

HOLIDAYS HOMEWORK OF ALL SUBJECTS

CLASS XII

BIOLOGY HOLIDAY HOMEWORK

- Complete the assignment from UNIT -1 REPRODUCTION .
- Complete your practical file.

ASSIGNMENT -1

REPRODUCTION IN FLOWERING PLANTS

UNIT: REPRODUCTION | CHAPTER: SEXUAL REPRODUCTION IN FLOWERING PLANTS

Time: 1.5 Hours | Max. Marks: 50

SECTION A: MCQ (1 Mark Each)

1. The hilum in a typical angiospermic ovule represents the junction between: **(CBSE 2023)**
a) Integuments and embryo sac b) Embryo sac and nucellus
c) Body of the ovule and the funicle d) Nucellus and the funicle
2. In a majority of angiosperms, the flower is chasmogamous, meaning: **(CBSE 2022)**
a) It remains closed forever b) Anthers and stigma are exposed
c) It is always autogamous d) It does not require pollinators
3. An undifferentiated sheath covering the root cap of a monocotyledonous embryo is: **(CBSE 2024)**
a) Scutellum
b) Coleorhiza
c) Coleoptile
d) Epiblast
4. How many male gametes are produced by a single pollen grain? **(CBSE 2021)**
a) One
b) Two
c) Three
d) Four
5. Which part of the gynoecium determines the compatible nature of the pollen grain? **(CBSE 2020)**
a) Ovary
b) Style
c) Stigma
d) Thalamus

SECTION B: ASSERTION-REASONING (1 Mark Each)

Directions: (a) Both A and R are true, R is the correct explanation. (b) Both A and R are true, R is NOT the correct explanation. (c) A is true, R is false. (d) A is false, R is true.

6. **Assertion (A):** Pollen grains can be well-preserved as fossils.
Reason (R): The exine of pollen grains is made of sporopollenin, one of the most resistant organic materials. **(CBSE 2023)**
7. **Assertion (A):** Cleistogamous flowers are invariably autogamous.
Reason (R): These flowers never open, ensuring no cross-pollination. **(CBSE 2022)**
8. **Assertion (A):** The tapetum is the innermost layer of the microsporangium.
Reason (R): Tapetal cells are usually multinucleate and provide nourishment to developing pollen. **(CBSE 2024)**
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SECTION C: VERY SHORT ANSWER (2 Marks Each)

9. Differentiate between geitonogamy and xenogamy. **(CBSE 2023)**
10. Why are some fruits called "false fruits"? Give two examples. **(CBSE 2022)**
11. Describe the structure of a mature male gametophyte of an angiosperm. **(CBSE 2021)**
12. What is apomixis? Mention its importance in the hybrid seed industry. **(CBSE 2020)**
13. Draw a neat, labeled diagram of an anatropous ovule. **(CBSE 2024)**
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SECTION D: SHORT ANSWER (3 Marks Each)

14. Explain the process of microsporogenesis in angiosperms. **(CBSE 2023)**
15. "Double fertilization is a unique feature of flowering plants." Explain this statement by describing the two fusion events. **(CBSE 2022)**
16. List three outbreeding devices developed by flowering plants to discourage self-pollination. **(CBSE 2021)**
17. Describe the development of a monocot embryo with a labeled diagram of a maize grain. **(CBSE 2020)**
18. Distinguish between chasmogamous and cleistogamous flowers. Why do cleistogamous flowers produce assured seed sets? **(CBSE 2024)**
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SECTION E: CASE-BASED QUESTIONS (4 Marks Each)

19. **Case Study:** Pollen-pistil interaction is a dynamic process involving pollen recognition followed by promotion or inhibition of the pollen. This determines whether the pollen will germinate on the stigma. **(CBSE 2023)**
- What is the chemical basis of pollen recognition? (1M)
 - Mention the role of the filiform apparatus in this interaction. (1M)
 - How does a plant breeder use this interaction for crop improvement? (2M)

