SUMMER VACATION HOMEWORK

CLASS XII

COMPUTER SCIENCE.

SUMMER BREAK HOLIDAY HOMEWORK 2025-26 CLASS-XII SUBJECT –COMPUTER SCIENCE [083]

Part 1: Basic Dictionary Operations Create a Periodic Table Dictionary Create a dictionary periodic_table where the keys are the element symbols and the values are dictionaries containing: atomic_number (the atomic number of the element), name (the full name of the element), atomic_weight (the atomic weight of the element), group (the group in the periodic table). Perform following operations on Dictionary

• Add the elements to the dictionary:

• Print the periodic_table dictionary after adding the elements.

• Access Element Information

• Write Python code to access and print the following information from the dictionary:

• The atomic number of Carbon.

• The atomic weight of Oxygen.

• The name of the element with the symbol

• Update Atomic Weight

• Print the updated periodic table dictionary to confirm the change.

• Delete an Element

• Print the dictionary after deletion.

• Add New Element

• Print the updated dictionary.

• Nested Dictionaries and Advanced Queries

PART 2-

DESIGN FLOWCHART FOR INVESTIGATORY PROJECT[CHOOSE YOURSELF] FOR CLASS –XII COMPUTER SCIENCE PRACTICAL ----------***----------

CHEMISTRY

Q1). Assertion and Reason type question.

Given below are two statements labelled as Assertion (A) and Reason (R) Select the most appropriate 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

1) Assertion (A): Azeotropic mixtures are formed only by non-ideal solution and they may have boiling points either greater than both the components or less than both the components.

Reason(R): The composition of the vapour phase is same as that of the liquid phase of an azeotropic mixture

2) Assertion(A): Vapour pressure of a liquid is constant at a constant temperature

Reason (R): At equilibrium rate of evaporation becomes equal to the rate of condensation.

3) Assertion(A): 0.1M NaCl will have same osmotic pressure as that of 0.1M Urea solution.

Reason(R): Solution with same concentration will have same osmotic pressure.

4)Assertion(A): Molecular mass of benzoic acid when determined by colligative properties is found high.

Reason(R): Dimerization of benzoic acid.

5) Assertion(A): A raw mango placed in a saline solution loses water and shrived into pickle.

Reason(R): Through the process of reverse osmosis, raw mango shrived into pickle. (CBSE 2022

6)Assertion (A): During electrolysis of aqueous copper sulphate solution using copper electrodes hydrogen gas is released at the cathode.

Reason(R) The electrode potential of Cu2+ /Cu is greater than that of H^+/H 2

7) Assertion (A) : Conductivity decreases with decrease in concentration of electrolyte.

Reason (R) : Number of ions per unit volume that carry the current in a solution decreases ondilution

8)Assertion(A): The order of reaction can be zero or fractional.

Reason: The order of a reaction cannot be determined from a balanced chemical reaction.

9)Assertion: The order and molecularity of a reaction are always the same.

Reason: Order is determined experimentally whereas molecularity by a balanced elementary reaction.

10) Assertion (A): Electrolytic cells require an external source of energy to drive the reaction.

Reason (R): Electrolytic cells convert electrical energy into chemical energy.

11) Assertion (A): Conductivity increases with an increase in temperature for electrolytes.

Reason (R): Higher temperatures lead to increased ion mobility in solutions.

(Q2) MCQ

1)The Nernst equation relates which of the following quantities? (2022)

a) Concentration and temperature b) Electrode potential and concentration

c) Current and voltage d) Charge and mass

2)The Faraday's first law of electrolysis states that: (2022)

a) The amount of substance deposited is directly proportional to current and time.

b) The amount of substance deposited is inversely proportional to current.

c) The total charge passed through an electrolyte is constant. d) None of these

3)An electrochemical cell can behave like an electrolytic cell when _____.

a)Ecell=0 b) Ecell>Eext c)Eext>Ecell d) Ecell=Eext

4)Zinc can be coated on iron to produce galvanized iron but the reverse is not possible. It is because

a) zinc has lower negative electrode potential than iron

b) zinc has higher negative electrode potential than iron

c) zinc is lighter than iron d) zinc has lower melting point than iron

5) The standard reduction potentials of X, Y, Z metals are 0.52, -3.03, -1.18 respectively. The order of reducing power of the corresponding metals is:

(a) Y > Z > X (b) X > Y > Z (c) Z > Y > X (d) Z > X > Y

6) For a cell reaction involving two electrons change the standard emf of the cell is found to be 0.295 V at 25°C. The equilibrium constant for the reaction at 25°C will be:

(a) 2.95×10^2 (b) 10 (c) 1 × 1010 (d) 1 × 10-10

7) Which of the following is not a good conductor?

