SET-B

GWPS03B

G-W CLASSES, GONDIA

Near Giri Hospital, Vivekanand Colony, Gondia. Mob.: 9673916351, 9422950376
email : gwclassesgondia@gmail.com

GW PARIKSHA-03

SUBJECT: SCIENCE **MAX. MARKS: 80**

CLASS : X **TIME: 3 HRS**

General Instruction:

(i) *This question paper consists of 39 questions in 3 sections.* ***Section A*** *is Biology,* ***Section B*** *is Chemistry and* ***Section C*** *is Physics.*

(ii) *All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.*

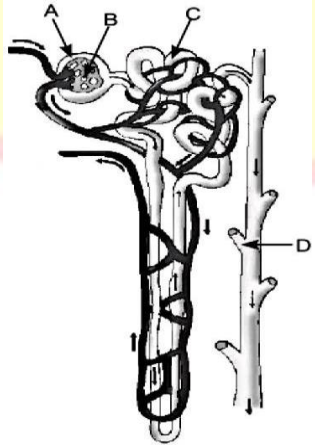
(iii) ***Section-A*** *has Q1 to Q9 carrying 1 mark each, Q10 to Q12 carrying 2 marks each, Q13 to Q14 carrying 3 marks, Q15 carrying Case Study Question of 4 marks and Q16 carrying 5 marks.*

(iv) ***Section-B*** *has Q17 to Q24 carrying 1 mark each, Q25 carrying 2 marks, Q26 to Q27 carrying 3 marks each, Q28 carrying Case Study Question of 4 marks and Q29 carrying 5 marks.*

(v) ***Section-C*** *has Q30 to Q32 carrying 1 mark each, Q33 to Q34 carrying 2 marks each, Q35 to Q37 carrying 3 marks each, Q38 carrying Case Study Question of 4 marks and Q39 carrying 5 marks.*

SECTION – A

1. Adi, Ashmi, Alankrita and Vikas labelled the parts A, B, C and D of a nephron. Identify the child who labelled the parts correctly.



Child	A	B	C	D
(a) Adi	Bowman's capsule	Glomerulus	Tubular part of nephron	Collecting duct
(b) Ashmi	Glomerulus	Bowman's capsule	Tubular part of nephron	Collecting duct
(c) Alankrita	Glomerulus	Tubular part of nephron	Bowman's capsule	Collecting duct
(d) Vikas	Bowman's capsule	Glomerulus	Collecting duct	Tubular part of nephron

2. The two versions of a trait (character) which are brought in by the male and female gametes are situated on

(a) copies of the same chromosome (b) two different chromosomes

(c) sex chromosomes (d) any chromosome

3. Which of the following statements is correct about receptors?

(a) Gustatory receptors detect taste while olfactory receptors detect smell.

(b) Both gustatory and olfactory receptors detect smell.

(c) Auditory receptors detect smell and olfactory receptors detect taste.

(d) Olfactory receptors detect taste and gustatory receptors detect smell.

4. What is the primary function of the protein haemoglobin, which gives red blood cells their characteristic colour?

(a) To defend the body against pathogens.

(b) To initiate the blood clotting process.

(c) To transport oxygen from the lungs to the body's tissues.

(d) To carry digestive enzymes in the blood.

5. Consider the following statements about the human menstrual cycle:

(i) It is a recurring cycle in females that involves the shedding of the uterine lining if pregnancy does not occur.

(ii) Ovulation, the release of a mature egg from the ovary, occurs during the cycle.

(iii) The cycle is regulated by hormones like oestrogen and progesterone.

(iv) The breakdown of the thickened uterine wall leads to bleeding, known as menstruation. Which of the above statements are correct?

(a) (i) and (ii) only (b) (iii) and (iv) only

(c) (i), (ii), and (iii) only (d) All are correct.

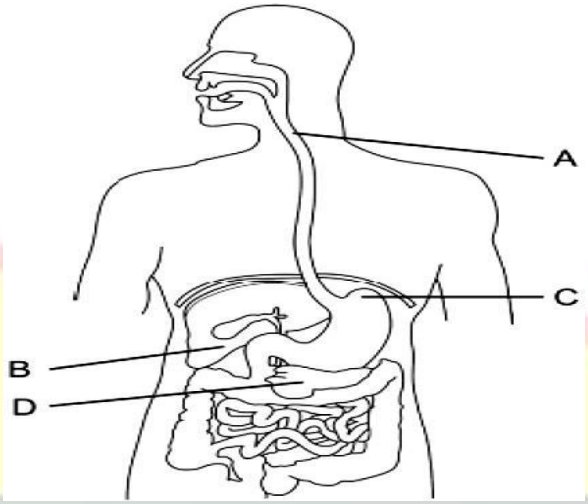
6. Which of these correctly represents the labels A, B, C and D respectively?

