GEETA DEVI DAV PUBLIC SCHOOL

BHANDARKOLA, SATAR ROAD, DEOGHAR

DIWALI & CHHATT PUJA HOLIDAY HOME WORK-(2025-26)

Class: -XII (Science ,Commerce &Humanaties)

CHEMISTRY –

(Based on Previous Year Questions)

Chapters Covered: Solutions, Electrochemistry, Chemical Kinetics, Coordination Compounds, Haloalkanes & Haloarenes, Alcohols-Phenols-Ethers

Section A – 1 Mark Questions

1. What type of deviation from Raoult's law is shown by a mixture of phenol and aniline?
2. Why does conductivity of an electrolyte decrease with dilution?
3. Write the order of reaction if the units of rate constant are mol^{-1} s^{-1}.
4. Write the IUPAC name of $[Cr(NH_3)_3Cl_3]$.
5. Which halogen compound undergoes nucleophilic substitution most easily: CH_3Cl, CH_3Br, or CH_3I?

Section B – 2 Mark Questions

6. Explain why azeotropes cannot be separated by fractional distillation.
7. Calculate the emf of a cell using the formula Ecell = E°cell - (0.0591/n) log Q.
8. Why is the rate of reaction almost independent of concentration in zero-order reactions? Give one example.
9. Write the geometrical isomers of $[Pt(NH_3)_2Cl_2]$.
10. Give one chemical test to distinguish between ethanol and phenol.

Section C – 3 Mark Questions

11. 100 g of solution contains 20 g of NaOH. Calculate its molality.
12. Write the overall cell reaction for a Daniell cell and calculate ΔG° if E°cell = 1.1 V.
13. For the reaction A → B, the rate constant is 0.231 min^{-1} at 25 °C. Calculate the half-life of A.
14. Explain the crystal field splitting in $[Fe(CN)_6]^{4-}$ and $[Fe(H_2O)_6]^{2+}$.
15. Write equations for converting:
    (a) Chlorobenzene → Phenol
    (b) Ethanol → Ethoxyethane
    (c) Bromomethane → Methanol

Section D – Case Study Type Questions

Case Study 1 – Colligative Property:

A solution containing 18 g of glucose in 100 g of water boils at 100.26 °C. Given: Kb =

0.52 K kg mol^{-1}.
a) Calculate the molality of solution.
b) Calculate the molecular mass of solute.
c) Name the colligative property used here.
d) Why does boiling point increase on adding solute?

Case Study 2 – Electrochemistry:
A galvanic cell is constructed as Zn | Zn^{2+} (1 M) || Cu^{2+} (1 M) | Cu.
a) Write the cell reaction.
b) Calculate E°cell if E°(Zn^{2+}/Zn) = –0.76 V and E°(Cu^{2+}/Cu) = +0.34 V.
c) If [Zn^{2+}] = 0.1 M and [Cu^{2+}] = 1 M, find Ecell at 298 K.
d) State whether the cell reaction is spontaneous or not.

Case Study 3 – Chemical Kinetics:
For the reaction 2A → B, the following data were obtained:
[A] (mol/L) : 0.1 , Rate : 6×10^{-3}
[A] (mol/L) : 0.2 , Rate : 2.4×10^{-2}
a) Determine the order of reaction.
b) Calculate the rate constant.
c) Write the rate law.
d) What happens to the rate if [A] is tripled?

Case Study 4 – Coordination Compounds:
A coordination compound has the formula $[Co(NH_3)_5Cl]SO_4$.
a) Write the IUPAC name.
b) What is the oxidation state of cobalt?
c) Write its ionization isomer.
d) State the type of hybridization and magnetic property.

Case Study 5 –
Ethanol reacts with PCl_5 to form an organic halide (A). (A) reacts with NaOH (aq) to give compound (B).
a) Identify (A) and (B).
b) Write chemical equations.
c) Name the type of reaction in each step.
d) What happens if phenol is treated with bromine water instead of ethanol?

Section E – 5 Mark Questions

16. (a) Define Henry's law and Raoult's law.
    (b) Explain the effect of temperature and pressure on solubility of gases in liquids.
17. Derive the Nernst equation for a cell and explain the significance of each term.
18. Explain the Arrhenius equation and how activation energy affects the rate of reaction.
19. Describe the Werner's theory of coordination compounds with two suitable examples.
20. (a) Explain Kolbe's reaction and Reimer–Tiemann reaction.
    (b) Write equations for each.