(a) Cu (b) NaCl (aq) (c) NaCl (molten) (d) NaCl(s)

8) How many coulombs are required for the oxidation of 1 mole of H2O to O2?

(a) 1.93 × 105 C (b) 9.65 × 104 C (c) 3.86 × 105 C (d) 4.825 × 105 C

9) The molal elevation constant depends upon

(a) nature of solute. (b) Nature of the solvent.

(c) vapour pressure of the solution. (d) Enthalpy change.

1. CASE-STUDY BASED QUESTION.

Scuba divers must cope with high concentrations of dissolved gases while breathing air at high pressure underwater. Increased pressure increases the solubility of atmospheric gases in blood. When the divers come towards surface, the pressure gradually decreases. This releases the dissolved

When the divers come towards surface, the pressure gradually decreases. This releases the dissolved gases and leads to the formation of bubbles of nitrogen in the blood. This blocks capillaries and creates a medical condition known as bends, which are painful and dangerous to life. To avoid bends, as well as the toxic effects of high concentrations of nitrogen in the blood, the tanks used by scuba divers are filled with air diluted with helium, nitrogen, and oxygen.

1)Scuba divers carry the cylinder consisting the mixture of gases diluted in air

A) O2, He, CO2 B) O2, He, N2 C) O2, He, Ne D) O2, Ar, N2

2)If scuba divers do not carry the proper diving device along with appropriate cylinder containing suitable mixture of required gases, meant for breathing support, when they come to surface they experience

A) Blood clots B) Scratches on the skin C) Burst capillaries D) causes bends

SUBJECT –BIOLOGY .

LESSON- **SEXUAL REPRODUCTION IN FLOWERING PLANTS**

Knowledge and Understanding (Recall & Explain)

1. Define pollination.

2. Name the male reproductive part of a flower.

3. State the function of the ovary in a flower.

4. List the types of pollination.

5. Describe the structure of a typical stamen.

6. Explain the term "double fertilization."

7. What is the role of pollen tube in fertilization?

8. Identify the parts of a carpel.

9. Distinguish between self-pollination and cross-pollination.

10. What is the role of the stigma in reproduction?

Application-Based Questions

11. Given a diagram of a flower, label the reproductive parts.

12. Predict what would happen if a flower's anthers were removed.

13. Suggest why brightly colored petals are common in insect-pollinated flowers.

14. If a plant is wind-pollinated, what floral adaptations would you expect?

15. Apply your understanding to explain why seedless fruits are produced in some plants.

16. A plant species depends on bees for pollination. What might happen if bee populations decline?

17. How can artificial pollination be useful in agriculture?

18. Use your knowledge of plant reproduction to suggest a method of producing hybrid seeds.

19. Identify the reason why some flowers produce nectar.

20. Apply knowledge of pollen germination to explain how fertilizers might affect reproduction.

Analytical Thinking

21. Compare the process of pollination in wind vs. insect-pollinated flowers.

22. Analyze the advantages and disadvantages of self-pollination.

23. Why is cross-pollination considered to promote genetic diversity?

24. Differentiate between the structures of monocot and dicot flowers.

25. Analyze the importance of synchrony in pollen release and stigma receptivity.

26. Examine the role of synergids during fertilization.

27. Why might a plant evolve mechanisms to avoid self-pollination?

28. Identify potential reasons for failure in fertilization.

29. Interpret the evolutionary significance of double fertilization in angiosperms.

30. Compare the reproductive structures of gymnosperms and angiosperms.

Higher-Order Thinking (Evaluation & Creation)

