

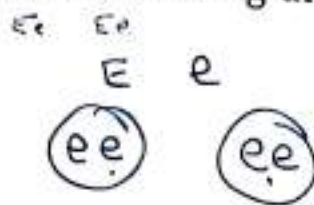
IMPORTANT INSTRUCTIONS-

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.
3. Section-B comprises Question No.21-26 are of short answer type- 1 questions carrying 2 marks each.
4. Section-C comprises Question No.27-33 are of short answer type- 2 questions carrying 3 marks each.
5. Section-D comprises Question No.34-36 are of long answer type carrying 5 marks each.
6. Section-E comprises Question No. 37-39 are case based carrying 4 marks each.

SECTION - A

1. A farmer wants to grow banana plants genetically similar enough to the plants already available in his field. Which one of the following methods would you suggest for this purpose?
 - a) Regeneration
 - b) Budding
 - c) Vegetative propagation
 - d) Sexual reproduction
2. Height of a plant is regulated by:
 - a) DNA which is directly influenced by growth hormone.
 - b) Genes which regulate the proteins directly.
 - c) Growth hormones under the influence of the enzymes coded by a gene.
 - d) Growth hormones directly under the influence a gene.
3. A sportsman, after a long break of his routine exercise, suffered muscular cramps during a heavy exercise session. This happened due to:
 - a) lack of carbon dioxide and formation of pyruvate.
 - b) presence of oxygen and formation of ethanol.
 - c) lack of oxygen and formation of lactic acid.
 - d) lack of oxygen and formation of carbon dioxide
4. Which of the following features relates to biodegradable substances?
 - a) Broken down by biological processes
 - b) Remain inert
 - c) Persist in environment for long time
 - d) May harm the ecosystem.

5. Attached earlobes in humans is an inherited condition. The alleles for attached earlobes is recessive. What are the chances of parents both having attached earlobes to have a child with attached earlobes
- a) 0% b) 25%
c) 75% d) 100%
6. The isomeric pair is
(a) Ethane and propane
(b) Propane and butane
(c) Ethane and ethane
(d) Butane and 2-methylpropane
7. Vinegar is a solution of
(a) 30% - 40% acetic acid in alcohol
(b) 5% - 8% acetic acid in alcohol
(c) 5% - 8% acetic acid in water
(d) 15% -20% acetic acid in water
8. A substance added to food containing fats and oils is called
(a) Oxidant
(b) Rancid
(c) Coolant
(d) Antioxidant
9. When carbon dioxide is passed through lime water,
(a) calcium hydroxide is formed
(b) white precipitate of CaO is formed
(c) lime water turns milky
(d) colour of lime water disappears.
10. Acetic acid is weak acid because
(a) Its aqueous solution is acidic
(b) It is highly ionised
(c) It is weakly ionised
(d) It contains the COOH group.
11. What is formed when zinc reacts with sodium hydroxide?
(a) Zinc hydroxide and sodium
(b) Sodium zincate and hydrogen gas
(c) Sodium zinc-oxide and hydrogen gas
(d) Sodium zincate and water
12. Sodium carbonate is a basic salt because it is a salt of a
(a) strong acid and strong base
(b) weak acid and weak base
(c) strong acid and weak base
(d) weak acid and strong base.



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ee ee ee ee

13. A person gets out in the sunlight from a dark room. How does his pupil regulate and control the light entering the eye?
- (a) The size of the pupil will decrease, and less light will enter the eye
 - (b) The size of the pupil will decrease, and more light will enter the eye
 - (c) The size of the pupil will remain the same, but more light will enter the eye
 - (d) The size of the pupil will remain the same, but less light will enter the eye
14. Rahul conducts an experiment using an object of height of 10 cm and a concave lens with a focal length of 20 cm. The object is placed at a distance of 25 cm from the lens. Can the image be formed on a screen?
- (a) Yes, as the image formed will be real
 - (b) Yes, as the image formed will be erect
 - (c) No, as the image formed will be virtual
 - (d) No, as the image formed will be inverted
15. The image of an object formed by concave lens is
- a) virtual
 - b) real
 - c) erect
 - d) Both (a)&(c)
16. While driving in winter, through dense fog, one can see some rays from headlights emitted by vehicle reaching towards us is due to
- a) scattering of light
 - b) atmospheric refraction
 - c) reflection of light
 - d) dispersion of light
17. Which wire carries current from source to the distribution board.
- a) neutral wire
 - b) earth wire
 - c) live wire
 - d) Both (a) & (b)