MATHEMATICS-

Do activity 1 to 7 in activity copy.

ENGLISH-

A. Art Integrated Project –

The story “Journey to the End of the Earth” is significant for understanding Earth’s past, present, and future, as it offers insights into geological history, climate change, and the impacts of human interference on the environment.

Keeping the concept of the above story in mind the students are informed to prepare a brochure on “Andaman and Nicobar islands- Emerald, Blue and You”. Inscribe the details of the Andaman and Nicobar Coral Islands.

Guidelines:

1. The brochure should be prepared on A4 sheets and the presentation should be eye-catching.
2. Steps to be considered while working on the project:

(a)Browse the information about the topic.

(b) Add some relevant pictures. You can draw or paste the same. Give a suitable title to the brochure.

(c) Prepare it for presenting in the class.

Assignment:

Read the following chapters and make a PPT on any one.

1. Poets and Pancakes
2. Interview

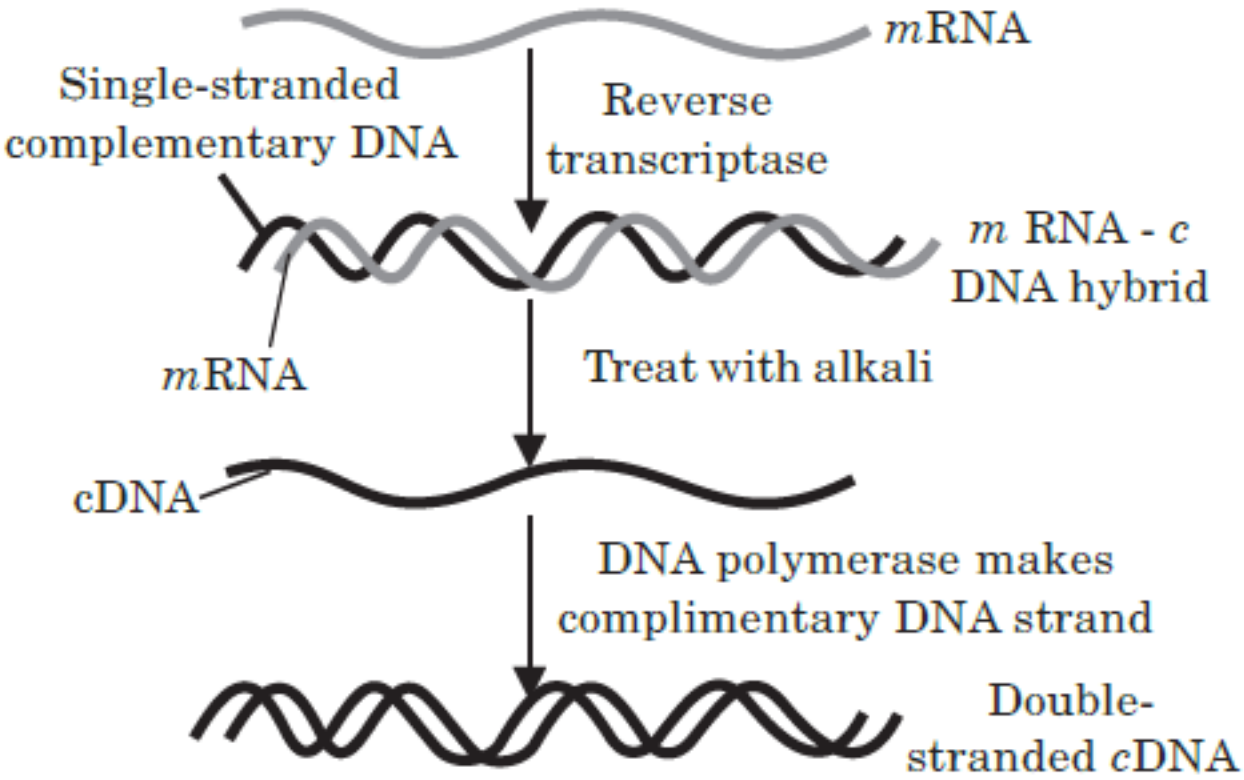
Guidelines:

1. The PPT must be done digitally first and then take a print out of the same.
2. The hard copy (the printed copy) of the PPT must be submitted in the school.
3. Students must be able to demonstrate and discuss the PPT whenever asked in the classroom.

