COMMERCE DEPARTMENT

https://youtu.be/oWlWzkQFXaU - ACCOUNTANCY

https://www.youtube.com/watch?v=NJ3QFwxM3oM- BUSINESS STUDIES

https://youtu.be/FH17jOBwPBY , https://youtu.be/ySBSYSwo4Fw - ECONOMICS

SCIENCE DEPARTMENT

https://www.youtube.com/watch?v=NpGNUqopzJc - BIOLOGY

https://youtu.be/5QYVCa8o1YY – CHEMISTRY

https://www.youtube.com/watch?v=8Ks5DmsCjEc – PHYSICS

HUMANITIES DEPARTMENT

https://youtu.be/t4oNRPlbQrs - LEGAL STUDIES

https://youtu.be/2pUvNpG1gew - PSYCHOLOGY

https://youtu.be/nM98xcer8qA - GEOGRAPHY

https://www.youtube.com/watch?v=DoU0YeslOkM – HISTORY

ENGLISH

https://www.youtube.com/watch?v=8_NmVtnEEA8

MATHEMATICS

https://youtu.be/_WRqZay3UHs

COMPUTER DEPARTMENT

https://www.youtube.com/watch?v=WaNSIPYAb5o

https://www.youtube.com/watch?v=If0f7ZIniuk

https://www.youtube.com/watch?v=XiDnK9Lq-Ng –IP & C.S.

OPTIONAL-II

https://youtu.be/6BPQqKkfQJE - PHYSICAL EDUCATION

https://www.youtube.com/watch?v=xPEQEoTxge8 ,
https://www.youtube.com/watch?v=Xfjy3YgjYC8 - FMM

https://youtu.be/_gM9_HZG58k – HINDI

https://www.youtube.com/watch?v=9cTqBgAA-i0&t=751s - PAINTING

EAST POINT SCHOOL
ASSIGNMENT
ENGLISH

LITERATURE (The Enemy by Pearl S Buck)

1. **Read the extracts given below and answer the questions that follow.**
   a. Who was Dr. Sadao? Where was his house?
   b. Write about the political backdrop of the story.
   c. Where did Dr. Sadao acquire his education?
   d. Where did Dr. Sadao meet Hana? Why did he wait to fall in love with Hana?
   e. Why was Dr. Sadao held back in Japan?
   f. Why were Dr. Sadao and Hana scared about helping the man who was washed ashore in a wounded condition? **OR** Despite being a doctor, why was Dr. Sadao apprehensive about helping the wounded man?
   g. What did Dr. Sadao do for he and his wife were scared of being caught?
   h. What was Dr. Sadao's dilemma? What does he finally decide?
   i. Why did Dr. Sadao help the American POW? What was the condition he set before he set out to help the American prisoner?
   j. Why did Yumi refuse to help clean up the American POW?
   k. Give a brief character sketch of the gardener from the story.
   l. Was Dr. Sadao prejudiced against the Americans? If yes, then state reasons to substantiate your answer.

Grammar

Given below is the link to a video about Newspaper report writing. (Ignore the picture part as mentioned in the video) https://www.youtube.com/watch?v=8_NmVtnEEA8

MATHEMATICS

Assignment on Differentiation of functions in Parametric Forms

Find $\frac{dy}{dx}$

1. x =($\cos\theta + \cos 2\theta$) ,y= ($\sin\theta + \sin 2\theta$)
2. x =a($\cos\theta+\theta\sin\theta$) ,y =a($\sin\theta - \theta\cos\theta$)
3. x =a ($\frac{1+t^2}{1-t^2}$) , y =b($\frac{2t}{1-t^2}$)
4. If $x=e^{\cos 2t}$,$y=e^{\sin 2t}$,then show that $\frac{dy}{dx} = \frac{-y\log x}{x\log y}$
5. If x=a(t+ $\frac{1}{t}$) and y= a(t- $\frac{1}{t}$) then show that $\frac{dy}{dx} = \frac{x}{y}$
6. If $x=\sin^{-1}(\frac{2t}{1+t^2})$ and $y= \tan^{-1}(\frac{2t}{1-t^2})$ then show that $\frac{dy}{dx}=1$
7. Differentiate $\sin^{-1}x$ with respect to $\tan^{-1}x$.
8. $\tan^{-1}(\frac{1+2x}{1-2x})$ with respect to $\sqrt{1+4x^2}$
9. $\tan^{-1}(\frac{\cos x}{1+\sin x})$ with respect to $\sec^{-1}x$
10. Prove that derivative of $\tan^{-1}(\frac{\sqrt{1+x^2}-1}{x})$ with respect to $\tan^{-1}x$ is independent of x.

ACCOUNTANCY

Fundamentals of Partnership: Interest on Drawings

1. Calculate interest on drawings of Mr. Vinod @ 8% p.a. for the year ended 31st March, 2014 in each of the following cases:

Case 1: If he withdrew Rs.2,000 at the beginning of each month
Case 2: If he withdrew Rs.2,000 during the middle of each month.
Case 3: If he withdrew Rs.2,000 at the end of each month.

2. Calculate interest on drawings of Mr. Ashok @ 10% p.a. for the year ended 31st March, 2014 in each of the following cases:

Case 1: If he withdrew Rs.1,000 at the beginning of each Quarter.
Case 2: If he withdrew Rs.1,000 during the middle of each Quarter.
Case 3: If he withdrew Rs.1,000 at the end of each Quarter.

3. Find out interest on drawing of Mr. Ashok, if he withdrew Rs.2,000 in the beginning of every month for six months ended 31st March 2014. Rate of interest on drawings is 6% p.a.

4. Find out interest on drawing of Mr. Ashok, if he withdrew Rs.4,000 at the end of every month for six months ended 31st March 2014. Rate of interest on drawings is 6% p.a.

5. Find out interest on drawing of Mr. Ashok, if he withdrew Rs.8,000 in the middle of every month for six months ended 31st March 2014. Rate of interest on drawings is 6% p.a.

6. Riya, Renu, Ishika and Aarushi are partners in a firm. Calculate interest on drawings @ 6% p.a. for the year ended 31st March, 2020.
   Riya withdrew Rs. 4,000 on 1st April, 2019 and she withdrew the same amount in the beginning of every alternate month after that. Renu withdrew Rs. 2,000 in the middle of every alternate month. She made her first drawing in the middle of April,2019. Ishika withdrew Rs. 3,000 at the end of every alternate month and she made her first drawing at the end of April, 2019. Aarushi withdrew Rs. 1,000 at the end of every alternate month starting withdrawing from 30th June, 2019.