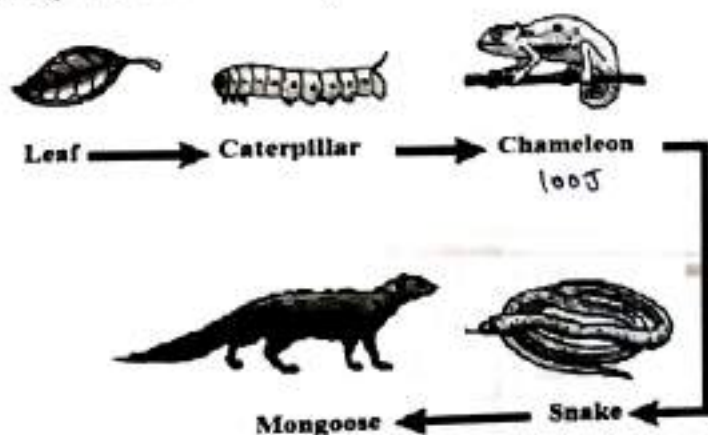
In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

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

18. Assertion: Probability of survival of an organism produced through sexual reproduction is more than that of organism produced through asexual mode.
Reason: Variations provide advantages to individuals for survival. .
19. Assertion: Magnetic field inside a solenoid is in straight lines but while coming out of a solenoid, they diverge and move far apart.
Reason: The magnetic field is maximum inside a solenoid and starts to decrease as we move away from the solenoid.
20. Assertion (A): HCl produces hydronium (H_3O^+) and chloride ions in aqueous solution
Reason (R): In presence of water, bases give H^+ ions.

SECTION - B

21. (a) Give any 2 functions of cerebellum.
(b) How nerve impulse travels from one neuron to another?
22. Study the food chain given below and answer the questions that follow:



- a) If the amount of energy available at the third trophic level is 100 joules, then how much energy will be available at the producer level? Justify your answer.
- b) Is it possible to have 2 more trophic levels in this food chain just before the fourth trophic level? Justify your answer.
23. Sodium hydrogen carbonate is a basic salt". Justify this statement. How is it converted into washing soda.
24. State briefly the cleansing action of soaps.
25. Absolute refractive Index of some of material is tabulated below
- | Material | Rock salt | Kerosene | Water | Diamond |
|------------|-----------|----------|-------|---------|
| Refractive | 1.54 | 1.44 | 1.33 | 2.42 |
- i) In which of these does light travel fastest and why?
ii) Arrange these materials in ascending order of their optical densities.
26. Ammeter burns out when connected in parallel. Give any 2 reasons

SECTION - C

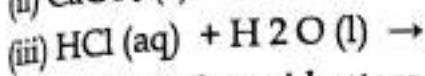
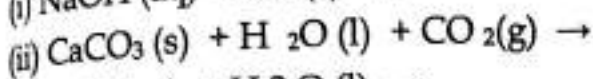
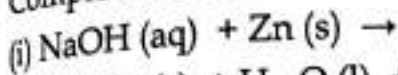
27. With the help of labeled diagram explain the phenomenon of chemotropism.

28. Explain any 3 functions of different types of digestive enzymes.

29. Write any one function of each-

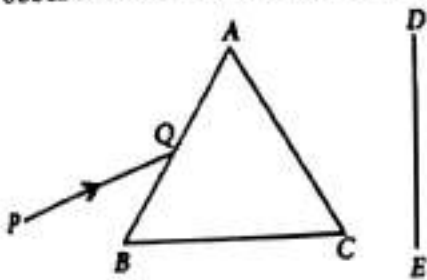
- (a) Alveoli
- (b) Pericardium
- (c) Chromosomes

30. Complete and balance the following chemical equations :



31. Why is silver bromide stored in dark bottles in the laboratories? Write the chemical equation to justify your answer.

32. A narrow PQ of white light is passing through a glass prism ABC as shown in the diagram. Trace it on your answer sheet and show the path of the emergent beam as observed on the screen DE.



(i) Write the name and cause of the phenomenon observed.

(ii) Where else in nature is this phenomenon observed?

(iii) Based on this observation, state the conclusion which can be drawn about the constituents of white light.

