

(c) The sodium metal reaction is highly explosive.

Answer the following questions from these observations.

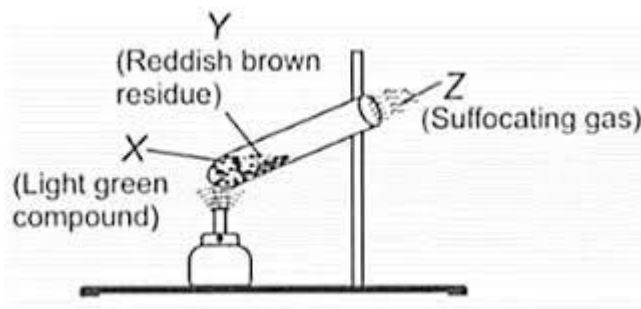
I. Explain why silver does not react.

II. What is the name of the process involved in observation (b)?

III. Which gas is produced when sodium reacts with diluted sulphuric acid?

27 Refer to the given picture & answer the following questions.

3



I. Write the chemical formula of X.

II. Write the name of the acid produced when Z is dissolved into water.

III. Differentiate between Y and rust.

- 28** Madhura took 5 mL of dilute HCl in a test tube and added two drops of methyl orange indicator. The solution changed the colour. She then added dilute NaOH drop by drop, shaking after each addition, until the solution turned into another colour. **4**

She repeated the same activity using phenolphthalein as an indicator and noted a different colour change than the previous. She recorded her observations as follows:

Indicator Used	Initial Colour with HCl	Final Colour after NaOH
Methyl orange	Red	Yellow
Phenolphthalein	Colourless	Pink

Answer the following questions based on the above information.

A. In both trials, the point where the first colour change occurred corresponds to

- The completion of an oxidation-reduction reaction.
- The point where $[H^+] < [OH^-]$.
- The start of the neutralisation reaction.
- The precipitation of NaCl.

Attempt either part B or C.

B. Predict and justify whether the number of drops will increase, decrease, or remain the same if concentrated NaOH is used instead of diluted NaOH.

OR

C. In which part of the pH scale will the initial solution and the final solution lie? Give the approximate pH range for each.

D. If Madhura used a universal indicator instead, what colour change would she observe when moving from acidic to basic conditions?

- Red → Orange → Yellow → Blue → Purple
- Red → Blue → Purple → Yellow → Green
- Yellow → Green → Blue → Purple → Red
- Colourless → Pink → Purple → Yellow

- 29** **Attempt either option A or B.**

5

A. A white solid 'S' changes to a grey solid 'T' when exposed to sunlight, and a greenish-yellow gas 'U' is released.

- Identify S, T, and U with their chemical formulae.
- Write the balanced chemical equation for the reaction.
- Classify the type of decomposition.
- State one use of the reaction.
- Justify whether it is a redox process.

OR

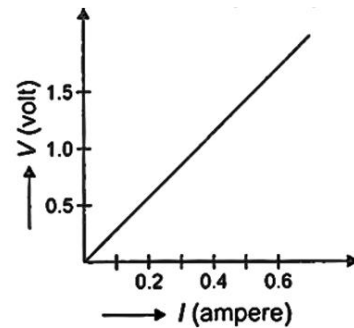
B. A student heated a sample of lead nitrate crystals in a boiling tube. A brown gas evolved, and a solid was left behind.

- Write the balanced chemical equation for the reaction with state symbols.
- Describe the colour of the residue.
- Identify the brown gas and the solid.
- State whether energy is absorbed or released.
- Name one other compound from the chapter that undergoes the same type of decomposition.

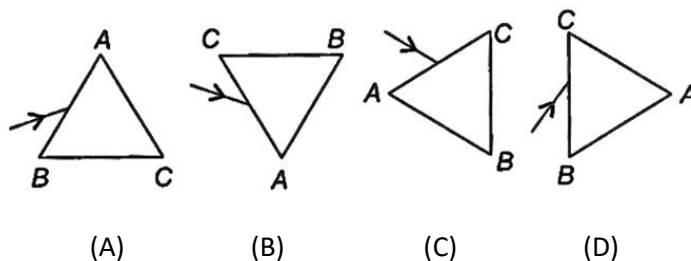
SECTION - C

30. Following graph was plotted to show the variation of current I with the voltage V , across a wire. Which of the following statement is correct regarding this? 1

- A. Value of the ratio $V:I$ when the potential difference is 0.8 V is equal to the value of the ratio $V:I$ when the potential difference is 1.2 V.
- B. This graph illustrates the non-ohmic law.
- C. While plotting this graph, the temperature does not remain constant.
- D. All of these

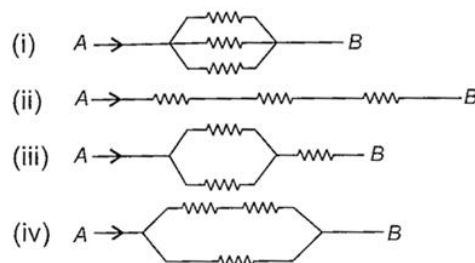


31. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in figure. In which of the following cases, after dispersion, the third colour from the top corresponds to the colour of the sky? 1



The following question consists of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

- A. Both A and R are true, and R is the correct explanation of A.
 - B. Both A and R are true, and R is not the correct explanation of A.
 - C. A is true but R is false.
 - D. A is false but R is true.
32. **Assertion(A):** If a plane glass slab is placed on the letters of different colours all the letters appear to be raised up to the same height. 1
Reason(R): Different colours have different wavelengths.
33. Arrange the following combinations in the ascending order of power dissipated in the given circuits, if the same current enters at point A in all the circuits and resistance of each resistor is R . 2



34. Attempt either option A or B. 2

- A. (i) After moving from bright sunlight into a dark room, vision isn't immediately clear. Explain which parts of the eye are responsible and how they physiologically respond.
- (ii) Environmental scientists note that stars near the horizon appear higher than they truly are. Critically explain this phenomenon.