BUSINESS STUDIES

Q1. Ginika, Tanish and Rohit were friends from college days and now they are doing different kinds of business. They regularly meet and discuss their business ideas and exchange notes on customer satisfaction, marketing efforts, product designing, selling techniques, social concerns etc. In one of such meetings, Ginika drew the attention of Tanish and Rohit towards the exploitation of consumers. She told that most of the sellers were exploiting the consumers in various ways' and were not paying attention towards the social, ethical and ecological aspects of marketing, whereas she was not doing so.

Tanish told that they were under pressure to satisfy the consumers, but stated that the consumers would not buy or not buy enough unless they were adequately convinced and motivated for the same. Rohit stressed that a company cannot achieve its objectives without understanding the needs of the customers. It was the duty of the businessmen to keep consumer satisfaction in mind because business is run by the resources made available to them by the society. He further stated that he himself was taking into consideration the needs of the customers.

Identify the various types of thinking that guided Ginika, Tanish and Rohit in the marketing efforts of their business. Also, state one more feature of the various types of thinking identified that is not given in the above para.

Q2. “Time Line” watch manufacturing company is a renowned company marketing watches. It performs various activities like, market analysis, product designing or merchandising, packaging, warehousing, branding, pricing, promotion and selling. The company maintains good customer relations through various follow up activities. This helps the company in procuring repeat sales orders.

a) Name the concept related to the activities mentioned in the above paragraph.

b) Explain any two features of the concept identified in part (a).

Q3. Radhika was a student of Business Studies of Class XII. Her father was a farmer who grew different varieties of rice and was well-versed in the various aspects of rice cultivation. He was also selected by the government for a pilot-project on rice cultivation. As a project work in Business Studies, she decided to study the feasibility of marketing good quality rice at a reasonable price. Her father suggested her to use the Internt to gather customers’ views and opinions. She found that there was a huge demand for packaged organic rice. She knew that there were no predetermined specifications in case of rice because of which it was difficult to achieve uniformity in the output. To differentiate the product from its competitors, she gave it the name of ‘Malabari Organic Rice’ and classified it into three different varieties, namely — Popular, Classic and Supreme, based on the quality. She felt that these names would help her in product differentiation.
Explain the three functions of marketing with reference to the above paragraph

Q4. Beauty Products Ltd. is a natural and ethical beauty brand famous for offering organic beauty products for men and women. The company uses plant-based materials for its products and is the No.1 beauty brand in the country. It not only satisfies its customers but also believes in the overall protection of the planet. Identify the marketing management philosophy being followed by ‘Beauty Product Ltd’.

Q5. ‘Haryaram’ is a famous chain selling a large variety of products in the Indian market. Their products include chips, biscuits, sweets and squashes. It charges a comparatively higher price than its competitors as it sells quality products. Besides, it offers regular discounts to its customers and easy credit terms to its retailers. It has five of its own retail shops. It also sells its products through various grocery stores so that the products are made available to customers at the right place, in the right quantity and at the right time. It regularly uses different communication tools to increase its sales. The above paragraph describes the combination of variables used by Haryaram to prepare its market offering. Identify and explain the variables.

ECONOMICS

1. Define the concept of Value Added method?
2. Distinguish between intermediate consumption and final consumption?
3. What is meant by problem of double counting? How this problem can be avoided?
4. Define operating surplus. State its components.
5. Explain mixed income of self-employed and give an example?
6. What are the precautions while calculating National Income by Value added method?
7. Explain why Exports form a part of National income?

8. Calculate 'value of output' from the following data:-

Particulars	**Rs. in Lakhs**
Subsidy	10
Intermediate consumption	150
Depreciation	30
Goods and Services Tax	20
Net value added at factor cost	250
Net addition to stocks	−(13)

9. Calculate Gross National Product at market price and at factor cost from the following data.

Particulars	**Rs. in crores**
Compensation of employees	2,000
Interest	500
Rent	700
Profits	800
Employer's contribution to social security schemes	201
Dividends	300
Consumption of fixed capital	100
Net indirect taxes	250
Net exports	70
Net factor income to abroad	150
Mixed income of self employed	1,500

Items	**(Rs. in crore)**
(i) National debt interest	30
(ii) Gross national product at market price	400
(iii) Current transfers from government	20
(iv) Net indirect taxes	40
(v) Net current transfers from rest of the world	(−) 10
(vi) Net domestic product at factor cost accruing to government	50
(vii) Consumption of fixed capital	70

BIOLOGY

Assignment Inheritance (3)

1. Define pleitropy and explain using any 2 examples.

2. Yellow fruit and dwarf vines are recessive traits in tomatoes. Red fruit and tall vines are dominant. Complete a punnett square and answer the questions for a completely dominant red and tall plant crossed with a heterozygous red and dwarf plant. (You chose the letters you want to use)

A. What percent of the offspring will be totally heterozygous?

B. What is the phenotype ratio?

C. What percent of the offspring will have yellow fruit and dwarf vines?

3. A cross is made between different homozygous pea plants for contrasting flower positions.

a. Find out the position of flowers in F1 generation on the basis of genotypes.

b. Work out the cross upto F2 generation.

c. Compute the relative fraction of various genotypes in the F2 generation.

4. On selfing the purple flowered F1 hybrids of pea plant, the F2 offspring produced 470 plants with purple flowers and 162 plants with white flowers. What genetic mechanism account for these results?

5. Why was Drosophila favoured for experiments by Morgan?

6. What was the role of Sturtevant, Sutton and Boveri and de Vries,Correns, Tschermak?

7. Define the terms linkage and recombination and explain their relation.

8. What does the chromosomal theory of inheritance infer? How is behaviour of genes and chromosomes similar?

9. How does the pattern of inheritance deviates from Mendelian law of dominance while talking of size of starch grain and seed shape of pea.

CHEMISTRY

AMINES

QUESTION BANK

Question 1

Write the IUPAC name of: $CH_3CH(Br)CH_2CONHCH_3$.

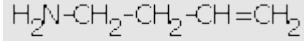
Ans.

3-Bromo - N-methyl - butanamide.

Question 2

Give the IUPAC name of $H_2N - CH_2 - CH_2 - CH = CH_2$

Ans.

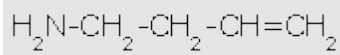


But-3-en-1-amine

Question 3

Give the IUPAC name of $H_2N - CH_2 - CH_2 - CH = CH_2$

Ans.



But-1-en-4-amine

Question 4

Accomplish the following conversions:

(i) Nitrobenzene to benzoic acid

(ii) Benzene to m-bromophenol

Ans.