BIOLOGY-

Q1. Do the given questions in notebook.

The DNA, which is transferred from one organism into another by joining it with the vehicle DNA is called passenger or foreign DNA. Generally three types of passenger DNAs are used. These are complementary DNA (cDNA), synthetic DNA (sDNA) and random DNA. Complementary DNA (cDNA) is synthesized on RNA template (usually mRNA) with the help of reverse transcriptase. Synthetic DNA (sDNA) is synthesized on DNA template or without a template. Random DNA are small fragments formed by breaking a chromosome of an organism in the presence of restriction endonuclease



(1)Reverse transcriptase enzyme was discovered by

(a)Temin and Baltimore (b) Cohen and Boyer
(c) Arber and Nathan (d) Paul Berg.

ii) During cDNA formation, what would happen if DNA formed by reverse transcriptase is not
treated with the alkali?

(a) cDNA will not be digested (b)mRNA will not be digested
(c) Hydrogen bonds will not form between base pairs
(d)mRNA will not be formed.

iii) Enzyme that helps in the formation of double stranded cDNA is

(a) DNA synthetase (b)Ligase
(c) DNA polymerase (d)Helicase.

(iv) DNA polymerase can be obtained form

(a) Retrovirus (b)Agrobacterium
(c) tobacco mosaic virus (d)Thermus aquaticus.

v) DNA synthesised without a template is referred to as

(a) Complementary DNA (b)Random DNA
(c) synthetic DNA (d)Z-DNA.

Assertion Reason based questions :-

1. Assertion : Tropical rain forests are disappearing fast from developing countries such as India.

Reason : No value is attached to these forests because these are poor in biodiversity

2. Assertion : Species are groups of potentially interbreeding natural populations which are isolated from other such groups.

Reason : Distinctive morphological characters are displayed due to reproductive isolation.

3. Assertion : Cold deserts too exist. E.g., Tibet, Gobi.

Reason : Desert can be hot, e.g., Thar, Sahara.

4. Assertion: Restriction digestion is a process of cutting DNA by restriction enzyme.

Reason: DNA ligase joins two DNAs.

5. Assertion: In gel electrophoresis, DNA fragments are separated.

Reason: DNA is negatively charged, so it moves towards anode under electric field.

Q2. Research Activity-Explore types of vector , write their name and characteristics in your notes notebook

Physics Home – Work:

A.Complete the given CBSE practical note, activity and investigatory project.

B.Choose the correction option.

1. In Young's double slit experiment, if the distance between the slits is doubled, what happens to the fringe width?

(a) It doubles (b)It becomes four times

(c)It remains the same (d)It becomes half

2. In a compound microscope, the magnification is the product of magnifications of:

Mirror and lens (b)Objective and eyepiece

(c) Objective and mirror (d)Eyepiece and lens

3. Which of the following phenomena can be explained using Huygens' principle?

(a) Reflection only (b)Refraction only

(c)Diffraction only (d)Both reflection and refraction

4. Which phenomenon is used in optical fibers?

Scattering (b) Refraction (c)Dispersion(d)Total internal reflection

5. In Young's double slit experiment, the intensity at the central maximum is I_0. What will be the intensity at a point where the path difference is $\lambda/3$?

(a) $3I_0/4$ (b) I_0 (c) $I_0/4$ (d) $I_0/2$

6. Which condition is necessary for total internal reflection?

A. Angle of incidence < critical angle

B.Light must travel from rarer to denser medium

C.Light must travel from denser to rarer medium

D. Refractive index of second medium must be higher

7. In a single-slit diffraction pattern, the width of the central maximum is:

(a) $\lambda D/a$ (b) $2a/\lambda D$ (c) $2\lambda D/a$ (d) $\lambda a/D$

8. Which of the following is NOT true for interference of light?

A.It can occur with incoherent sources

B. It results in redistribution of energy

C. Fringe width depends on wavelength

D. It requires coherent sources

9. In a diffraction experiment, if the slit width is halved, the width of the central maximum:

(a) Becomes half (b)Becomes double

(c)Remains the same (d)Becomes four times

10. Which of the following is used to produce plane-polarized light?

(a) Polaroid (b)Convex lens

(c) Glass slab (d)Concave mirror

11. Which of the following is NOT a consequence of wave nature of light?

(a) Diffraction (b)Photoelectric effect

(c) Interference (d)Polarization

12. In Young's double slit experiment, fringe width is 0.5 mm. If the setup is immersed in water (μ = 4/3), what is the new fringe width?