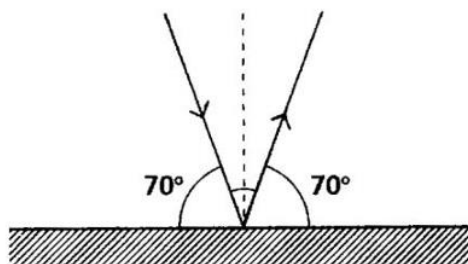
OR

B. Arjun has minimum distance of distinct vision of 150cm. He wishes to read at a distance of 25cm. 2

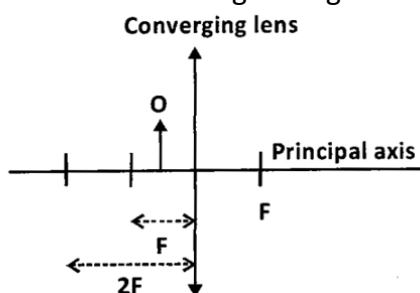
(i) What focal length of lens should he use?

(ii) What is the nature of eye defect and the type of the lens he requires?

35. A. Draw a schematic diagram of a circuit consisting of a battery of three cells of 2 V each, a 5Ω , resistor, an 8Ω resistor, and a 12Ω resistor, and a plug key, all connected in series. 3
- B. Redraw the circuit of the previous question, putting in an ammeter to measure the current through the resistors and a voltmeter to measure the potential difference across the 12Ω resistor.
- C. What would be the reading in the ammeter and the voltmeter?
36. A. A Concave and a convex lens is placed touching each other. The ratio of magnitudes of their powers is 2:3. The focal length of the system is 30 cm. Find the focal lengths of individual lenses. 3
- B. Based on the figure given below calculate the angle of reflection.

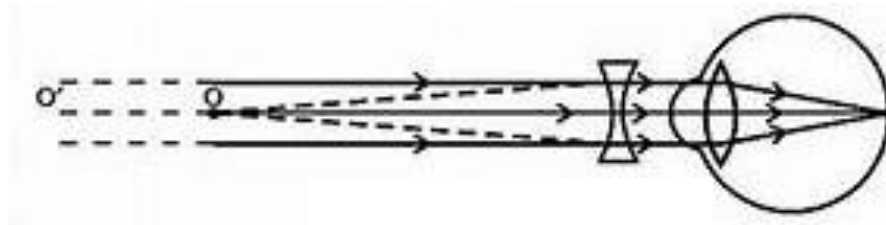


C. An object O is placed at the position shown in the given figure.



What are the characteristics of the image formed? Complete the ray diagram.

37. 3



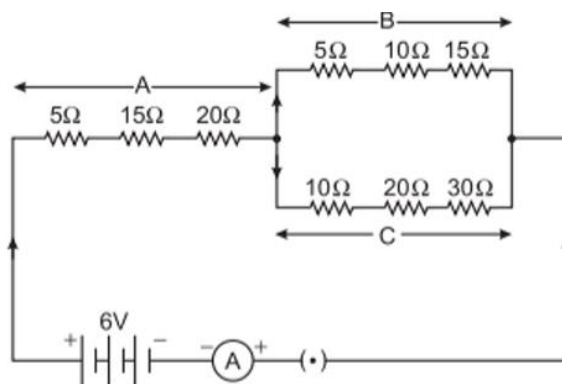
The above image shows a corrective measure for a particular defect of vision.

- A. Identify the defect of vision and state what kind of lens is used to correct this deficiency.
- B. Draw and label a ray diagram that shows the defect of vision in the above case before correction.
- C. Write two causes of the defect.

- 38.** Resistors are electrical devices that restrict the flow of current in a circuit. Most of the circuits have only one resistor, but sometimes more than one resistor can be present in the circuit. In that case, the current flowing through the circuit depends on the equivalent resistance of the combination. These combinations can be arbitrarily complex, but they can be divided into two basic types:

1. Series Combination
2. Parallel Combination

Study the following electric circuit in which the resistors are arranged in three arms A, B and C:



- A. Find the equivalent resistance of arm C.
- B. Calculate the equivalent resistance of the parallel combination of the arms B and C.

Attempt either subpart C or D.

- C. Determine the current that flows through the ammeter.

OR

- D. Determine the current that flows in the ammeter when the arm B is withdrawn from the circuit.

- 39. Attempt either option A or B.**

- A. An object is placed at a distance of 30 cm from a concave lens of focal length 30 cm.
 - (i) Use lens formula to determine the distance of the image from the lens.
 - (ii) List four characteristics of the image (nature, position, size, erect/inverted) in this case.
 - (iii) Draw a labelled ray diagram to justify your answer of part (ii)

OR

- B. (i) Draw a neat and labelled diagram of refraction of light through a glass prism.
- (ii) A prism of angle 60° has a ray incident at an angle 50° and emerging at an angle 60° . Find the angle of deviation.
- (iii) A ray of light is incident on a rectangular glass slab at an angle of 60° . If the refractive index of glass is 1.5, calculate the angle of refraction and angle of emergence.