

SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOLIDAY HOMEWORK

CLASS XII

SUBJECT	SUBMITTED BY
ENGLISH	MRS POOJA
MATHS	MR. RAKESH RAMPURIA
PHYSICS	MR ONKAR SINGH
CHEMISTRY	MR TONY A.
COMPUTER	MR ABHISHEK BHARDWAJ
BIOLOGY	MR MANJIT SINGH

GENERAL INSTRUCTIONS

INSTRUCTIONS:

1. The holiday homework will be considered as your project work.
2. The marks awarded for this will be counted towards Internal –assessment.
3. On page 1: write -Project Work, name, class, roll number, topic etc

PROJECT WORK

NAME:

CLASS:

SCHOOL NUMBER:

HOUSE:

SECTION

4. Last page of the project will carry the following certificate

CERTIFICATE

This is to certify that I _____ OF Class _____. Have done the project work on my own. It is my own original work as per the guidelines provided by _____ (Name of the teacher).

Signature

Name:

CHEMISTRY

ASSIGNMENT UNIT 1

1. If we place the blood cells in a solution containing less than 0.9% NaCl. It will ----- . Explain
2. The values of Van't Hoff factor 'i' for KNO_3 , NaCl and K_2SO_4 will be -----, ----- and ----- . Give reason
3. The value of Van't Hoff factor for ethanoic acid in benzene is ----- . Why?
4. Which out of 1M NaOH and 1M Na_2SO_4 will have a higher boiling point? Why?
5. In comparison to a 0.01 molar glucose, the depression in freezing point of 0.01M MgCl_2 will be ----- times.
6. Why some solutions show abnormal molecular mass? Explain with the help of suitable examples.
7. The solute particles undergo ----- when $i = 0.3$
8. How will you define molal elevation constant K_b and molal depression constant K_f ?
9. A solution is prepared by dissolving 1.25 g of oil of winter green (methyl salicylate) in 99 g of benzene has a boiling point of 80.31°C . Determine the molar mass of this compound if the boiling point of pure benzene is 80.10°C and K_b for benzene is $2.530\text{K Kg mol}^{-1}$.
10. What type of mixture the rectified spirit is? Explain giving reason.
11. When will a liquid start boiling? Explain.
12. Why is osmotic pressure is considered to better than other colligative properties?

UNIT 2

1. The standard reduction/electrode potentials of some metals are as follows. Arrange them in their increasing order of reducing power. $\text{K} = -2.93\text{V}$, $\text{Ag} = 0.80\text{V}$, $\text{Hg} = 0.79\text{V}$, $\text{Cr} = -0.74\text{V}$
2. How much charge is required for reduction of (a) 1 mol of Al^{3+} (b) 1 mol of MnO_4^- to Mn^{2+}
3. What are the products when dil. H_2SO_4 is electrolyzed using Pt electrodes?
4. Find the products when an aqueous solution of AgNO_3 is electrolyzed using Ag electrodes.
5. When will an electrochemical cell behave like an electrolytic cell?
6. What should be the values of ΔG and E^0 for the spontaneity of the cell?
7. What is the effect of temperature on ionic conductance? Explain.
8. Using E^0 values predict which metal can be used to coat Fe for preventing rusting.
 $\text{Fe} = -0.44\text{V}$, $\text{X} = -2.36\text{V}$, $\text{Y} = -0.14\text{V}$
9. The conductivity of 0.20 M solution of KCl at 298 K is 0.025 S cm^{-1} . Calculate its λ_m .
10. The molar conductivity of 1.5 M solution is $138.9\text{ S cm}^2\text{ mol}^{-1}$. Calculate its conductivity.
11. State the Kohlraush law of independent migration of ions.
12. Why does the conductivity or specific conductance of a solution decrease with dilution?
13. Calculate the degree of dissociation (α) of CH_3COOH if its molar conductivity is $39.05\text{ S cm}^2\text{ mol}^{-1}$. The molar conductivity at infinite dilution for H^+ is 349.6 and for CH_3COO^- = 40.9.
14. Write the reactions taking place in the cell used in hearing aids.
15. The chemistry of corrosion is essentially an electrochemical phenomenon. Give reactions.
16. Calculate ΔG for the reaction at 298 K. $2\text{Cr} + 3\text{Fe}^{2+} \rightarrow 2\text{Cr}^{3+} + 3\text{Fe}$. Given $E^0_{\text{cell}} = 0.30\text{V}$.
17. What are the applications of Kohlraush law?
18. How does molar conductivity vary with increase in concentration of strong electrolytes?
19. State two advantages of $\text{H}_2\text{-O}_2$ type of fuel cell.
20. What type of metal is preferably used for cathodic protection of iron?
21. Which out of 0.1M HCl and 0.1M NaCl, do you expect to have greater λ_m at infinite dilution?
22. Which electrodes are used in fuel cell and why?
23. Why is the equilibrium constant K related to E^0_{cell} and not E_{cell} ?
24. Why does alkaline medium inhibits rusting of iron? Explain.
25. State Faraday's second law of electrolysis.
26. Which cell is generally used in inverters? Give the chemical reactions at anode and cathode?