Question 5

What are ambident nucleophiles?

Ans.

A group that can be linked through two different sides are ambident nucleophiles. For example: Isocyanides the CN group can be attached to the alkyl or the aryl group either through carbon or the nitrogen atom thus CN^- is an ambident nucleophile.

Question 6

What is obtained when we heat Methylisocyanide with Mercuric oxide?

Ans.

When we heat methylisocyanide with mercuric oxide we get methyl isocyanate i.e. CH_3-N=C=O.

Question 7

How are Carbylamines formed?

Ans.

Carbylamines are formed by heating a mixture primary amine and $CHCl_3$ in presence of alc. KOH

$$CH_3CH_2NH_2 \xrightarrow{CHCl_3 + KOH} CH_3CH_2NC$$

Question 8

Write the structure of primary, secondary and tertiary Methanamine?

Ans.

Primary Methanamine is CH_3NH_2

Secondary Methanamine is N-Methyl methanamine CH_3-NH-CH_3

Tertiary Methanamine is N,N-Dimethyl-methanamine

Question 9

Write the structure of 2-Phenylethanamine.

Ans.

Structure of 2-Phenylethanamine is C_6H_5-$CH_2CH_2NH_2$

Question 10

An organic compound A contain C=32%, H=7% and N=20%. On reduction it gives a primary amine B which gives ethyl alcohol and nitrous acid. B gives an offensive odour on warming with $CHCl_3$ and KOH and forms compound C which on reduction forms ethyl methyl amine. Give structures of A, B and C and explain.

Ans.

$A=CH_3CN$ $B=CH_3CH_2NH_2$ and $C=CH_3CH_2NC$

$$CH_3CN \underset{A}{} + 4[H] \xrightarrow{LiAlH_4} \underset{B}{CH_3CH_2NH_2} \xrightarrow{CHCl_3 + KOH} \underset{C}{CH_3CH_2NC}$$

Question 11

How can we get primary amine from alkyl cyanides?

Ans.

The carbon-nitrogen triple bond of Nitriles can be completely reduced to yield primary amines. The reduction is done using H_2 in presence of Ni or Pt as catalyst or using $LiAlH_4$.

$$CH_3CN + 4[H] \xrightarrow{LiAlH_4} CH_3CH_2NH_2$$

Question 12

Convert benzonitrile to benzaldehyde?

Ans.

$C_6H_5CN + 2[H] + HCl$ **Ether** ------- $C_6H_5CH=NH.HCl$

290-295K Benzaldimine hydrochloride

Boiling water

---------- $C_6H_5CHO + NH_4Cl$

Question 13

Why Cyanides are soluble in water but the corresponding Isocyanides not?

Ans.

The alkyl cyanides are soluble in water as they form H-bonds.

R-CN.....H-O
\
H.....NC-R

But with increase in the size of the alkyl group the solubility decreases due to an increase in the hydrocarbon portion of the molecule.
Alkyl isocyanides are insoluble in water, mainly because nitrogen atom does not have a lone pair of electrons and hence cannot form H-bonds.

Question 1

Arrange the following compounds in an increasing order of their solubility in water:

$C_6H_5NH_2$, $(C_2H_5)_2NH$, $C_2H_5NH_2$

Ans.

The solubility order of the given amines is as follows

$C_6H_5NH_2 < (C_2H_5)_2NH < C_2H_5NH_2$

Reason:

The more extensive the H-bonding, the higher is the solubility. $C_2H_5NH_2$ contains two H-atoms whereas $(C_2H_5)_2NH$ contains only one H-atom. Thus $C_2H_5NH_2$ undergoes more extensive H-bonding than $(C_2H_5)_2NH$. Hence, the solubility in water of $C_2H_5NH_2$ is more than that of $(C_2H_5)_2NH$.

Further, the solubility of amines decreases with increase in the molecular mass. This is because the molecular mass of amines increases with an increase in the size of the hydrophobic part. The molecular mass of $C_6H_5NH_2$ is greater than that of $C_2H_5NH_2$ and $(C_2H_5)_2NH$. Thus, the solubility of $C_6H_5NH_2$ is less than that of $C_2H_5NH_2$ and $(C_2H_5)_2NH$.

Question 2

What is ammonolysis?

Ans.

The process of cleavage of the C-X bond by ammonia molecule is known as ammonolysis.

Question 3

Name a tertiary amine with one methyl, one ethyl and one propyl group.

Ans.

Tertiary amine with one methyl, one ethyl and one propyl group is N-Ethyl-N-methylpropanamine.

Question 4

What reaction is used for converting a primary amide into a primary amine containing one carbon atom less than the parent amide?

Ans.

Hoffmann Bromamide reaction is used for converting a primary amide into a primary amine containing one carbon atom less than the parent amide.

Question 5

Which reagent is used to convert an amide into amine with the same number of carbon atoms?

Ans.

$LiAlH_4$ is used to convert an amide into amine with the same number of carbon atoms.

Question 6

What happens when a mixture of an alcohol and ammonia in the vapour phase is passed over heated alumina at 633K?

Ans.

When a mixture of an alcohol and ammonia in the vapour phase is passed over heated alumina at 633K we get a mixture of primary, secondary and tertiary amines.

$$ROH + NH_3 \xrightarrow[633K]{Al_2O_3} R\text{-}NH_2 + H_2O$$

$$R\text{-}NH_2 + R\text{-}OH \xrightarrow[633K]{Al_2O_3} R_2NH + H_2O$$

$$R_2NH + R\text{-}OH \xrightarrow[633K]{Al_2O_3} R_3N + H_2O$$

Question 7

Write a short note on Hofmann Bromamide reaction?

Ans.

Primary amide when treated with an aqueous solution of KOH and bromine, it gives a primary amine. The primary amine thus obtained has one carbon atom less than the original amide.

$$\underset{(1^o \text{ amide})}{RCONH_2} + Br_2 + 4KOH \longrightarrow \underset{(1^o \text{ amine})}{RNH_2} + K_2CO_3 + 2KBr + 2H_2O$$

Question 8

How can you prepare primary, secondary and tertiary amine by reduction?

Ans.

Primary, secondary and tertiary amines can be prepared by reduction of the corresponding amides.

$$C_6H_5CONH_2 + 4[H] \xrightarrow{LiAlH_4/Ether} C_6H_5CH_2NH_2 + H_2O$$

For preparing secondary and tertiary amide we need to reduce the secondary and tertiary amides.

$$CH_3CONHCH_3 \xrightarrow{LiAlH_4/Ether} CH_3CH_2NHCH_3$$

N-methyl acetamide — Ethyl methyl amine 2^0

$$CH_3CON(CH_3)_2 \xrightarrow{LiAlH_4/Ether} CH_3CH_2N(CH_3)_2$$

N,N-Dimethylacetamide — Ethyl dimethyl amine 3^0

Question 9

How will you convert Methyl halide to Ethylamine?

