SHARDA VIDYALAYA, RISALI SECTOR BHILAI
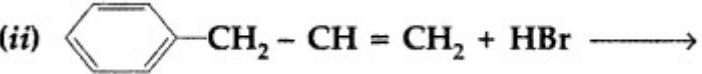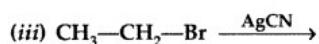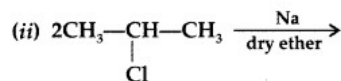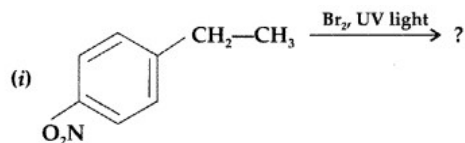## SESSION: 2023-24
VACATION HOMEWORK
CLASS – XII (Science Stream)

| S_NO	SUBJECT	VACATION HOMEWORK
1	ENGLISH	1. As the Sports Captain of your school , write a notice for students notice board informing budding cricketers to attend trails for selection in school team . Invent all the necessary details. 2. Write a paragraph in about 100 -120words arguing for or against having to study three language at school. 3. Write the theme and message of the poem " My Mother at sixty six" 4. "The modern world , as has been said , is full of stress , anxieties and worries for innumerable things. in the face of these stress we want an escape as did Charley from the story the Third level. Charley's escape, how ever is the past" you have read the given lines write what do you think about the given opinion in 100-120 words . 5. Analyse the concept of losing our dear ones on account of old age in the context of the poem " My Mother at sixty six". 6. Prepare a ppt on the importance of language . compare and contrast the language of Chhattisgarh and kerala with two or three foreign language.
2	HINDI	1. कला समेकित गतिविधि-छत्तीसगढ़ तथा केरल के बाजारों के अंतर को बताते हुए मुख्य बाज़ारों की विशेषताएँ स्पष्ट कीजिए। 2. कक्षा में दिए गए सभी अपठित गद्यांशों एवं पद्यांशों के उत्तर कॉपी में लिखें।
3	MATHEMATICS	Art integrated project :- prepare a file to show the population growth in kerala and Chhatisgarh In last 5 years. solve it algebraically method. Q.1 If A $=\begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$,prove that A+ A' is symmetric and A – A' is skew symmetric matrices. Q.2 If A= $\begin{matrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{matrix}$, prove that A^3 – 6A^2+7A+2I =0 Q.3 If A = [a ij] is a matrix of order 2 x2 , such that |A| = - 15 and Aij represents the cofactor of a ij then find a21 A21 + a22 A22. Q.4 Show that the points (a, b+c) , (b , c+a) , and (c, a+b) are collinear. Q.5 Find x , y and z if A = $\begin{matrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{matrix}$,satisfies A' = A^{-1}. Q.6 Q.7 F. Write the simplest form of $\tan^{-1}(\frac{\sqrt{1-cosx}}{\sqrt{1+cosx}})$, where $-\pi < x < \pi$ Q.8 Find the value of $\sin[\frac{\pi}{3} - \sin^{-1}(\frac{-1}{2})]$. Q.9 If 2 A + 3 B $=\begin{bmatrix} 2 & 3 \\ 4 & 0 \end{bmatrix}$ and 3 A + 2 B $= \begin{bmatrix} -2 & 2 \\ 1 & -5 \end{bmatrix}$, find A and B. Q.10 If $\begin{vmatrix} x & \sin\theta & \cos\theta \\ -\sin\theta & -x & 1 \\ \cos\theta & 1 & x \end{vmatrix}$ = 8, write the value of x.

4	PHYSICS	**PRACTICALS -**

PRACTICALS -

<u>SECTION - A</u>

1. To determine resistance per cm of a given wire by plotting a graph of potential difference versus current .
2. To find resistance of a given wire / standard resistor using metre bridge.
3. To verify the laws of combination (series) of resistances using a metre bridge.
4. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.

<u>SECTION – B</u>

5. To find the value of v for different values of u in case of a concave mirror and to find the focal length.
6. To find the focal length of a convex lens by plotting graphs between u and v or between 1/u and 1/v.
7. To determine angle of minimum deviation for a given prism by plotting a graph between angle of   incidence and angle of deviation.
8. To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias.

<u>ACTIVITY</u>

1. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
2. To assemble the components of a given electrical circuit.
3. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.
4. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.
5. Use of multimeter to see the unidirectional flow of current in case of a diode and an LED and check whether a given electronic component (e.g., diode) is in working order.
6. To study the nature and size of the image formed by a (i) convex lens, or (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).