31. Evaluate the efficiency of artificial pollination in comparison to natural pollination.

32. Design an experiment to test the effect of wind on pollination rate.

33. Justify the use of biotechnology in improving plant reproduction.

34. Propose a breeding technique to improve flower yield in a specific crop.

35. Construct a model showing the journey of pollen to the ovule.

36. Develop a flowchart of the steps involved in sexual reproduction in flowering plants.

37. Assess the impact of environmental pollution on plant reproduction.

38. Debate the ethical aspects of genetically modifying flowering plants for reproduction.

39. Compose a poem or story describing the life cycle of a flowering plant.

40. Invent a device to aid pollination in a greenhouse setup.

Competency-Linked Situational Items

41. Your school garden has mango and papaya trees. Identify which is likely to be unisexual and why.

42. A plant has sticky pollen and large colorful petals. Suggest its likely pollinator.

43. You observe a flower with both reproductive parts but still relies on cross-pollination. Explain why.

44. While dissecting a flower, you see a large, sticky stigma. What does this indicate about the mode of pollination?

45. Seeds are not forming on a hibiscus plant. Suggest reasons and remedies.

46. A botanist wants to produce a hybrid plant. Which part should be removed and why?

47. Why are seed banks important in conserving plant biodiversity?

48. In a lab setup, a pollen tube doesn't reach the ovule. What factors could be responsible?

49. A fruit has no seeds. What type of reproduction might have taken place?

50. Draw Transverse section of Young anther with all layers, Mature pollen grain, Typical ovule, Mature embryo sac, Pistill showing path of pollen tube growth, Typical Dicot and Monoct embryo, structure of Castor seed and Maize grain?

LESSON – **HUMAN REPRODUCTION**

Knowledge-Based (Recall)

1. Define fertilization.

2. Name the primary male and female reproductive organs.

3. What is the function of the uterus?

4. Identify the hormone responsible for ovulation.

5. Label the parts of the male reproductive system.

6. List the stages of the menstrual cycle.

7. What is the role of the placenta?

8. State the site of sperm production.

9. Mention two secondary sexual characteristics in males.

10. Which structure in females receives the fertilized egg?

Understanding-Based

11. Explain how the menstrual cycle is regulated by hormones.

12. Describe the process of implantation.

13. Differentiate between identical and fraternal twins.

14. Describe the function of the fallopian tube.

15. Why is the scrotum located outside the body?

16. How does puberty affect males and females differently?

17. Explain the importance of amniotic fluid.

18. Describe the changes in hormone levels during pregnancy.

19. Interpret the role of FSH and LH in reproduction.

20. Why does menstruation occur?

Application-Based

21. Predict the outcome if the fallopian tubes are blocked.
22. Suggest ways to maintain reproductive health.
23. A woman has irregular periods; what might be the causes?
24. Explain how birth control pills prevent pregnancy.
25. Use a diagram to trace the path of sperm from formation to ejaculation.
26. Apply knowledge of fertilization to explain how IVF works.
27. How would an imbalance in estrogen affect the menstrual cycle?
28. Explain how understanding of human reproduction helps in family planning.
29. Apply the stages of labor to identify the correct birth phase in a scenario.
30. Analyze a hormonal chart to identify when ovulation occurs.

Analysis-Based

31. Compare and contrast sexual and asexual reproduction.
32. Analyze the menstrual cycle to determine the fertile period.
33. Evaluate how lifestyle affects reproductive health.
34. Distinguish between ovulation and menstruation using a flowchart.
35. Examine the effects of reproductive diseases like STIs.
36. Compare human reproductive strategies with those of mammals.
37. Why do reproductive technologies raise ethical issues?
38. Analyze the roles of progesterone and estrogen during pregnancy.
39. How does the structure of sperm aid in fertilization?
40. Interpret a graph showing hormone levels across the menstrual cycle.

Evaluation & Higher Order Thinking

41. Assess the impact of early pregnancy on teenage health.
42. Evaluate pros and cons of various contraceptive methods.
43. Formulate a campaign to educate peers on reproductive health.
44. Justify the need for sex education in schools.
45. Develop a plan to promote awareness of STDs in your community.
46. Debate: Should IVF be made freely available to all?
47. Critique the portrayal of human reproduction in media.
48. Propose improvements in reproductive healthcare access.
49. Defend the role of hormones in maintaining pregnancy.

50. Draw Diagrammatic representation of Spermatogenesis and Oogenesis, Sectional view of semniferous tubules(enlarged),Sectional view of ovary, Diagrammatic representation of various events during menstrual cycle,

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