Ans.

This is a method for converting alkyl halides into primary amines having one carbon atom more than the parent alkyl halides.

$$CH_3Cl + KCN \xrightarrow[-KCl]{LiAlH_4} CH_3CN \xrightarrow{LiAlH_4} CH_3CH_2NH_2$$

(alc)

Question 10

Write the structures of primary, secondary and tertiary amines having the molecular formula C_3H_9N?

Ans.

Primary amine is $CH_3CH_2CH_2NH_2$

Secondary amine is $CH_3-NH-CH_2CH_3$

Tertiary amine is $CH_3-N(CH_3)-CH_3$

Question 11

An organic compound A, $C_2H_5O_2N$ gives on reduction another compound B C_2H_7N. What are A and B?

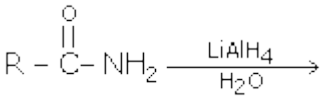
Ans.

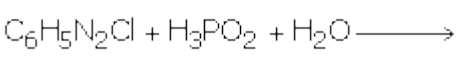
Organic compound A is Nitroethane $C_2H_5O_2N$ on reduction gives another compound B i.e. Ethyl amine $C_2H_5NH_2$

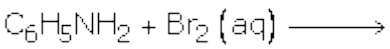
$$\underset{A}{C_2H_5O_2N} + 3H_2 \xrightarrow[\text{Room Temp}]{\text{Raney Ni or Pt}} \underset{B}{C_2H_5NH_2} + 2H_2O$$

Question 1

Complete the following reaction equations:

i. 

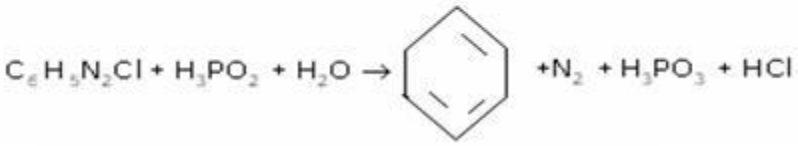
ii. 

iii. 

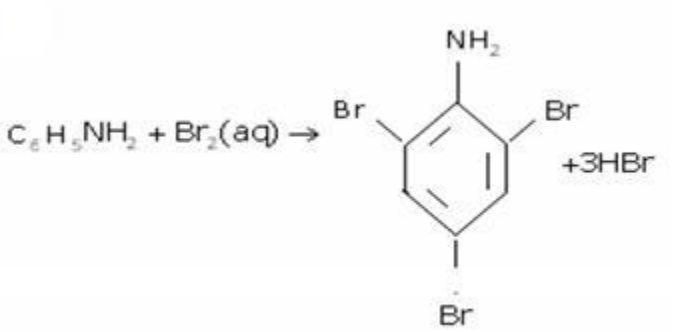
Ans.

(a)

(b)



(c)



Question 2

Arrange the following compounds in an increasing order of basic strengths in their aqueous solutions:

NH_3, CH_3NH_2, $(CH_3)_2NH$, $(CH_3)_3N$

Ans.

In aqueous solutions, the increasing order of basic strengths is:

$(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N > NH_3$

Question 3

Define the following and give one example of each:

(a) Tranquillisers

(b) Mordant

(c) Hybrid rocket propellants

Ans.

(a) Tranquillisers are the neurologically active drugs. They are the class of chemical compounds used for the treatment of stress, anxiety, and mild or severe mental diseases. They are essential components of sleeping pills.

(b) Not in current syllabus

(c) Not in current syllabus

Question 4

Account for the following:

(i) Electrophilic substitution in case of aromatic amines takes place more readily than benzene.

(ii) CH_3CONH_2 is a weaker base than $CH_3CH_2NH_2$.

(iii) Nitrocompounds have higher boiling points than hydrocarbons having almost same molecular mass.

Ans.

(i) Benzene ring in aromatic amines is highly activated. This is due to the displacement of lone pair of nitrogen towards the ring, which results in the increase in the electron density on the ring. This facilitates the electrophilic attack on the ring.

(ii) In CH_3CONH_2, the lone pair of electrons on nitrogen atom is involved in resonance with the carbonyl group. So the electron pair of nitrogen is not easily available for protonation. Hence CH_3CONH_2 is a weaker base than $CH_3CH_2NH_2$.

(iii) Nitro compounds are polar compounds whereas hydrocarbons are non-polar. Due to their polarity, nitro compounds have higher boiling points than the hydrocarbons having almost same molecular mass.

Question 5

Give a chemical test to distinguish between aniline and N-methyl aniline.

Ans.

When warmed with chloroform in the presence of alc. KOH, aniline gives offensive smell of isocyanides while N-methyl aniline does not give this test.

$C_6H_5NH_2 + CHCl_3 + 3KOH \rightarrow C_6H_5NC + 3KCl + 3H_2O$

Aniline Phenylisocyanide

Question 6

In the following cases, rearrange the compounds as directed:

(i) In an increasing order of basic strength:

$C_6H_5NH_2$, $C_6H_5N(CH_3)_2$, $(C_2H_5)_2NH$ and CH_3NH_2

(ii) In decreasing order of basic strength:

Aniline, p-nitroaniline and p-toluidine

(iii) In an increasing order of pk_b values:

$C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$ and $C_6H_5NH_2$

Ans.

(i) Increasing order of basic strength:

$C_6H_5NH_2 < C_6H_5N(CH_3)_2 < CH_3NH_2 < (C_2H_5)_2NH$

This is because $-C_6H_5$ group has an electron withdrawing inductive effect or -I effect and $-CH_3$ and $-C_2H_5$ group has electron releasing inductive effect or +I effect. Groups with -I effect decreases the electron density on the nitrogen of amino group and hence decreases the basic strength. Groups with +I effect increases the electron density on the nitrogen of amino group and hence increases the basic strength.

(ii) Decreasing order of basic strength:

p- Toluidine > aniline > p- nitroaniline

This is because $-NO_2$ group has an electron withdrawing inductive effect or -I effect and $-CH_3$ group has electron releasing inductive effect or +I effect. Groups with -I effect decreases the electron density on the nitrogen of amino group and hence decreases the basic strength. Groups with +I effect increases the electron density on the nitrogen of amino group and hence increases

the basic strength.