(a) 0.25 mm (b) 0.667 mm (c) 0.375 mm (d) 0.5 mm

13. In YDSE, the fringe width is 0.2 mm when light of wavelength 600 nm is used. If the wavelength is changed to 400 nm, the fringe width will be:

(a) 0.1 mm (b) 0.133 mm (c) 0.2 mm (d) 0.3 mm

14. In YDSE, the central bright fringe is observed at O. If one slit is covered with a thin film of thickness t and refractive index μ, the central fringe shifts by:

(a) (μt/λ) fringes (b)(μ−1)t/λ fringes

(c) t/λ fringes (d)μt/λ fringes

15. In YDSE, the ratio of intensities of maxima and minima is 9:1. The ratio of amplitudes of the two slits is:

(a) 3:1 (b)2:1 (c)9:1 (d)1:1

16. In YDSE, if the screen is moved farther away from the slits, the fringe width:

(a) First increases then decreases (b)Remains same

(c)Decreases (d)Increases

17. In YDSE, the path difference between two waves reaching a point on the screen is λ/2. The intensity at that point is:

(a)Maximum (b)Half of maximum (c)Zero (d)Minimum

18. In YDSE, if white light is used instead of monochromatic light, the central fringe will be:

(a) Colored (b) White (c) Black (d) Absent

19. In YDSE, the distance between two consecutive bright fringes is called:

(a)Path difference (b)Coherence length

(c)Fringe width (d)Phase difference

20. In YDSE, the condition for constructive interference is:

(a) Path difference = (2n+1)λ/2 (b)Phase difference = (2n+1)π

(c) Path difference = nλ (d)Path difference = λ/4

21. In YDSE, the angular fringe width is given by:

(a) λ/d (b) d/λ (c) λD/d (d) D/λ

ACCOUNTANCY

Project Work:

1) Write all the formula of Liquidity, Solvency, Activity and Profitability Ratio.
2) Present the Format of Cash flow from Operating, Activity and Financing Activities.
3) Write the formula of calculation of Goodwill from the chapter Change in Profit Sharing Ratio.

Assignment : Solve one question from each topic of the Chapter Admission of a Partner.

General Instructions:

1.Project must be presented on different/multiple chart papers.
2.Use multiple colours to present formula on chart paper.
3.Use diagrams to make it more attractive.
4.Assignment must be done in a separate notebook.

BUSINESS STUDIES

Project:

- Write the Process of Planning, Organising and Staffing.

Assignment:

- Solve two case studies from each of the topic factors affecting Investment decision, Financing decision and Dividend decision.

General Instructions:

i) Flow chart/ Diagram in Project work
ii) Use Multi colour Pens or Pencils.
iii) Project work should be on different/ multiple chart papers for different topics.
iv) Assignment must be in a separate note book.

ECONOMICS

Question:

In an economy, people start working sincerely and regularly, leading to a rise in overall output and income.

- (a) Which economic variable is likely to increase in this situation?
- (b) Which value is being highlighted here?

Question:

A group of young employees decide to save a portion of their income rather than spending all of it on luxuries.

(a) How does this affect the level of aggregate demand?

(b) What value is reflected by this behaviour?

Question:

A firm starts hiring workers from economically weaker sections and trains them for skilled jobs.

(a) How does this decision help the economy in terms of employment and income determination?

(b) Mention the value reflected here.

Question:

Why ethical economic decisions are essential for sustainable employment and income generation in India.

Question:

During an economic slowdown, the government launches a rural employment program (e.g., MNREGA). The initiative increases income in rural areas and boosts demand for local goods.

Question:

1) Explain the mechanism through which income and employment rise according to Keynesian theory.
2) Identify one economic and one social value reflected in this initiative.

Question:

1) Investment in renewable energy projects by the government raises both employment and national income."
2) Explain using the concept of the multiplier effect.