(a) Pancreas, Oesophagus, Stomach, Liver

(b) Oesophagus, Liver, Stomach, Pancreas

(c) Stomach, Liver, Oesophagus, Pancreas

(d) Oesophagus, Pancreas, Liver, Stomach



7. In the table given below select the row which contains incorrect information.

Part / Organ	**Function**
(a) Kidney	Filters the blood
(b) Urethra	Filtering unit of kidney
(c)Urinary bladder	Stores urine
(d) Ureter	Passage for urine

8. Assertion (A): Plants raised by vegetative propagation can bear flower and seed earlier than those produced from seeds.

Reason (R): Plants which have lost the capacity to bear viable seeds can propagate through vegetative propagation.

(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.

9. Assertion (A): Kidneys perform a dual function in our body.

Reason (R): Selective reabsorption occurs in the glomerulus.

(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.

10. Arthropods and molluscs have a copper-containing respiratory pigment called hemocyanin while human beings have iron-containing hemoglobin.

(a) How do respiratory pigments help in the process of respiration?

(b) Why do multicellular animals need a respiratory pigment?

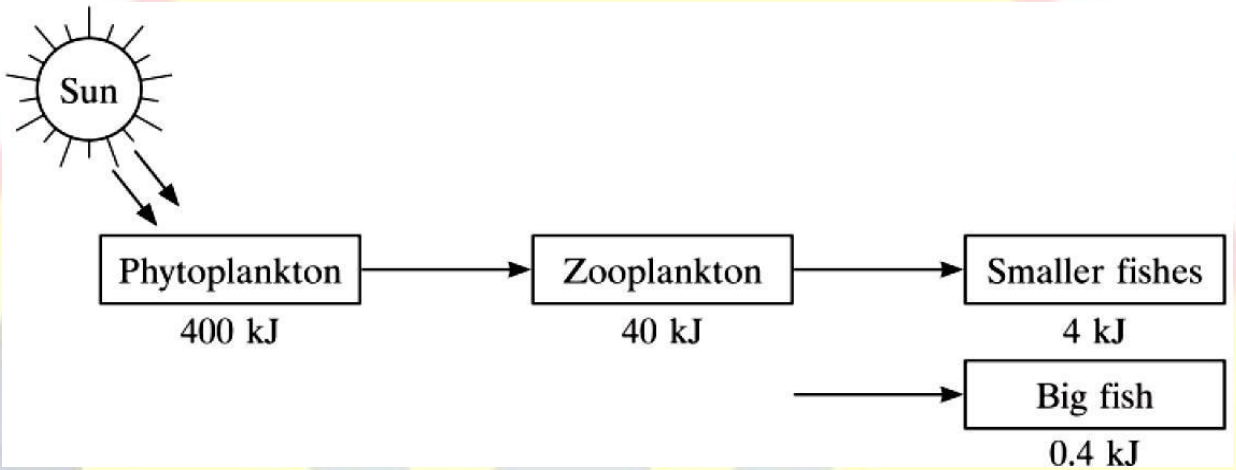
OR

Mammals and birds have a four-chambered heart with the right and left sides completely separated. Why is this separation necessary, and what is the structure responsible for it?

11. What is phototropism? Explain the mechanism by which it occurs in a plant shoot.

12. "To discard the household waste we should have two separate dustbins, one for the biodegradable waste and the other for the non-biodegradable waste." Justify this statement suggesting the proper way of disposal of these wastes.

13. (a) What is depicted in the below mentioned scheme?



(b) List two man-made ecosystems.

(c) "Save the tiger" campaign is being overemphasized these days by our Government. What may be the possible reason?

14. Describe the structure of Uriniferous tubule and also explain How is urine produced?

15. The growing size of the human population is a cause of concern for all people. The rate of birth and death in a given population will determine its size. Reproduction is the process by which organisms increase their population. The process of sexual maturation for reproduction is gradual and takes place while general body growth is still going on. Some degree of sexual maturation does not necessarily mean that the mind or body is ready for sexual acts for having and bringing up children. Various contraceptive devices are being used by human beings to control the size of population.

(a) Which contraceptive method changes the hormonal balance of the body?