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5   CHEMISTRY

Write down question answers

1 How would you differentiate between S_N1 and S_N2 mechanisms of substitution reactions? Give one example of each.

2 Haloalkanes easily dissolve in organic solvents, why?

(ii) What is known as a racemic mixture? Give an example.

(iii) Of the two bromoderivatives, $C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$, which one is more reactive in S_N1 substitution reaction and why

3 Draw the structures of major mono halo products in each of the following reactions :

(i) $\hexagon$—$CH_2OH \xrightarrow{PCl_5}$

(ii) $\hexagon$—$CH_2 - CH = CH_2 + HBr \longrightarrow$

4.Give reasons :

(a) n-Butyl bromide has higher boiling point than f-butyl bromide.

(b) Racemic mixture is optically inactive.

(c) The presence of nitro group ($-NO_2$) at o/p positions increases the reactivity of haloarenes towards nucleophilic substitution reactions.

5.How do you convert:

(i) Chlorobenzene to biphenyl

(ii) Propene to 1-iodopropane

(iii) 2-bromobutane to but-2-ene

6. Write the major product(s) in the following:

(i) CH_2—CH_3 $\xrightarrow{Br_2, \text{ UV light}}$?

(ii) $2CH_3$—$\underset{\underset{Cl}{|}}{CH}$—$CH_3$ $\xrightarrow[\text{dry ether}]{Na}$

(iii) CH_3—CH_2—Br $\xrightarrow{AgCN}$

7 Write structures of compounds A, B and C in each of the following reactions:

C_2H_5Br $\xrightarrow{Mg/\text{ dry ether}}$ A $\xrightarrow[(b) \ H_3O^+]{(a) \ CO_2 \ (g)}$ B $\xrightarrow{PCl_5}$ C
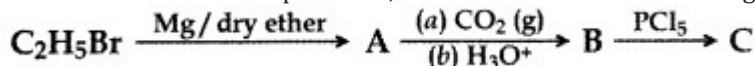
8. Write the main products when : (i) n-butyl chloride is treated with alcoholic KOH (ii) 2, 4, 6-trinitrochlorobenzene is subjected to hydrolysis. (iii)Methyl chloride is treated with AgCN.

9 Carry out the following conversions in not more than two steps :
 (i) Toluene to benzyl alcohol
(ii) Benzyl alcohol to phenylethanenitrile

10(i) Which isomer of C4 H9 Cl will have the lowest boiling point ? (ii) Predict the alkenes that would be formed by dehydrohalogenation with sodium ethoxide and ethanol. Predict major alkenes :

Practical

To prepare M/20 Mohr salt and with this solution determine the molarity and strength of a given potassium permanganate solution

Multiple Choice Questions

Q.1. Gem-dibromide is
(a) $CH_3CH(Br)CH_2(Br)$
(b) $CH_3CBr_2CH_3$
(c) $CH_2(Br)CH_2CH_2$
(d) CH_2BrCH_2Br

Q.2. IUPAC name of $(CH_3)_3CCl$
(a) 3-Chlorobutane
(b) 2-Chloro-2-methylpropane
(c) t-butyl chloride
(d) n-butyl chloride

Q.3. Which of the following is a primary halide?
(a) Isopropyl iodide
(b) Secondary butyl iodide
(c) Tertiary butyl bromide
(d) Neohexyl chloride

Q.4. When two halogen atoms are attached to same carbon atom then it is :
(a) vic-dihalide
(b) gem-dihalide
(c) α, ω -halide
(d) α, β -halide

Q.5. How many structural isomers are possible for a compound with molecular formula C_3H_7Cl ?
(a) 2   (b) 5   (c) 7   (d) 9

Q.6. The compound which contains all the four 1°, 2°, 3° and 4° carbon atoms is
(a) 2, 3-dimethyl pentane
(b) 3-chloro-2, 3-dimethylpentane
(c) 2, 3, 4-trimethylpentane
(d) 3, 3-dimethylpentane

Q.7. IUPAC name of $CH_3CH_2C(Br) = CH—Cl$ is
(a) 2-bromo-1-chloro butene
(b) 1-chloro-2-bromo butene
(c) 3-chloro-2-bromo butene
(d) None of the above

Q.8. Benzene hexachloride is
(a) 1, 2, 3, 4, 5, 6 – hexachlorocyclohexane
(b) 1, 1, 1, 6, 6, 6 – hexachlorocyclohexane
(c) 1, 6 – phenyl – 1, 6 – chlorohexane
(d) 1, 1 – phenyl – 6, 6 -chlorohexane

Q.9. The IUPAC name of $CH_2 = CH—CH_2Cl$ is
(a) Allyl chloride
(b) 1-chloro-3-propene
(c) Vinyl chloride
(d) 3-chloro-1-propene