Question:

i) An economy is experiencing low levels of income and employment
ii) Explain two policy measures the government can use to increase income and employment.
iii) Discuss the effect of increased government spending on Aggregate Demand and equilibrium.

Question:

Discuss the implications if the economy is at underemployment equilibrium rather than full employment equilibrium.

Project: -

Design an infographic chart paper display that graphically explains the investment multiplier and its impact on national income and employment, using both economic data and symbolic art elements.

COMPUTER SCIENCE

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1. Write a program to show entered string is a palindrome or not.
2. Write a program to show statistics of characters in the given line (to counts the number of alphabets, digits, uppercase, lowercase, spaces and other characters).
3. Write a program to show GCD of two positive numbers using function.
4. Write a program to swap the content with next value, if it is divisible by 7 so that the resultant array will look like: 3,5,21,6,8,14,3,14.

5. Write a program to show and count the number of words in a text file 'DATA.TXT' which is starting/ended with a word 'the'.

6. Write a program to read data from a text file DATA.TXT, and display each word with number of vowels and consonants.

7. Consider the table EMPL & DEPT given below and write queries based on it.

Table: EMPL

empno	ename	job	mgr	hiredate	sal	comm	deptno
8369	SMITH	CLERK	8902	1990-12-18	800.00	NULL	20
8499	ANYA	SALESMAN	8698	1991-02-20	1600.00	300.00	30
8521	SETH	SALESMAN	8698	1991-02-22	1250.00	500.00	30
8566	MAHADEVAN	MANAGER	8839	1991-04-02	2985.00	NULL	20
8654	MOMIN	SALESMAN	8698	1991-09-28	1250.00	1400.00	30
8698	BINA	MANAGER	8839	1991-05-01	2850.00	NULL	30
8882	SHIAVNSH	MANAGER	8839	1991-06-09	2450.00	NULL	10
8888	SCOTT	ANALYST	8566	1992-12-09	3000.00	NULL	20
8839	AMIR	PRESIDENT	NULL	1991-11-18	5000.00	NULL	10
8844	KULDEEP	SALESMAN	8698	1991-09-08	1500.00	0.00	30
8886	ANOOP	CLERK	8888	1993-01-12	1100.00	NULL	20
8900	JATIN	CLERK	8698	1991-12-03	950.00	NULL	30
8902	FAKIR	ANALYST	8566	1991-12-03	3000.00	NULL	20
8934	MITA	CLERK	8882	1992-01-23	1300.00	NULL	10

Table: DEPT

deptno	dname	loc
10	ACCOUNTING	NEW DELHI
20	RESEARCH	CHENNAI
30	SALES	KOLKATA
40	OPERATIONS	MUMBAI

a. Write a query to display EName and Sal of Employees whose salary is greater than or equal to 3000 from table EMPL.
b. Write a Query to display Employee Number, name, sal and sal*12 as Annual Salary whose commission is not NULL from table EMPL.

c. Write a Query to display name, job, salary, and HireDate of Employees who are hired between February 20, 1991, and May 1, 1991. Order the query in ascending order of HireDate.

d. Write a Query to display distinct JOB along with number of Employee in each job from table EMPL.

e. Write a Query to display the name of Employee whose name contains 'M' as third alphabet.

f. Write a query to display the current system date.

g. Write a Query to display Employee number, name, salary, salary increase by 15%. Label the column as New Salary.

h. Write a query which displays the Employee name with the first letter capitalized and all other letters lower case and length of their name string.

i. Write a Query to Display the Sum, Average, Highest and Lowest salary of the Employees grouped by department number.

j. Write a query to display the difference of Highest and lowest salary of each department having maximum salary > 4000.

INFORMATICES PRACTICES

1) Write a Pandas program to create series and change the index of the series objects in any random order.
2) Write a Pandas program to add, subtract, multiple and divide two Pandas Series.
3) Write a Python Program to perform head( ) & tail( ) Functions on DataFrame.
   Write a Python Program to create the DataFrame and selecting rows/column using loc and iloc function.
4) Write a program that reads from a csv file (marks.csv stored in desired location) in a DataFrame then add a column Totalstoring total marks in three subjects and another column for storing average marks.

Print the DataFrame after adding thesecolumns.

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********THE END**********