20. **Case Study:** A typical angiosperm embryo sac at maturity, though 8-nucleate, is 7-celled. This development starts from a single functional megaspore. **(CBSE 2022)**
- Why is this type of embryo sac called "monosporic"? (1M)
 - Name the cells present at the chalazal end. (1M)
 - Describe the distribution of cells and nuclei within the mature embryo sac. (2M)
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SECTION F: LONG ANSWER (5 Marks Each)

21. (a) Trace the development of a megaspore mother cell into a mature embryo sac.
(b) Draw a labeled diagram of a mature 7-celled, 8-nucleate embryo sac. **(CBSE 2023)**
- OR**
- (a) Explain the different types of pollination based on the source of pollen.
(b) Discuss the various abiotic and biotic agencies of pollination with examples. **(CBSE 2021)**

ASSIGNMENT -2

HUMAN REPRODUCTION

SECTION A: MULTIPLE CHOICE QUESTIONS (1 Mark Each)

- Which of the following depicts the correct pathway of transport of sperms? **(CBSE 2016)**
a) Rete testis → Efferent ductules → Epididymis → Vas deferens
b) Rete testis → Epididymis → Efferent ductules → Vas deferens
c) Rete testis → Vas deferens → Efferent ductules → Epididymis
d) Efferent ductules → Rete testis → Vas deferens → Epididymis
- The shared terminal duct of the reproductive and urinary system in the human male is: **(CBSE 2014)**
a) Urethra b) Ureter c) Vas deferens d) Vasa efferentia
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- Capacitation occurs in: **(CBSE 2017)**
a) Epididymis b) Vas deferens c) Female reproductive tract d) Rete testis
- Which layer of the uterus undergoes cyclical changes during the menstrual cycle? **(CBSE 2023)**
a) Perimetrium b) Myometrium c) Endometrium d) Mesometrium
- The function of the secretions of the prostate gland is to: **(CBSE 2020)**
a) Inhibit sperm activity
b) Attract sperms

- c) Stimulate sperm activity
 - d) None of the above
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SECTION B: ASSERTION-REASONING (1 Mark Each)

Instructions: (a) Both A and R are true, R is the correct explanation. (b) Both A and R are true, R is NOT the correct explanation. (c) A is true, R is false. (d) A is false, R is true.

- 6. **Assertion (A):** The regions outside the seminiferous tubules are called interstitial spaces.
Reason (R): These spaces contain Leydig cells which secrete androgens. **(CBSE 2022)**
 - 7. **Assertion (A):** The female external genitalia includes the ovary.
Reason (R): Ovaries are the primary female sex organs that produce the female gamete. **(CBSE 2021)**
 - 8. **Assertion (A):** Failure of testes to descend into the scrotum causes sterility.
Reason (R): Scrotum helps in maintaining a low temperature for spermatogenesis. **(CBSE 2024)**
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SECTION C: VERY SHORT ANSWER (2 Marks Each)

- 9. Write the location and function of Sertoli cells in humans. **(CBSE 2015)**
 - 10. State the role of the ampullary-isthmic junction in the female reproductive tract. **(CBSE 2022)**
 - 11. Name the glands that constitute the male accessory glands. **(CBSE 2019)**
 - 12. List the functions of the fimbriae and the cervix in the female system. **(CBSE 2023)**
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SECTION D: SHORT ANSWER (3 Marks Each)

- 14. Draw a diagram of the human male reproductive system and label: Testis, Epididymis, Vas deferens, and Prostate gland. **(CBSE 2017/2020)**
 - 15. Explain the structure of the mammary glands in human females. **(CBSE 2016)**
 - 16. Differentiate between the functions of LH and FSH in the human male. **(CBSE 2021)**
 - 17. Describe the histology of the seminiferous tubule with the help of a diagram. **(CBSE 2018)**
 - 18. Write the function of: (a) Corpus luteum, (b) Endometrium, and (c) Acrosome. **(CBSE 2015/2022)**
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SECTION E: CASE-BASED QUESTIONS (4 Marks Each)

- 19. **Case Study:** A 35-year-old male is unable to conceive. Semen analysis shows low sperm count. **(CBSE 2024)**
 - i. Where are sperms produced? (1M)