(iii) Increasing order of pK_b value:

$(C_2H_5)_2NH < C_2H_5NH_2 < C_6H_5NHCH_3 < C_6H_5NH_2$

This is because $-C_6H_5$ group has an electron withdrawing inductive effect or -I effect and $-C_2H_5$ group has electron releasing inductive effect. Groups with -I effect decreases the electron density on the nitrogen of amino group and hence decreases the basic strength. Groups with +I effect increases the electron density on the nitrogen of amino group and hence increases the basic strength. Greater the basic strength the smaller is the pK_b value.

Question 7

Arrange the following compounds in an increasing order of their solubility in water: $C_6H_5NH_2$, $(C_2H_5)_2NH$, $C_2H_5NH_2$

Ans.

The solubility order of the given amines is as follows:

$C_6H_5NH_2 < (C_2H_5)_2NH < C_2H_5NH_2$

The more extensive the H-bonding, the higher is the solubility. $C_2H_5NH_2$ contains two H-atoms whereas $(C_2H_5)_2NH$ contains only one H-atom. Thus $C_2H_5NH_2$ undergoes more extensive H-bonding than $(C_2H_5)_2NH$. Hence, the solubility in water of $C_2H_5NH_2$ is more than that of $(C_2H_5)_2NH$.

Further, the solubility of amines decreases with increase in the molecular mass. This is because the molecular mass of amines increases with an increase in the size of the hydrophobic part. The molecular mass of $C_6H_5NH_2$ is greater than that of $C_2H_5NH_2$ and $(C_2H_5)_2NH$. Thus, the solubility of $C_6H_5NH_2$ is less than that of $C_2H_5NH_2$ and $(C_2H_5)_2NH$.

Question 8

Account for the following observations:

(i) pk_b for aniline is more than that for methylamine.

(ii) Methylamine solution in water reacts with ferric chloride solution to give a precipitate of ferric hydroxide.

(iii) Aniline does not undergo Friedel-Crafts reaction.

Ans.

(i) pk_b for aniline is more than that for methylamine because in aniline, the $-NH_2$ group is attached directly to the benzene ring. It results in the unshared electron pair on nitrogen atom to be in conjugation with the benzene ring and thus making it less available for protonation and hence aniline is a weaker base than methylamine.

(b) Methyl amine in water gives OH^- ions which react with $FeCl_3$ to give precipitate of ferric hydroxide/ or

$$CH_3NH_2 + H_2O \longrightarrow CH_3NH_3^+OH^- \longrightarrow CH_3NH_3^+ + OH^-$$

$$Fe^{3+} + 3OH^- \longrightarrow Fe(OH)_3$$

(iii)Aniline does not undergo Friedel-Crafts reaction due to salt formation with aluminium chloride, the Lewis acid.

Question 9

Write balanced chemical equations for the following reactions:

(i) Aluminium dissolves in aqueous hydrochloric acid

(ii) Tin reacts with a hot alkali solution

Ans.

Not in current syllabus

Question 10

A reaction with $\Delta_r G^\circ$ < 0, always has an equilibrium constant value greater than 1. Why?

Ans.

Not in current syllabus

Question 11

State 'Pauli's exclusion principle'. Explain giving an example how this principle limits the maximum occupancy of an energy level in an atom.

Or

State 'Aufbau principle' and give the order in which the energies of orbitals increase and hence they are filled in that order.

Ans.

Not in current syllabus

Question 12

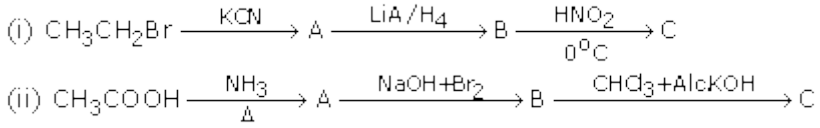
Why do nitro compounds have high boiling points in comparison with other compounds of same molecular mass?

Ans.

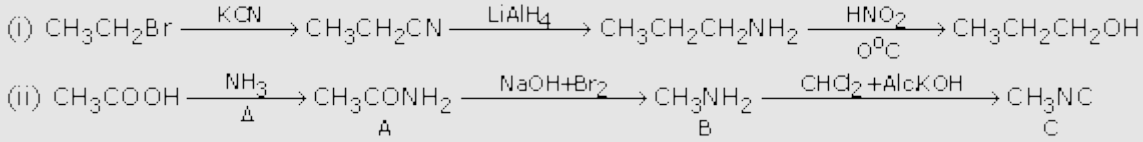
Due to polarity, there is strong electrostatic attraction between the nitrogen and oxygen atoms of a nitro group hence the boiling points of nitro compounds are unusually high in comparison with other compounds of same molecular mass.

Question 13

Give the structures of products A, B and C in the following reactions:



Ans.



Question 14

(a) Explain why an alkyl amine is more basic than ammonia.

(b) How would you convert:

(i) Aniline to nitrobenzene

(ii) Aniline to iodobenzene?

Ans.

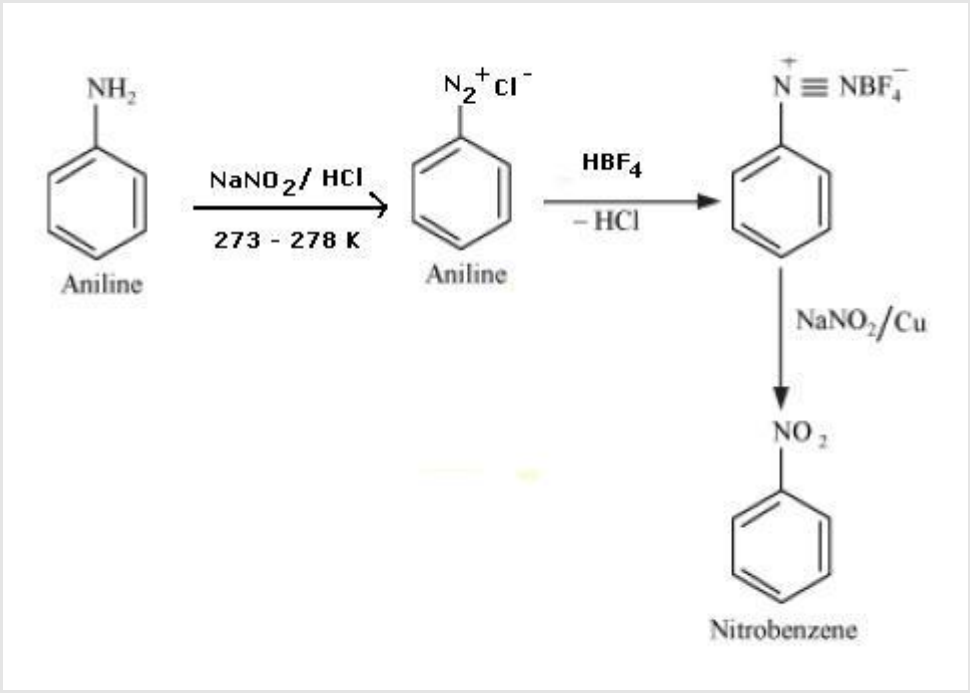
(a) The basicity of amines depends on the +I effects of the alkyl group.