Q.10. Which of the following halide is 2° ?
(a) Isopropyl chloride
(b) Isobutyl chloride
(c) n-propyl chloride
(d) n-butyl chloride

Q.11. Halogenation of alkanes is
(a) a reductive process
(b) an oxidative process
(c) an isothermal process
(d) an endothermal process

Q.12. C – X bond is strongest in
(a) CH_3Cl (b) CH_3Br (c) CH_3F (d) CH_3I

Q.13. Which of the following will have the maximum dipole moment?
(a) CH_3F (b) CH_3Cl (c) CH_3Br (d) CH_3I

Q.14. Phosgene is a common name for
(a) phosphoryl chloride
(b) thionyl chloride
(c) carbon dioxide and phosphine
(d) carbonyl chloride

Q.15. In the preparation of chlorobenzene from aniline, the most suitable reagent is
(a) Chlorine in the presence of ultraviolet light
(b) Chlorine in the presence of $AlCl_3$
(c) Nitrous acid followed by heating with Cu_2Cl_2
(d) HCl and Cu_2Cl_2

Q.16. Ethylene dichloride can be prepared by adding HCl to
(a) Ethane
(b) Ethylene
(c) Acetylene
(d) Ethylene glycol

Q.17. In which of the following conversions, phosphorus pentachloride is used as the reagent?
(a) $H_2C = CH_2 \rightarrow CH_3CH_2Cl$
(b) $CH_3CH_2OH \rightarrow CH_3CH_2Cl$
(c) $H_3C\text{-}O\text{-}CH3 \rightarrow CH_3Cl$
(d) $CH \equiv CH \rightarrow CH_2 = CHCl$

Q.18. The decreasing order of boiling points of alkyl halides is
(a) RF > RCl > RBr > RI
(b) RBr > RCl > RI > RF
(c) RI > RBr > RCl > RF
(d) RCl > RF > RI > RBr

Q.19. The best method for the conversion of an alcohol into an alkyl chloride is by treating the alcohol with
(a) PCl_5
(b) dry HCl in the presence of anhydrous $ZnCl_2$
(c) $SOCl_2$ in presence of pyridine
(d) None of these

Q.20. Which of the following is liquid at room temperature (b.p. is shown against it)?
(a) CH_3I 42ºC
(b) CH_3Br 3ºC
(c) C_2H_5Cl 12ºC
(d) CH_3F −78ºC

Q.21. The catalyst used in the preparation of an alkyl chloride by the action of dry HCl on an alcohol is
(a) anhydrous $AlCl_3$
(b) $FeCl_3$
(c) anhydrous $ZnCl_2$
(d) Cu

Q.22. Chlorobenzene is prepared commercially by
(a) Raschig process
(b) Wurtz Fittig reaction
(c) Friedel-Craft's reaction
(d) Grignard reaction

6	BIOLOGY	**Complete the Part A of Practical.** 1. Prepare a temporary mount to observe pollen germination. 2. Study the plant population density by quadrat method. 3. Study the plant population frequency by quadrat method. 4. Prepare a temporary mount of onion root tip to study mitosis. 5.Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc. Under the heading, Aim, Materials Required Theory, Procedure, Observation Table, Observation, Diagram, Calculation, Result, Precaution.
7	COMPUTER SCIENCE	**Art Integrated Project** - Make a menu driven Python Program to show details like sex ratio, literacy rate of various districts of kerala (take atleast 5 dictricts of kerala). Make the attractive video to describe your Project by adding images and graphics. Submit your video as well as Hard copy of your project.

8	**PHYSICAL EDUCATION**	Q.1 **Art Integrated Project** - Draw a free Hand Drawing of corrective measures for Round Shoulder, Flat foot & Bow legs. Q.2 **Project File :-** According to topics Prac-1 : Fitness test Administration(SAI khelo India Test) Prac-2 : Procedure for Asanas, Benefits & Contraindiction for any two Asanas for each lifestyle disease. Prac-3 : Any one IOA recognized Sport / Game of choice.(labelled diagram of field & equipment, Also mention its rules, terminologies and skills.
9	IT	Q-1. Create a document file on effective communication skills and its types by pasting their images. Prepare a conversation between two persons, one from C.G. state and other from Kerala. Observe the difference in their communication behaviors. Q-2. Create the front end by using diff controls and components, etc. 1. Accept marks of five subjects and find the percentage. 2. To find the square and cube of any entered no. 3. To find the volume and surface area of cone, cuboids and sphere. (take values of radius and height from the user input. Note: Both the questions are to be solved in A4 sheet and submit in stick files.
10	YOGA	Prepare Power point presentation on **Shatkarmas** (Procedures, Benefits and Precaution).