- ii. Which cells provide nutrition to the sperms? (1M)
 - iii. Explain the pathway of sperm from production to ejaculation. (2M)
20. **Case Study:** The female reproductive system is integrated structurally and functionally to support ovulation and pregnancy. **(CBSE 2023)**
- i. Name the site of fertilization. (1M)
 - ii. Which part of the uterus is involved in strong contractions during delivery? (1M)
 - iii. Explain the role of ovaries as both endocrine and gametogenic organs. (2M)
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SECTION F: LONG ANSWER (5 Marks Each)

21. (a) Draw a labeled diagram of the human female reproductive system.
 (b) Explain the process of oogenesis with a schematic representation. **(CBSE 2014/2022)**
- OR**
- (a) Describe the male reproductive system in detail.
 (b) Explain the role of the scrotum in maintaining the viability of sperms. **(CBSE 2019/2021)**

Class XII – Chemistry Summer Vacation Work

Q1. A solution is prepared by dissolving 2.0 g of a non-electrolyte solute (molar mass = 80 g mol⁻¹) in 100 g of water. The boiling point elevation constant (K_b) of water is 0.512 K kg mol⁻¹ and the boiling point of pure water is 100°C. Calculate the number of moles of solute, the molality of the solution, the elevation in boiling point, and the boiling point of the resulting solution. Also, explain what happens to the boiling point if more solute is added.

Q2. A solution contains 24 g of a non-volatile solute dissolved in 80 g of water. The vapour pressure of the solution at 298 K is 3.0 kPa. When 20 g more water is added, the vapour pressure increases to 3.2 kPa at the same temperature.

Q3. 5.85 g of NaCl is dissolved in 500 g of water. 30% of NaCl dissociates into ions. Calculate the depression in freezing point.

(water = 1.86 K kg mol⁻¹).

Q4. A solution is prepared by mixing 26.0 g of heptane and 35.0 g of octane. The vapour pressures of pure heptane and octane at 373 K are 105.2 kPa and 46.8 kPa respectively. Find the vapour pressure of the solution.

Q5. A solution is prepared by dissolving 10 g of urea (CH₄N₂O) and 11.1 g of CaCl₂ in water to make 1 litre solution at 300 K. CaCl₂ dissociates completely. Calculate the osmotic pressure. (Given: R = 0.0821 L atm mol⁻¹ K⁻¹).

Q6. A 1 litre of a solution at 300 K contains 0.1 M K₂SO₄ (degree of dissociation $\alpha = 0.6$), 0.2 M CH₃COOH (degree of dissociation $\alpha = 0.1$), and 0.1 M benzoic acid in benzene (degree of association $\alpha = 0.5$, forming dimers). K₂SO₄ and CH₃COOH undergo dissociation in aqueous solution, while benzoic acid undergoes association (dimerisation) in benzene.

Calculate the total osmotic pressure of the solution at 300 K.

Q7. Calculate the amount of CaCl₂ (molar mass = 111 g mol⁻¹) which must be added to 500 g of water to lower its freezing point by 2 K, assuming CaCl₂ is completely dissociated. (K_f for water = 1.86 K kg mol⁻¹).

Q8. i) 2 g solute in 500 mL solution gives osmotic pressure = 2.46 atm at 300 K.

(Molar mass = 100 g/mol).

(ii) A solution shows vapour pressure of pure water = 24 mmHg and solution = 23.52 mmHg.

Find relative lowering of vapour pressure.

Q9. (i) 0.5 g of a non-volatile solute is dissolved in 50 g of benzene. The boiling point increases by 0.20 K. Given K_f for benzene = $2.53 \text{ K kg mol}^{-1}$. Find the molar mass of the solute.

(ii) 100 mg of a protein is dissolved in enough water to make 10.0 mL of a solution. If this solution has an osmotic pressure of 13.3 mm Hg at 25°C , what is the molar mass of protein?

($R=0.0821 \text{ L atm K}^{-1}\text{mol}^{-1}$)(760 mm Hg=1 atm).

Q10. (i) A 0.4 m solution of Na_2SO_4 shows a freezing point of -1.86°C . Calculate Van't Hoff factor and degree of dissociation.

