

TIME -3 Hrs.

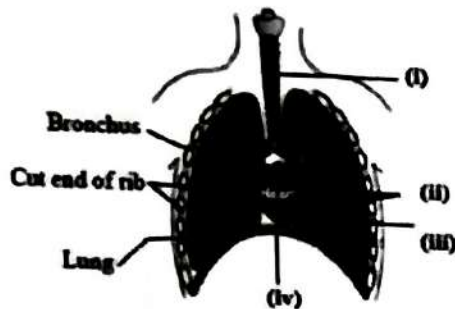
M.M -80

IMPORTANT INSTRUCTIONS-

1. Question paper comprises five sections A,B,C,D & E. There are 39 questions in the question paper. All questions are compulsory.
2. Section -A comprises Question No. 1-20. All questions are of one mark each. Section-B comprises Question No.21-26 are of short answer type- 1 questions carrying 2 marks each.
3. Section-C comprises Question No.27-33 are of short answer type- 2 questions carrying 3 marks each.
4. Section-D comprises Question No.34-36 are of long answer type carrying 5 marks each. Section-E comprises Question No. 37-39 are case based carrying 4 marks each.

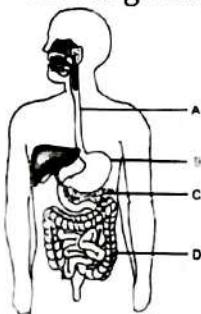
SECTION A

1. Carefully study the diagram of the human respiratory system with labels (i), (ii), (iii) and (iv). Select the option which gives correct identification and main function and / or characteristic.



- (a) (i) Trachea : It is supported by bony rings for conducting inspired air.
 - (b) (ii) Ribs: When we breathe out, ribs are lifted.
 - (c) (iii) Alveoli: Thin-walled sac like structures for exchange of gases
 - (d) (iv) Diaphragm : It is pulled up when we breathe in.
2. Two pink coloured flowers on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of cross will be:
 - (a) Double fertilisation
 - (b) Self pollination
 - (c) Cross pollination
 - (d) Triple fusion
 3. Glucagon is secreted by

(a) Liver	(b) Pancreas
(c) Thyroid	(d) Adrenal
 4. From the given picture of the digestive system, identify the part labelled as gastric gland.



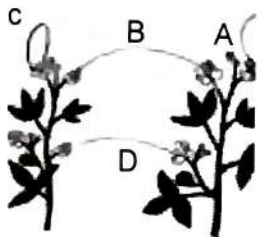
- (a) A
- (b) B
- (c) C
- (d) D

5. The image shows the transport of gases in the body through the heart and lungs.



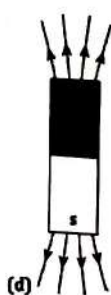
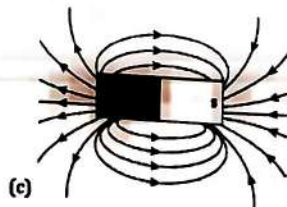
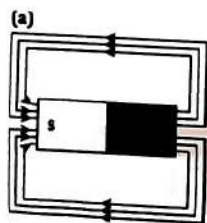
Which of the following option shows the transport of oxygen to the cell correctly?

- (a) Lungs → pulmonary vein → left atrium → left ventricle → aorta → body cells
 - (b) Lungs → pulmonary vein → right atrium → right ventricle → aorta → body cells
 - (c) Lungs → pulmonary artery → left atrium → left ventricle → vena cava → body cells
 - (d) Lungs → pulmonary artery → right atrium → right ventricle → vena cava → body cells
6. The diagram shown below depicts pollination.



Choose the options that will show a maximum variation in the offspring.

- (a) A, B and C
 - (b) B and D
 - (c) B, C and D
 - (d) A and C
7. A student learns that magnetic field strength around a bar magnet is different at every point. Which diagram shows the correct magnetic field lines around a bar magnet?



DIRECTION: Following questions contains an Assertion followed by Reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

- (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

18. Assertion: Testes lie outside the body.

Reason: Sperms require a temperature more than the body temperature for development.

19. Assertion (A): On changing the direction of flow of current through a straight conductor, the direction of a magnetic field around the conductor is reversed.