OR

(b) What is the result of reckless female foeticide?

(c) List two common signs of sexual maturation in boys and girls.

(d) Write two factors that determine the size of a population.

16. (a) Name the human male reproductive organ that produces sperms and also secretes hormones. Write the functions of the hormone secreted.

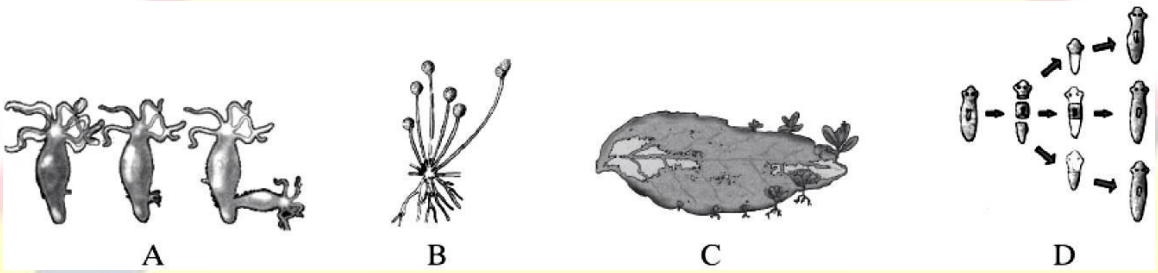
(b) Draw the diagram of human Female reproductive system and lable the parts of the human female reproductive system where

(i) fertilization and (ii) implantation occur respectively. Explain how the embryo gets nutrition inside the mother's body.

OR

A) Draw the diagram of Human male reproductive system.

B) Observe the given figures.



(a) Identify the organisms in figure A, B, C and D.

(b) Identify the life process shown in all the figures.

(c) How is this life process advantageous to the organisms?

SECTION – B

17. Reema writes straight chain structure of a saturated hydrocarbon having 5 carbon atoms but one of them is not written correctly. Identify that one.

(a) $H_3C—CH_2—CH_2—CH_2—CH_3$

(b) $H_3C—CH(H_3C)—CH_2—CH_3$

(c) $H_2C(CH_3)—CH_2—CH_2—CH_3$

(d) $H_2C(CH_3)—CH_2—CH_2(CH_3)$

18. Chemically Roasting is a process in metallurgy primarily used for converting:

(a) Sulphide ores into oxides. (b) Carbonate ores into oxides.

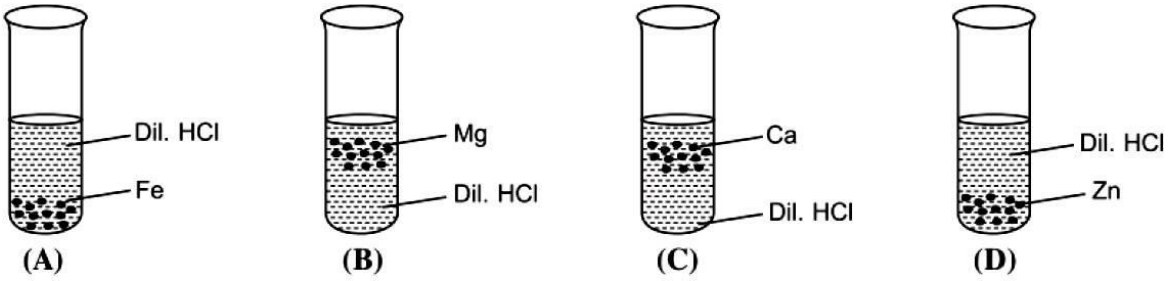
(c) Oxide ores into metals. (d) Sulphide ores into sulphates.

19. A molecule of ammonia (NH_3) has:

(a) Only single bonds (b) Only double bonds

(c) Only triple bonds (d) One double bond and two single bonds

20. Chitra added four different metals in four test tubes A, B, C and D containing 5 ml



of dil. hydrochloric acid as shown in the given figure. She found calcium and magnesium metals show different behaviour.

'Which of the following is the correct explanation for such a behaviour?

(a) Mg and Ca are lighter than dil. HCL.

(b) Mg and Ca react with dil. HCI to produce CO, gas which helps in floating.

(c) Mg and Ca do not react with dil. HCI as they are more reactive metals than Fe and Zn.

(d) Mg and Ca react with dil. HCI to produce H, gas which helps them in floating.