(ii) A solution has molality 0.4 m and shows $\Delta T_f = 1.5^\circ\text{C}$. If electrolyte forms 3 ions:

(a) Find degree of dissociation

(b) Predict osmotic pressure at 300 K if solution is 0.4 M.

Subject - Computer science

Write and execute the following programs in your notebook/computer:

1. Write a program to print numbers from 1 to 100 using loop.
2. Write a program to check whether a number is even or odd.
3. Write a program to find the factorial of a number.
4. Write a program to count vowels in a string.
5. Write a program to reverse a string.
6. Write a program to create a list of 10 numbers and print the largest number.
7. Write a function to calculate simple interest.
8. Write a recursive function to find Fibonacci series up to n terms.
9. Write a program to read a file and count number of words.
10. Write a program to copy contents of one file to another.

HOLIDAY HOMEWORK (ENGLISH)

1. **Read the Chapter – Lost Spring (Flamingo Book)** and write its word meanings, theme, summary and question – answers in **English notebook**.

2. **Read the Poem – Keeping Quiet (Flamingo Book)** and write its word meanings, theme, summary and question – answers in **English notebook**.
3. **Read the Chapter – The Tiger King (Vistas Book)** and write its word meanings, theme, summary and question – answers in **English notebook**.
4. You are Smitha/Sunil, Secretary AVM Housing Society. You are going to organize a blood donation camp. **Write a notice** in not more than 50 words, urging the members of your society to come in large numbers for this noble cause. Invent all the necessary details.
5. As Student Editor, **draft a notice** in not more than 50 words for your school notice board inviting articles from the students for your school magazine. You are Rohai / Rupini of Vasant Vihar School, Pune.
6. You are Anand/Arti of 14, Model Town, Delhi. You have seen an advertisement in The Hindu for **the post of Chief Chef** in a 5-Star Hotel. Apply for the job with **complete biodata**. Write in 125-150 words.
7. Do any **Ten (10)** comprehension passages in **English notebook**.

विषय:-हिंदी

- 1)डिजिटल युग में प्रिंट मीडिया का भविष्य"के ऊपर एक लेख लिखिए।(250-300 शब्दों में लिखें।
- 2)बाज़ार दर्शन के आधार पर उपभोक्तावाद किसे कहते हैं अपने शब्दों में लिखें।
- 3)पुराना बाजार और आधुनिक मॉल पर अपने विचार प्रकट करें।
- 4)कल्पना कीजिए कि आप 'भक्तिन' हैं—एक दिन की अपनी दिनचर्या डायरी के रूप में लिखिए।
- 5) यदि बाजार न होता तो.. पर रचनात्मक लेख लिखें।
- 6)समाचार पत्र अथवा पत्रिका से दो गद्यांश चुने और प्रत्येक के पांच -पांच प्रश्न बनाएं और उनके उत्तर दें।
- 7)समाचारपत्र की कटिंग इकट्ठा करें और स्कैप बुक में लगाये जिसमें अलग अलग पृष्ठ की 2-3 कटिंग लगाएं

इसमें शामिल करें:

मुख्य समाचार

अंतरराष्ट्रीय समाचार

मनोरंजन/खेल समाचार

संपादकीय

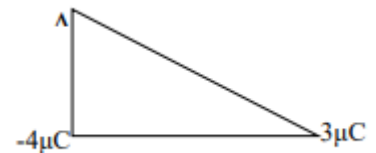
विज्ञापन

PHYSICS

*Solve the given assignment

NUMERICALS

1. Two electric charges $3\mu\text{C}$, $-4\mu\text{C}$ are placed at the two corners of an isosceles right angled triangle of side 1 m as shown in the figure. What is the direction and magnitude of electric field at A due to the two charges?



2. A charge $+Q$ fixed on the Y axis at a distance of 1m from the origin and another charge $+2Q$ is fixed on the X axis at a distance of m from the origin. A third charge $-Q$ is placed at the origin. What is the angle at which it moves?