PHYSICS

ASSIGNMENT CHAPTER1:ELECTRIC CHARGES AND THE FIELDS

Content 1. Complete the following questions from the exercises NCERT PHYSICS BOOK.

Q.NO.1.6, 1.8, 1.9, 1.10, 1.17,1.20,1.21,1.23

CHAPTER1: ELECTROSTATIC POTENTIAL AND CAPACITANCE

2.5, 2.6, 2.7, 2.9, 2.10, 2.11.

* Complete at least 10 numerical on capacitance in series and parallel.

COMPUTER SCIENCE

1. Which of the following is not a valid variable name in Python? Give the reason to justify your answer.

- (i) S S C (ii) Ssc (iii) SsC (iv) ssc1

2. Given a Dictionary `dict={1:'A',2:'B',3:'C',6:'D',4:'E'}` ? What is the output of the command `print(dict[6])`?

3. Evaluate the following expressions:

- (i) $6 + 3 * 4 ** 2 - 5 // 4$
(ii) $12 > 15$ and $15 < 12$ or not $18 > 31$

4. Dry run and write the output of the following Python code:

```
c = 10
def add():
    global c
    c = c + 2
    print("Inside add():",c)
add()
c = 15
print("In main:",c)
```

5. Dry run and write the output of the following Python code:

```
def fun(s):
    n = len(s)
    m=''
    for i in range(0, n):
        if (s[i] >= 'a' and s[i] <= 'm'):
            m = m + s[i].upper()
        elif (s[i] >= 'n' and s[i] <= 'z'):
            m = m + s[i-1]
        elif (s[i].isupper()):
            m = m + s[i].lower()
        else:
            m = m + '#'
    print(m)
fun('Ssc%Cse')
```

6. Write short notes on the following:

- (i) Arguments (ii) return (iii) Function Call

BIOLOGY

ASSIGNMENT CHAPTER 1: SEXUAL REPRODUCTION IN FLOWERING PLANTS

- Why are pollen grains produced in enormous quantity in maize?
- What is the ploidy of the cells in the microspore tetrad?
- What is the ploidy of PEN?
- How many eggs are present in an embryo sac?
- Even though each pollen grain has two male gametes, why are at least 10 pollen grains and not 5 pollen grains required to fertilize 10 ovules present in a particular carpel?
- What are parthenocarpic fruits?
- What is scutellum?
- What is a pollen bank?
- Of the eight nuclei of the embryo sac in flowering plants three are at the micropylar end. How many are there at the chalazal end and how many nuclei located in the central cell?
- How could pollen grains be well preserved as fossils?
- What are the effects of pollen in some people and how are the pollen grains are being used as food supplements?

3. How many haploid nuclei and haploid cells are present in the female gametophyte of angiosperm?
4. Why is the process of fertilization in flowering plant referred to as double fertilization? Explain.
5. How does geitonogamy differ from xenogamy in plants?
6. What are the stages of embryogeny in a Dicotyledonous embryo?
7. How long do the seeds remain alive after they are dispersed?
8. Explain the structure of microsporangium.
9. Explain the structure of pollen grain.
10. Explain artificial hybridization technique.
11. Explain double fertilization schematically.
12. What is pollination and explain its types?
13. Endosperm development precedes embryo development. Why?
14. Explain free nuclear endosperm development.
15. What are advantages of seeds to Angiosperms?
16. What do you mean by seed dormancy? What is its significance?

CHAPTER 2 : HUMAN REPRODUCTION

1. Name the cells which secrete androgens
2. What does the head of a sperm consists of?
3. Name the structure which secretes progesterone.
4. Name the structures which secrete estrogen.
5. Name the site of fertilization in human beings.
6. What is the main function of Sertoli cells?
7. Name the outermost layer of the blastocyst
8. What promotes completion of second meiotic division in oogenesis?
9. Testes normally remain suspended in scrotum in mammals. Why?
10. How many spermatozoa will be produced from 100 primary spermatocytes and how many ova will be produced from 100 primary oocytes?
11. Name the three layers of embryo that give rise to all tissues and also name the cells which have the potency to give rise to all the tissues and organs.
12. What is oogenesis? Where does it occur?
13. What is ovulation? What happens to Graafian follicle after ovulation?
14. What is colostrum? What is its importance?
15. Mention any three differences between spermatogenesis and oogenesis.
16. Differentiate between Leydig cells and Sertoli cells with reference to their location in the organ and their function
17. What is parturition? How is it induced? Which hormones are involved in induction of parturition?
18. What is seminiferous tubule? Name the various types of cells present in it and explain its function.
19. Explain different phases of spermatogenesis with schematic representation.
20. Explain different phases of oogenesis with schematic representation
21. Name the glands associated with male reproductive organs and state their functions.
22. Explain the process of fertilization.
23. Explain the stages of embryo development from fertilization to implantation.
24. Draw a diagrammatic presentation of various events during a menstrual cycle.
25. What is placenta? What is its role? Justify Placenta as an endocrine tissue.
26. What are the main features of embryonic development at various months of pregnancy?