21. A student learns that Na and Mg react with Cl, to form NaCl and MgCl,

$2Na + Cl_2 — 2NaCl;$ $Mg + Cl_2 — MgCl_2$

The melting point of NaCl is 1074 K while melting point of $MgCl_2$ is 981 K. Why does NaCl and $MgCl_2$, have different melting points?

(a) $MgCl_2$ is soluble in kerosene and petrol.

(b) Sodium chloride is formed by combining Na and 1 molecule of Cl,

(c) NaCl has strong inter-ionic bonding than $MgCl_2$.

(d) $MgCl_2$ is formed by combining one molecule of Mg.

22. Identify the product precipitated, its colour and the type of the reaction in the given set up.

Product precipitated	**Colour of precipitate**	**Type of reaction**
(a) Lead iodide	Yellow	Double displacement reaction
(b) Potassium iodide	Colourless	Displacement reaction
(c) Lead iodide	Colourless	Double displacement reaction
(d) Potassium nitrate	Yellow	Double displacement reaction

23. The table below has information regarding pH and nature (acidic/basic) for four different solutions. Which one of the option in the table is correct?

Solution	**Colour of pH paper**	**Appro.pH**	**Nature of solution**
(a) Lemon juice	Orange	3	Basic
(b) Milk of magnesia	Blue	10	Basic

(c) Gastric juice	Red	6	Acidic
(d) Pure water	Yellow	7	Neutral

24. The following question consists of two statements — Assertion (A) and Reason (R). Answer this question 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.

Assertion (A): Carbon forms covalent bonds with other elements only but not with itself.

Reason (R): Covalent bonds are formed by the sharing of electrons between two atoms.

25. The table shows the electronic structures of four elements.

Element	Electronic Structure
P	2, 6
Q	2, 8, 1
R	2, 8, 7
S	2, 8. 8

(a) Identify which element(s) will form covalent bonds with carbon.

(b) "Carbon reacts with an element in the above table to form several compounds." Give suitable reason.

26. An organic compound 'A' on heating with conc. H_2SO_4 forms a compound B, which on addition with 1 mole of hydrogen in presence of Ni forms a compound 'C'. One mole of compound 'C'" on combustion forms two moles of CO^2 and 3 moles of H_2O. Identify the compounds A, B and C and write the chemical equation of the reactions involved.

27. Name the ore of mercury. Write its chemical name and chemical formula. How can we obtain mercury from its ore? Write the chemical equations involved.

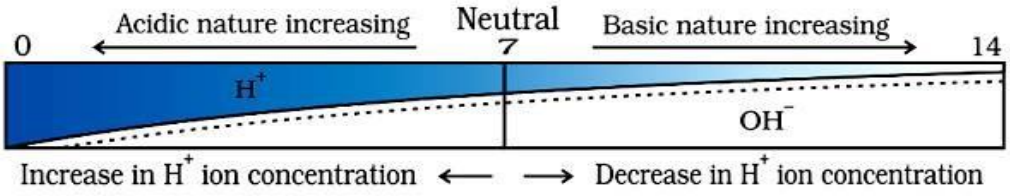
OR

$Fe_2O_3(s) + 2Al(s) — 2Fe(l) + Al_2O_3(s) + Heat$

'What type of reaction is shown above and why? Why this reaction is also an example of exothermic reaction? Where is this reaction used and why?

28. Anurag used litmus solution, methyl orange solution and phenolphthalein solution to distinguish between an acid and a base. He also studied about the

dilution and decrease in concentration of H^+ or OH^- ions in solutions. Now he is curious to find the amount of these ions present in a solution. By knowing the amount of H^+ or OH^- ions, he will be able to find out how strong a given acid or base is. For measuring the H^+ ion concentration he used the pH scale. On a pH scale he can measure pH from 0 to 14 as shown.



(a) If $[H^+]$ is equal to $[OH^-]$ in a solution at room temperature, the pH of the solution is:

(i) pH <7 (ii) pH > 7 (iii) pH = 7 Justify your answer.

(b) (i) What happens when we overeat?

(ii) What medicine is taken to counteract it and does it make us comfortable?

OR

(i) What is a universal indicator?

(ii) Four solutions A, B, C and D when tested with universal indicator showed pH as 5, 1, 12 and 7 respectively. Arrange the solutions in increasing order of hydrogen ion concentration.

(c) A solution with pH greater than 7 considered basic. Because:

(i) It has H+ and OH- concentration are equal.

(ii) 1t has more H+ than OH-.

(iii) 1t has lesser H+ than OH-.

(iv) It has pH greater than 7 always mean it's unsafe.