The presence of -CH_3 group in alkyl amine increases the electron density on the nitrogen atom and thus increases the basicity.

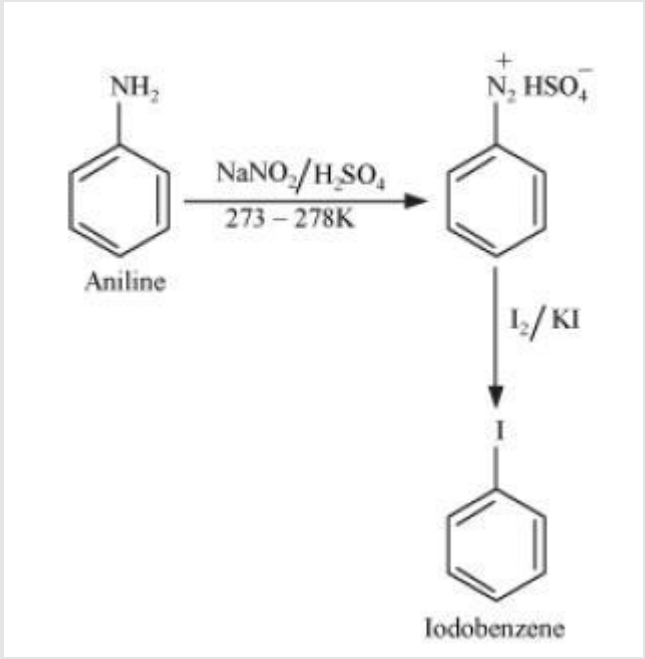
Hence, alkyl amine is more basic than ammonia

$CH_3NH_2 > NH_3$

(b) (i)



(ii)



Question 15

In the following cases rearrange the compounds as directed :

(i) In an increasing order of basic strength:

$C_6H_5NH_2$, $C_6H_5N(CH_3)_2$, $(C_2H_5)_2NH$ and CH_3NH_2

(II) In a decreasing order of basic strength:

Aniline, p-nitroaniline and p-toluidine

(iii) In an increasing order of pk_b values:

$C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$ and $C_6H_5NH_2$

Ans.

(i) Increasing order of basic strength:

$C_6H_5NH_2 < C_6H_5N(CH_3)_2 < CH_3NH_2 < (C_2H_5)_2NH$

This is because $-C_6H_5$ group has an electron withdrawing inductive effect or -I effect and $-CH_3$ and $-C_2H_5$ group has electron releasing inductive effect or +I effect. Groups with -I effect decreases the electron density on the nitrogen of amino group and hence decreases the basic strength. Groups with +I effect increases the electron density on the nitrogen of amino group and hence increases the basic strength.

(ii) Decreasing order of basic strength:

p- Toluidine > aniline > p- nitroaniline

This is because $-NO_2$ group has an electron withdrawing inductive effect or -I effect and $-CH_3$ group has electron releasing inductive effect or +I effect. Groups with -I effect decreases the electron density on the nitrogen of amino group and hence decreases the basic strength. Groups with +I effect increases the electron density on the nitrogen of amino group and hence increases the basic strength.

(iii) Increasing order of pK_b value:

$(C_2H_5)_2NH < C_2H_5NH_2 < C_6H_5NHCH_3 < C_6H_5NH_2$

This is because $-C_6H_5$ group has an electron withdrawing inductive effect or -I effect and $-C_2H_5$ group has electron releasing inductive effect. Groups with -I effect decreases the electron density on the nitrogen of amino group and hence decreases the basic strength. Groups with +I effect increases the electron density on the nitrogen of amino group and hence increases the basic strength. Greater the basic strength the smaller is the pK_b value.

Question 16

Arrange the following in the decreasing order of their basic strength m aquents solutions:

CH_3NH_2, $(CH_3)_2NH$, $(CH_3)_3N$ and NH_3

Ans.

Order of basic strength in aqueous solutions:

$(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N > NH_3$

Question 17

Which test is used for secondary amines?

Ans.

For secondary amines we do Libermann's nitroso reaction, in which nitroso-amines when heated with crystals of Phenols and conc H_2SO_4 forms a green solution which when alkalinated with NaOH forms deep blue and red on dilution.

Question 18 **Convert Aniline to Phenol?**

Ans.

$$\underset{\text{Aniline}}{C_6H_5NH_2} + HNO_2 + HCl \xrightarrow{273\text{-}278K} \underset{\text{Diazonium Salt}}{C_6H_5N^{2+}Cl^-} + 2H_2O$$

Question 19

What product is formed when Aniline is first diazotized and then reacted with Phenol in the alkaline medium?

Ans.p-Hydroxyazobenzene is formed when Aniline is first diazotized and then reacted with Phenol in the alkaline medium.

Question 20

What happens when Aniline reacts with Sodium nitrite and Hydrochloric acid?

Ans.

When well cooled aqueous solution of sodium nitrite is added to a cooled (273-278K) solution of the salt of aniline with hydrochloric acid, Benzene diazoniumchloride is formed.

$$NaNO_2 + HCl \longrightarrow HNO_2 + NaCl$$

$$C_6H_5NH_2 + HNO_2 + HCl \xrightarrow{273\text{-}278K} C_6H_5N_2 + Cl^- + 2H_2O$$

Question 21

What happens when Ethyl amine is treated with Chloroform and Alcoholic potash?

Ans.

When Ethyl Amine is treated with Chloroform and alcoholic potash, Ethyl Isocyanide is formed. This is Carbylamine reaction.

$$C_2H_5NH_2 + CHCl_3 + 3KOH(alc) \longrightarrow \underset{\text{Ethyl isocyanide}}{CH_3CH_2NC} + 3KCl + 3H_2O$$

Question 22

Write a short note on Schotten-Baumann Reaction?

Ans.