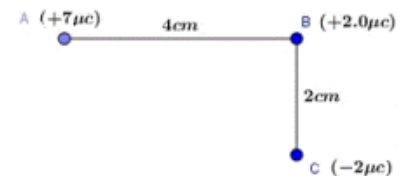
3. Three charges $+Q$, q , $+Q$ are placed respectively, at distance 0, $d/2$ and d from the origin, on the x-axis. If the net force experienced by $+Q$ placed at $x = 0$ is zero, then value of q is

4. An electric field of 1000 V/m is applied to an electric dipole at an angle of 45° . The value of the electric dipole moment is 10^{-29} Cm . What is the potential energy of the electric dipole?

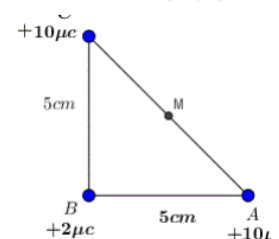
5. The bob of a simple pendulum has a mass of 2 g and a charge of 5.0 C. It is at rest in a uniform horizontal electric field of intensity 2000 V m^{-1} . At equilibrium, the angle that the pendulum makes with the vertical is (take $g = 10 \text{ m s}^{-2}$)

6. Two point charges $4Q$, Q are separated by 1m in air. At what point on the line joining the charges is the electric field intensity zero? Also calculate the electrostatic potential energy of the system of charges, taking the value of charge, $Q = 2 \times 10^{-7} \text{ C}$

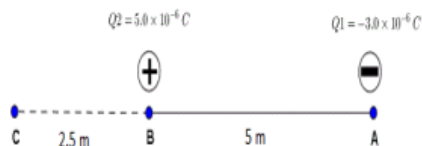
7. What is the net force and its direction that the charges at the vertices A and C of the right triangle ABC exert on the charge in vertex B? |



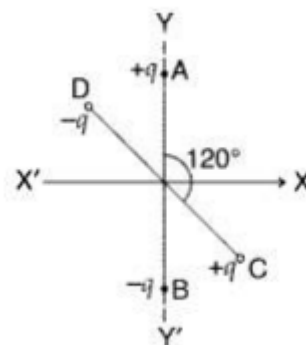
8. Three charges are located at the vertices of a right isosceles triangle as shown below. What is the magnitude and direction of the resultant electric field at the midpoint M of AC?



9. The distance AB between charges Q_1 and Q_2 shown below is 5.0 m. How much work must be done to move charge Q_2 to a new location at point C so that the distance $BC = 2.5 \text{ m}$?



10. Two small identical electrical dipoles AB and CD, each of dipole moment 'p' are kept at an angle of 120° as shown in the figure. What X' is the resultant dipole moment of this combination? If this system is subjected to electric field ($E \rightarrow$) directed along + X direction, what will be the magnitude and direction of the torque acting on this?



CHAPTER-2 ELECTRIC POTENTIAL AND CAPACITANCE

Q1 Three capacitors of capacitances $1\mu\text{F}$, $2\mu\text{F}$ and $4\mu\text{F}$ are connected first in a series combination, and then in parallel combination. Calculate the ratio of their equivalent capacitances.

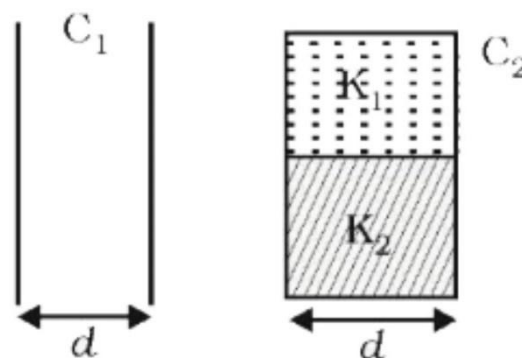
Q2 A capacitor of capacity C is connected with a battery of potential V . The distance between its plates is reduced to half, assuming that the battery remains the same. Then, what will be the new energy given by the battery.

Q3 Three condensers each of capacity C microfarad are connected in series. An exactly similar set is connected in parallel to the first one. The effective capacity of the combination is $4\mu\text{F}$. Then what will be the value of C in microfarad.