29. (a) Give reasons:

(i) Ionic compounds are solids and somewhat hard.

(ii) Ionic compounds have high melting point.

(b) Show the formation of potassium oxide by the transfer of electrons.

(c) What is aqua regia?

(d) Give one example of a metal which

(i) is a poor conductor of heat.

(ii) is most malleable and ductile.

OR

(a) Explain the following:

(i) Sodium chloride is an ionic compound which does not conduct electricity in solid state where as it does conduct electricity in molten state as well as in aqueous solution.

(i) Reactivity of Aluminium decreases if it is dipped in nitric acid.[Conceptual Application]

(iii)Metals like calcium and magnesium are never found in their free state in nature.

(b) A non-metal 'A" is an important constituent of our food and forms two oxides 'B" and 'C'. Oxide 'B' is toxic whereas oxide 'C' causes global warming.

(i) Identify 'A, 'B' and 'C'. (ii) To which group of periodic table does 'A" belong?

SECTION – C

30. Which of the following statements is/are true?

(a) A convex lens has 4 dioptre power having a focal length 0.25 m

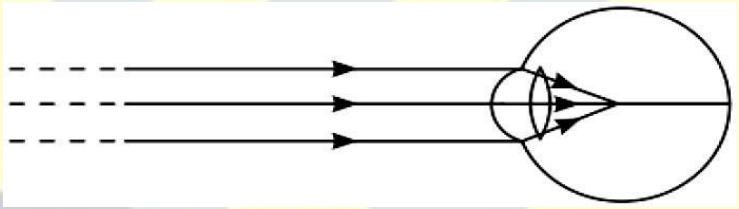
(b) A convex lens has -4 dioptre power having a focal length 0.25 m

(c) A concave lens has 4 dioptre power having a focal length 0.25 m

(d) A concave lens has - 4 dioptre having a focal 0.25m

31. Which one of the defects of vision has been shown in the figure given below?

(a) Far-sightedness (b) Myopia (c) Presbyopia (c) Hypermetropia



32. **Assertion (A):** When light travels obliquely from one medium to another, the direction of propagation of light in the second medium changes.

Reason (R): Refraction is due to the change in the speed of light when it travels from one medium to another.

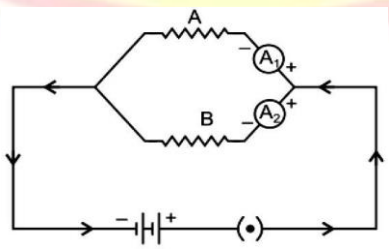
(a) Both A and R are true, and R is the correct explanation of A.

(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.

33. In the given circuit, resistors A and B are made up of same metal and are of the same length but, A is thicker than B.

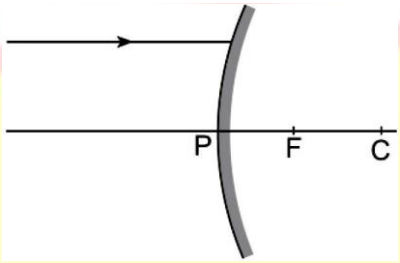


Which of the two ammeters will show a higher reading? Justify your answer.

OR

The electric power consumed by a device may be calculated by either of the two expression $P = I^2R$ or $P = V^2/R$ The first expression indicates that it is directly proportional to R whereas the second expression indicates inverse proportionality. How can the seemingly different dependence of P on R in these expression be explained?

34. A ray of light is incident on a convex mirror as shown.



Redraw the diagram and complete the path of this ray after reflection from the mirror. Mark angle of incidence and angle of reflection on it.

35. Name the physical quantity which is (i) same (ii) different in all the bulbs when three bulbs of :

(a) same wattage are connected in series.

(b) same wattage are connected in parallel.

(c) different wattage are connected in series.

(d) different wattage are connected in parallel.

36. 'Why is Tyndall effect shown by colloidal particles? State four instances of observing the Tyndall effect.

37. (a) A magnetic compass needle shows a deflection when placed near a current carrying wire. How will the deflection get affected if the current in the wire is decreased?

(b) A thin beam of moving alpha particles produce a magnetic field while neutrons do not produce any magnetic field. Explain.