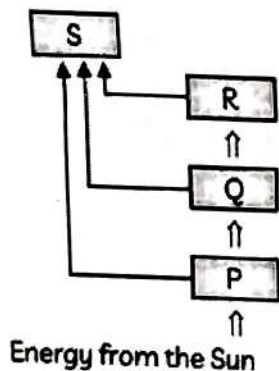
Reason (R): The direction of magnetic field around a conductor can be given in accordance with left hand thumb rule.

20. Assertion (A): When HCl is added to zinc granules, a chemical reaction occurs

Reason (R): Evolution of a gas and change in colour indicate that the chemical reaction is taking place.

SECTION B

21. The figure shown below represent the energy flow in our biosphere. Refer to the diagram and answer the questions on the basis of the diagram given

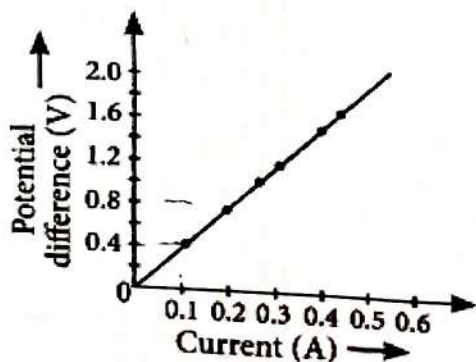


- (A) Name the boxes represented by P, Q, and R.
- (B) What is S and why is it linked with all three boxes?

22. What is reflex arc? Draw a flow chart showing the sequence of events which occur during sneezing.

23. Refractive index of diamond with respect to glass is 1.6 and absolute refractive index of glass is 1.5. Find out the absolute refractive index of diamond.

24. A V-I graph for a nichrome wire is given below. What do you infer from this graph? Draw a labeled circuit diagram to obtain such a graph.



$$\frac{3 \times 10^8}{1} = 1.5$$

$$\frac{2.4}{300} = 1.25$$

$$\frac{1.25}{1.6} = \frac{2.5}{4} = \frac{5}{8}$$

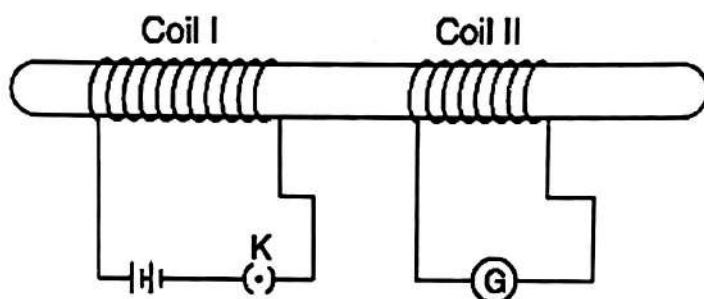
$$\frac{2.4}{300} \times \frac{5}{8} = \frac{2.4 \times 5}{300 \times 8} = \frac{12}{2400} = \frac{1}{200}$$

SECTION E

37. 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 or for having and bringing up children. Various contraceptive devices are being used by human beings to control the size of the population.

1. What are IUCDs?
2. Name any two bacterial infections that are sexually transmitted.
3. Explain any 2 methods adopted by female OR male that help to avoid unwanted pregnancies.

38. Two coils C1 and C2 are wrapped around a non-conducting cylinder. Coil C1 is connected to a battery and key and C2 with galvanometer G. On pressing the key (K), current starts flowing in the coil C1.



State your observation in the galvanometer.

- (a) When key K is pressed on.
 - (b) When current in the coil C1 is switched off.
 - (c) When the current is passed continuously through coil C1.
 - (d) Name and state the phenomenon responsible for the above observation.
39. The chemical reactivity of an element depends upon its electronic configuration. All elements having less than eight electrons in the outermost shell show chemical reactivity. During chemical reactions, atoms of all elements tend to achieve a completely filled valence shell. Metals are electropositive in nature. They have tendency to lose one or more electrons present in the valence shell of their atoms to form cations and achieve nearest noble gas configuration. The compounds formed by the transfer of electrons from one element to other are known as ionic or electrovalent compounds.
- (i) Write the electronic configuration of Mg^{2+} ion?
 - (ii) Show the formation of $MgCl_2$ by electron transfer method.
 - (iii) Why ionic compounds have high melting and boiling points?
 - (iv) What happens when Magnesium chloride is dissolved in water?

OR

What happens when sodium chloride is dissolved in water?