CHAPTER 3 : REPRODUCTIVE HEALTH

1. Name the technique to know the genetic disorders in the foetus.
2. What is MTP?
3. List one drawback of surgical methods of birth control.
4. Which period of pregnancy is safer for MTP?
5. What are the measures one has to take to prevent from contracting STDs?
6. Explain the technique amniocentesis .How is this technique misused?
7. Describe the three different practices under natural methods of birth control.
8. What are barrier methods of birth control? Explain.
9. Expand IUDs. Explain the various methods of IUDs.
10. What is sterilization? Explain the various methods.
11. How do oral contraceptives function? What is the advantage of Saheli?
12. What is an ideal contraceptive for women and explain its contraceptive role?
13. How do the natural, barriers, IUD's, Oral pills and Surgical methods help in Contraception? Explain.
14. What is STD ? List out the various STD's. How is it transmitted ? What are its symptoms ? What are the complications the STD could lead to?

15. Explain the various methods of Assisted Reproductive Technologies.
16. Expand RCH,CDRI,MMR,IMR,AIDS,VD,RTI,IUT,IUI,AI,IVF,STD,MTP,IUD,ZIFT,GIFT,ART,ICSI,PID.
17. Mrs. X was blamed for being childless though the problem was due to low sperm counts in the ejaculates of her husband. Suggest a technique which could help the couple to have a child.

ENGLISH

ASSIGNMENT Assignment 1 (For Section –A Cadets): Project topic - Empowerment of women (With reference to poem Aunt Jennifer's Tigers)

Cover the following aspects:

1. Cover page – Title of the project
2. Certificate
3. Acknowledgement
4. Introduction
5. Aim of Women's empowerment
6. Need to empower women
7. Methods for empowering women
8. Health, safety and freedom from violence
9. Educational empowerment
10. Economic and financial empowerment
11. Self-sufficiency for women
12. Indian government's role in empowering women
13. Impact of women empowerment in India
14. Conclusion
15. List of resources / Bibliography

Assignment 1 (For Section – B Cadets) : Project topic - Child Labour (With reference to the chapter 'Lost Spring')

Cover the following aspects:

1. Cover page – Title of the project
2. Certificate
3. Acknowledgement
4. Introduction
5. Summary of the Chapter –Lost spring
6. Causes of Child labour
7. Present scenario (Industries involved etc.)
8. Ways to eradicate child labour
9. Schemes of the Indian government to prevent child labour
10. Role of United Nations
11. Conclusion
12. List of resources / Bibliography

Deadline: 1st July, 2024

Assignment 2 :

1. You have lost a library book in the school, draft a suitable notice for the school notice board. Invent all necessary details.
2. You are Rohan/Rohini of 48, New Bank Enclave, Lucknow. Write a letter to the Editor of a local daily complaining about the badly maintained parks of your locality.

Deadline: 1st July, 2024

MATHS

ASSIGNMENT

1. Five years Old NDA questions of Mathematics syllabus from Pathfinder by Arihant Pub.
2. Relations & Functions, Inverse Trigonometry Functions, Matrices, Determinants, Differentiation and higher order differentiation of Various Functions - Solve all the problems From R D Sharma.
3. From NCERT textbook –
 - o Ch.1
Exercise 1.1 (Q.2,5,7,9,11)
Exercise 1.2 (Q.1,3,5,6,7,10)
 - o Ch.2
Exercise 2.1 (Q.2,5,7,9)
Exercise 2.2 (Q.1,3,5,6,7,10)
 - o Ch.3
Exercise 3.1 (Q.2,5,7,9)
Exercise 3.2 (Q.1,3,5,6,7)
Exercise 3.3 (Q.1,3,6,7,8,9)
 - o Ch.4
Exercise 4.1 (Q.2,5)
Exercise 4.2 (Q.1,3,5)
Exercise 4.3 (Q.1,4,6)
Exercise 4.4 (Q.1,2,4,5,6,7)
Exercise 4.5 (Q.2,3,5,7)
 - o Ch.5
Exercise 5.1 (Q.2,5)
Exercise 5.2 (Q.1,3,5)
Exercise 5.3 (Q.1,4,6)
Exercise 5.4 (Q.1,2,4,5,6,7)
Exercise 5.5 (Q.2,3,5,7)
Exercise 5.6 (Q.1,3,5,6,7,8)
Exercise 5.7 (Q.2,3,5,7,9,10)
Misc. Exercise of Ch.5