33. a) Draw magnetic field lines showing the magnetic field inside and outside the current carrying solenoid?

b) State three factor on which magnetic field produced by a current carrying solenoid depends.

write any 3 Properties of magnetic field lines

SECTION - D

34. (a) Why is it not possible to reconstruct the whole organism from a fragment in complex multicellular organisms?

(b) Sexual maturation of reproductive tissues and organs are necessary link for reproduction. Elucidate.

(c) What happens if egg is fertilized?

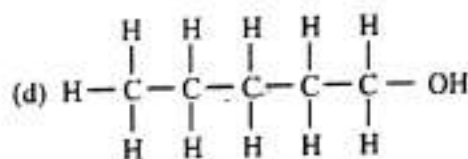
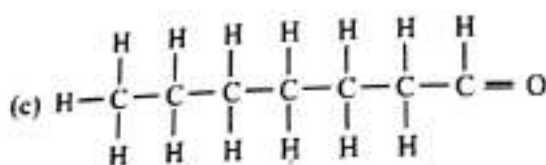
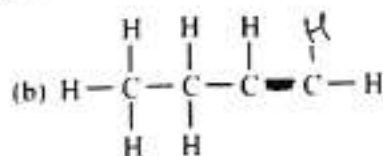
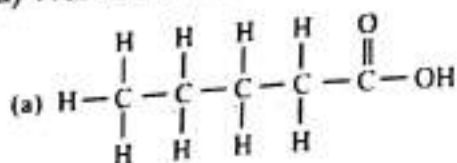
OR

(a) What are STDs? Give any 2 examples.

(b) Explain how the uterus and placenta provide necessary conditions for proper growth and development of the embryo after implantation.

(c) How can pregnancy be prevented surgically?

35. (a) Write the names of the following compounds.



b) Write the esterification reaction. .

36. a) Draw magnetic field lines showing the magnetic field inside and outside the current carrying solenoid.

b) State three factors on which magnetic field produced by a current carrying solenoid depends.

SECTION - E

Read the following paragraphs and answer the questions that follow-

37. Pooja has green eyes while her parents and brother have black eyes. Pooja's husband Ravi has black eyes while his mother has green eyes and father has black eyes.

(a) On the basis of the above given information, is the green eye colour a dominant or recessive trait? Justify your answer.

(b) What is the possible genetic makeup of Pooja's brother's eye colour?

(c) What is the probability that the offspring of Pooja and Ravi will have green eyes?

(d) Also, show the inheritance of eye colour in the offspring with the help of a suitable cross.

OR

50% of the offspring of Pooja's brother are green eyed. With help of cross show how this is possible.

38. Read the following and answer the questions:

Marble's popularity began in ancient Rome and Greece, where white and off-white marble were used to construct a variety of structures, from hand-held sculptures to massive pillars and buildings.

(i) What is the chemical formula of marble?

(ii) Write the reaction of reduction of calcium oxide to form calcium using sodium metal.

(iii) Which compound acts as an oxidizing agent in above reaction?

(iv) Write the reaction for decomposition of marble compound.

OR

39. (iv) What happens when CO_2 gas is passed through lime water. Write the reaction. When we can see that, as the applied voltage is increased the current through the wire also increases. It means that, the potential difference across the terminals of the wire is directly proportional to the electric current passing through it at a given temperature. Thus, $V = IR$

Where R is the proportionality constant called as resistance of the wire. Thus, we can say that the resistance of the wire is inversely proportional to the electric current. As the resistance increases current through the wire decreases. The resistance of the conductor is directly proportional to length of the conductor, inversely proportional to the area of cross section of the conductor and depends on the nature of the material from which conductor is made. Thus $R = \frac{\rho l}{A}$, where ρ is the

resistivity of the material they are classified as conductors, insulators and semiconductors. It is observed that the resistance and resistivity of the material varies with temperature. And hence there are vast applications of these materials based on their resistivity. The SI unit of resistance is ohm while the electric current is ampere. The potential difference is measured in volt. Conductors are the materials which are having less resistivity or more conductivity and hence they are used for transmission of electricity. Alloys are having more resistivity than conductors and hence they are used in electric heating devices. While insulators are bad conductors of electricity.

1) What is SI unit of resistivity?

2) What is variable resistance?

3) Why is tungsten used in electric bulbs?

4) What do you mean by potential difference? Give its SI unit also.