When Aniline is reacted with Ethanoyl chloride or Ethanoic anhydride in presence of a base such as aqueous NaOH or Pyridine, Acetanilide is obtained.

$$C_6H_5NH_2 + CH_3COCl \xrightarrow[\text{Or NaOH}]{\text{Pyridine}} \underset{\text{Acetanilide}}{C_6H_5NHCOCH_3}$$

$$C_6H_5NH_2 + \underset{\text{Ethanoic Anhydride}}{(CH_3CO)_2O} \xrightarrow[\text{Or NaOH}]{\text{Pyridine}} \underset{\text{Acetanilide}}{C_6H_5NHCOCH_3}$$

Question 23

Explain the order of basicity for primary, secondary and tertiary amines?

Ans.

The order of basicity for primary, secondary and tertiary amines are:

Secondary > Primary > Tertiary > NH_3

Amines are basic in nature as they have lone pair of electrons on nitrogen. Therefore they have a strong tendency to donate this lone pair of electrons to electron acceptors.

The stability of conjugate acids formed is depended on the extent of H-bonding,and greater the number of H-atoms on N more stable is the conjugate acid.

The conjugate acid of primary amine is the most stable with greater number (3) of H-bonds than > Secondary > tertiary. But primary amines are less basic than secondary as the electron density on the N atom are less and lone pair of electrons are not readily available for protonation.

The two opposing factors i.e. the stability of conjugate acids formed and ease of availability of electrons for Protonation, balance each other in case of secondary amines and it is most basic.

Question 24 **What happens when amines are treated with water?**

Ans.

Amines when treated with water it forms alkyl or aryl ammoniumhydroxides which ionize to furnish hydroxyl ions.

$$RNH_2 + H_2O \longrightarrow RNH_3OH \longrightarrow RNH_3^+ + OH^-$$

Question 25

What happens when we treat Aniline with HCl?

Ans.

When we treat Aniline with HCl, it forms Anilinium chloride.

$C_6H_5NH_2 + HCl \longrightarrow [C_6H_5NH_3^+]\ Cl^-$

Question 26

What amine salts are used for determining their molecular masses?

Ans.

Chloroplatinates i.e. $(RNH_3^+)_2PtCl_6^{2-}$ are used for determining the molecular masses of amines.

Question 1

(a) Explain why an alkylamine is more basic than ammonia.

(b) How would you convert:

(i) Aniline to nitrobenzene

(ii) Aniline to iodobenzene?

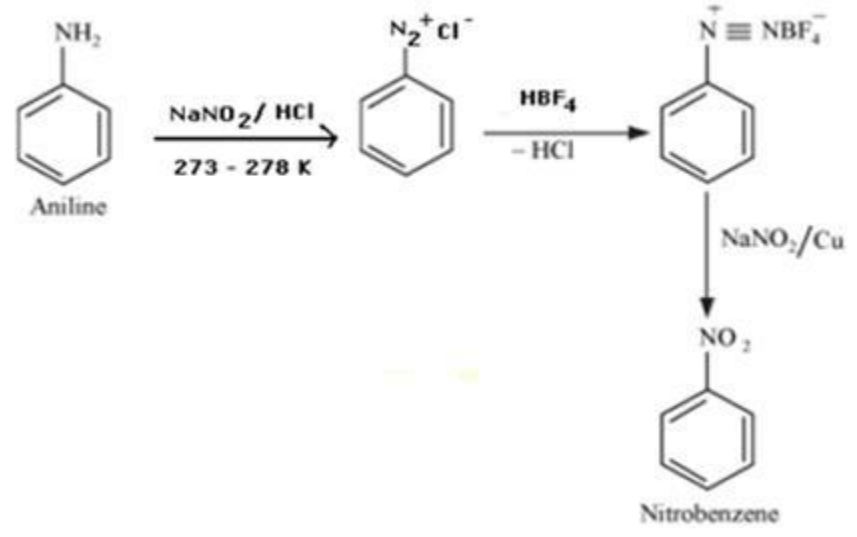
Ans.

(a) The basicity of amines depends on the +I effects of the alkyl group.

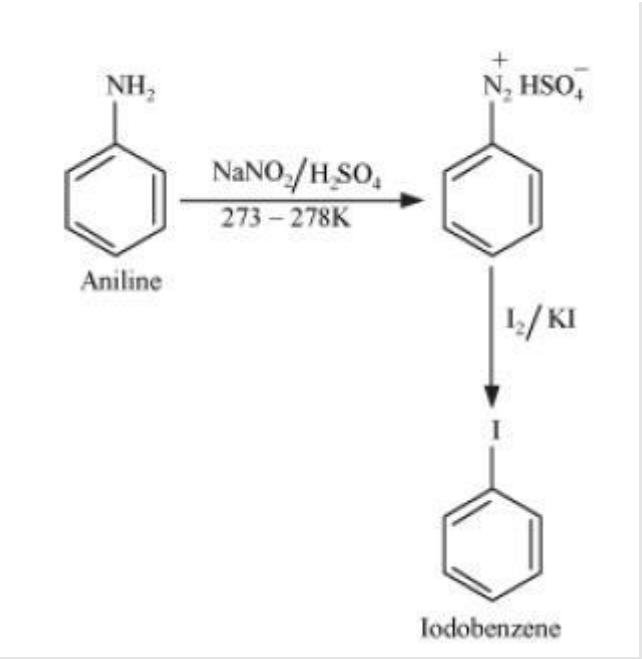
The presence of $-CH_3$ group in alkylamine increases the electron density on the nitrogen atom and thus increases the basicity.

Hence, alkylamine is more basic than ammonia $CH_3NH_2 > NH_3$

(b) (i)



(ii)



Question 2

(a) Explain why an alkylamine is more basic than ammonia.

(b) How would you convert:

(i) Aniline to nitrobenzene

(ii) Aniline to iodobenzene?

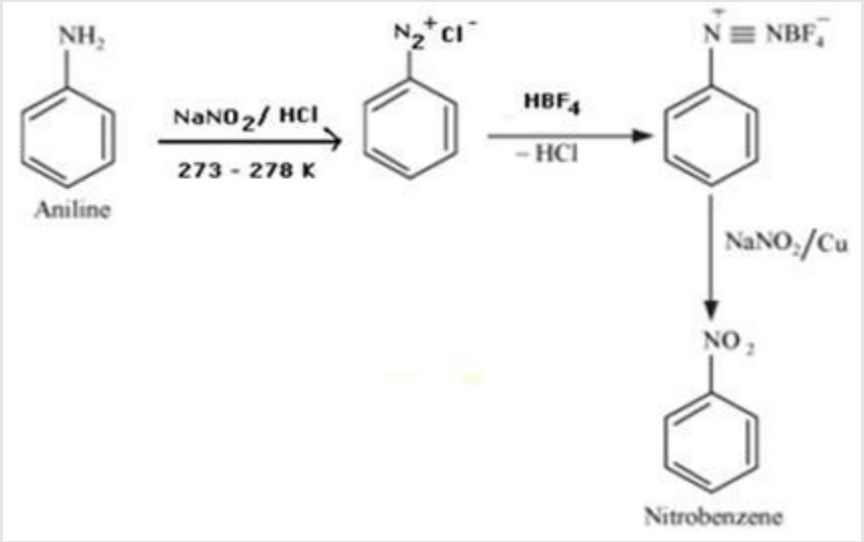
Ans.