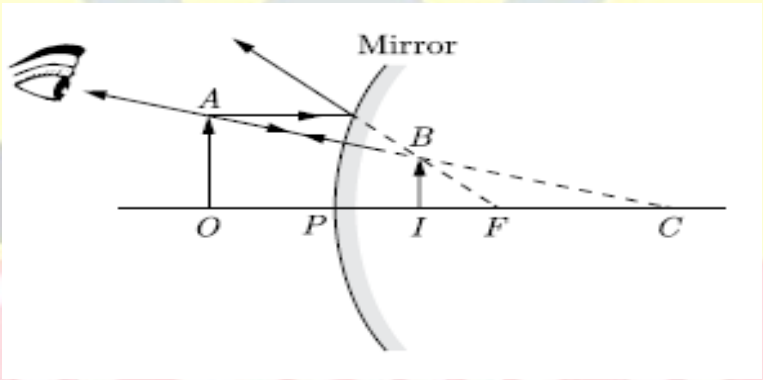
(c) In what way right hand thumb rule is different from Fleming's left hand rule?

38. After coming from playground, Tanu feels very hungry. But still some more time was required by her mother to cook food. While waiting on dining table Tanu was playing with her spoon. All of sudden she observed two different orientations of her face when she looked her face from both sides of spoon. She was confused why the orientation of her face changed in two cases. She was curious to know why her reflected image appears upside down in the one surface of a spoon but the correct way up in the opposite surface.

(i) Which type of image is formed on the both surface of spoon?

(ii) As tanu move concave surface of spoon towards her face, again she find that there comes a point (provided the spoon is big enough) where her image flips from inverted to upright. State the condition under which it happens ? Is this image real or virtual?

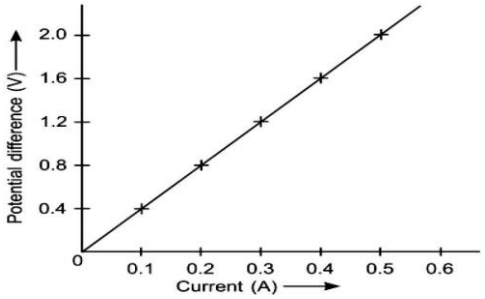
(iii) The given ray diagram depict the correct explanation of the image formed by one surface of the spoon. Name the surface which can form the image as depicted in given ray diagram?



OR

(iv) Tanu was trying to form image using a concave mirror. She got an inverted and real image of same size of the object. Given figure shows four possible positions of the image formed. Figure out the correct position and justify it.

39. (a) A child draws a V-I graph for a nichrome wire which is shown below. Study the graph and state what do you infer from this graph. State the law which helps you to find the inference.

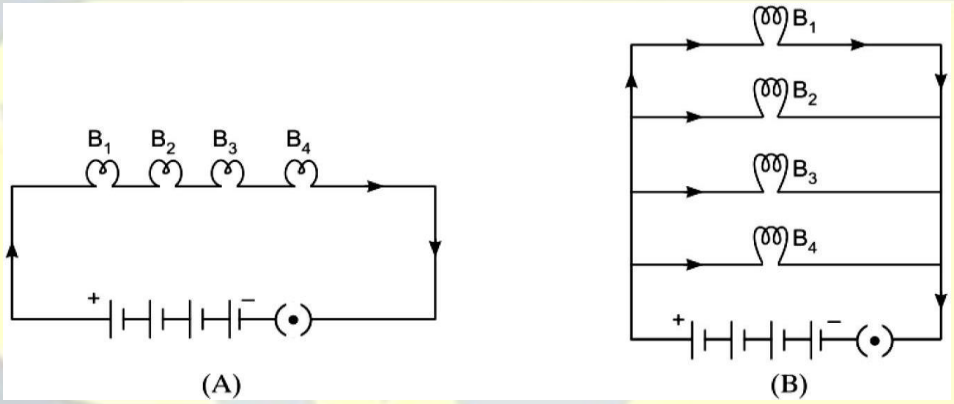


(b) Draw a labelled circuit diagram to obtain such a law.

(c) A nichrome wire having resistance 10 ohms has length l and area of cross-section A. What would be the resistance of another wire of same material having length $l/2$ and area of cross- section 2A?

OR

Study the given circuit carefully in which four bulbs are connected in (A) series



and in (B) parallel with a battery of 6 V and answer the following questions.

(a) Will the bulbs in both the circuits glow with the same brightness? Justify your answer.

(b) What will happen to the glow of bulbs in circuit (i) if bulb B3 gets fused?

(c) An electric hair dryer rated 750 W is connected to 220 V. Find:

(i) The current drawn from the mains.

(ii) Electric energy consumed if the dryer is used for 10 minutes daily in the month of November.

(iii) Total cost of energy consumed if the rate of one unit is Rs. 6.