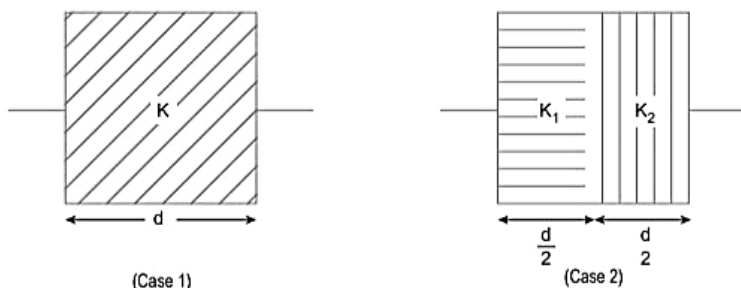
Q4 Two point charges $+2e$ and $-2e$ are situated at a distance of $2.4 \text{ \AA}$ from each other and constitute an electric dipole. This dipole is placed in a uniform electric field of $4.0 \times 10^5 \text{ Vm}^{-1}$. Calculate (i) electric dipole moment, (ii) potential energy of the dipole in equilibrium position (iii) and work done in rotating the dipole through 180° from the equilibrium position.

Q5 A parallel plate capacitor has plate area A and separation d between the plates. The capacitor is connected to a battery of emf V . (i) Find the charge on the capacitor. (ii) The plate separation is decreased to $d/2$. Find the extra charge given by the battery to the positive plate.

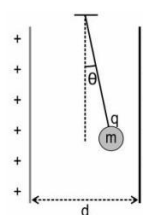
Q6 You are given an air filled parallel plate capacitor C_1 . The space between its plates is now filled with slabs of dielectric constants K_1 and K_2 as shown in C_2 . Find the capacitances of the capacitor C_2 if area of the plates is A and distance between the plates is d .



Q7 The space between the plates of a parallel plate capacitor is completely filled in two ways. In the first case, it is filled with a slab of dielectric constant K . In the second case, it is filled with two slabs of equal thickness and dielectric constants K_1 and K_2 respectively as shown in the figure. The capacitance of the capacitor is same in the two cases. Obtain the relationship between K , K_1 and K_2 .



Q8 A parallel plate capacitor is given as in the diagram. A small ball is suspended by an insulated thread in the space between the plates of the capacitor. The thread makes an angle θ with the vertical at equilibrium. What is the potential difference between the capacitor plates?



Q9 A ball of mass m having a charge q is released from rest in a region where a horizontal electric field E exists. (i) Find the resultant force acting on the ball. (ii) Find the trajectory followed by the ball.

Q10 A capacitor of $2\mu\text{F}$ charged to 50V is connected in parallel with another capacitor of $1\mu\text{F}$ charged to 20V . Calculate the common potential and loss of energy.

ANSWERS

Q1:	Ratio of series to parallel capacitance = $1/7 \mu\text{F}$
Q2	New energy will be twice of initial energy
Q3	Capacitance will be $6 \mu\text{F}$
Q4	Electric dipole moment $p=3.84 \times 10^{-29} \text{C m}$ 2. Potential energy in equilibrium position $U=-1.536 \times 10^{-23} \text{J}$ 3. Work done in rotating the dipole through 180° $W=3.072 \times 10^{-23} \text{J}$
Q5	(i) Initial charge = $Q = \epsilon_0 A V / d$ (ii) Extra charge from battery = $\Delta Q = \epsilon_0 A V / 2d$
Q6	Capacitance $C_2 = (2\epsilon_0 A / d) \times (K_1 K_2 / (K_1 + K_2))$
Q7	Relationship: $2/K = 1/K_1 + 1/K_2$
Q8	Potential difference $E = m g \tan \theta / q$ $E = m g \tan \theta / q$ Potential difference $V = E d = m g d \tan \theta / q$
Q9	Resultant force: $F = \sqrt{(m g)^2 + (q E)^2}$ (ii) Trajectory = straight line
Q10	Common potential $V = 40\text{V}$ - Charge on $C_1 = 80 \mu\text{C}$ - Charge on $C_2 = 40 \mu\text{C}$ - Loss of energy = 0.3 mJ