(a) The basicity of amines depends on the +I effects of the alkyl group.

The presence of $-CH_3$ group in alkylamine increases the electron density on the nitrogen atom and thus increases the basicity.

Hence, alkylamine is more basic than ammonia $CH_3NH_2 > NH_3$

(b) (i)



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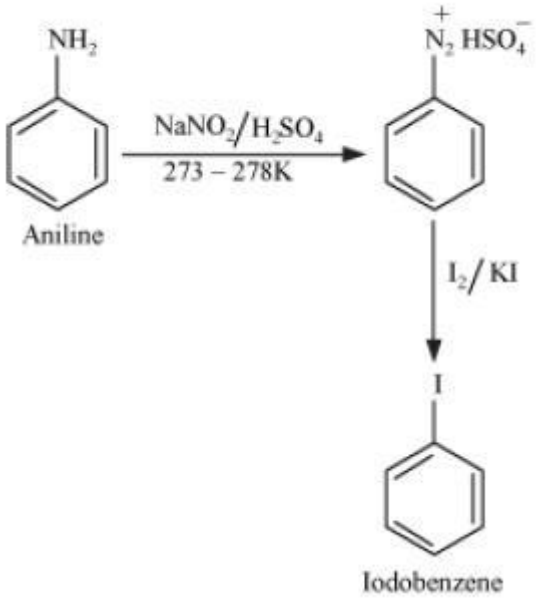


Question 3

Write a chemical reaction in which the iodide ion replaces the diazonium group in a diazonium salt.

Ans.

$C_6H_5\overset{+}{N_2}Cl^- + KI \rightarrow C_6H_5I + KCl + N_2$

Question 4

(i) Give an example of a hybrid propellant.

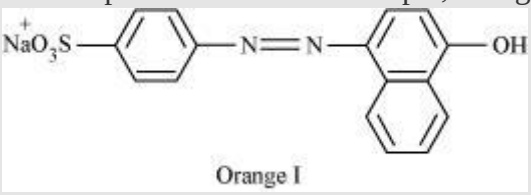
(ii) What are acid dyes?

(iii) Name a food preservative which is most commonly used by food producers.

Ans.

(a) Not in syllabus

(b) Acid dyes are usually salts of sulphonic acids. For example, orange I is an acid dye.



Orange I

(c) Sodium benzoate (C_6H_5COONa) is most commonly used by food producers as a food preservative.

Question 5

How would you achieve the following conversions:

(i) Nitrobenzene to aniline

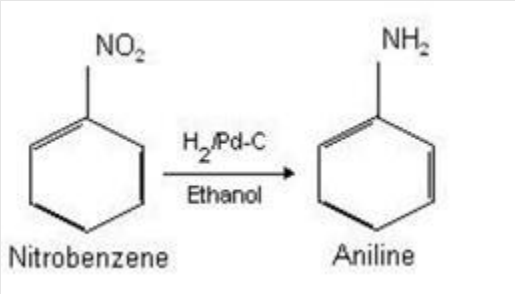
(ii) An alkyl halide to a quaternary ammonium salt

(iii) Aniline to benzonitrile

Write the chemical equation with reaction conditions in each case.

Ans.

(i)



(ii)

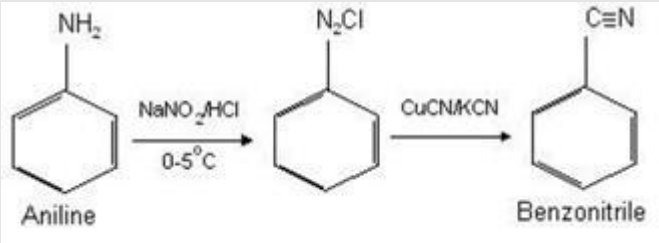
$$R\text{-}X + NH_3 \xrightarrow{373K} RNH_2 \xrightarrow{RX} R_2NH \xrightarrow{RX} R_3N$$

Alkyl Halide 1^{O} amine 2^{O} amine 3^{O} amine

$$R_3N \xrightarrow{RX} R_4N^{+}X^{-}$$

Quaternary ammonium salt (4^{O})

(iii)



Question 6

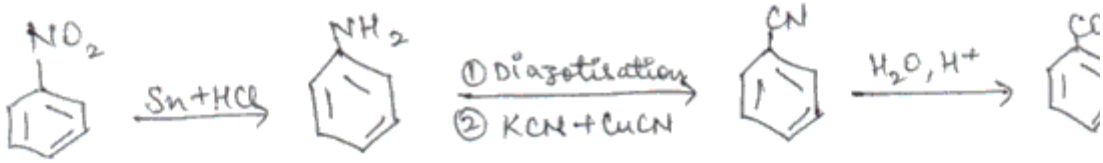
Write chemical equations for the following conversions:

(i) Nitrobenzene to benzoic acid.

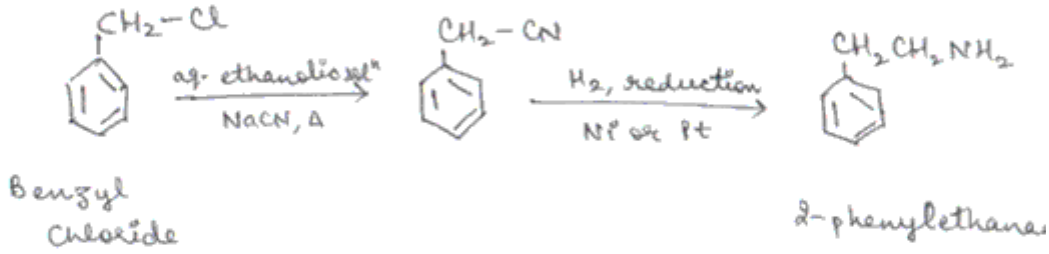
(ii) Benzyl chloride to 2-phenylethanamine.

(iii) Aniline to benzyl alcohol.

Ans.



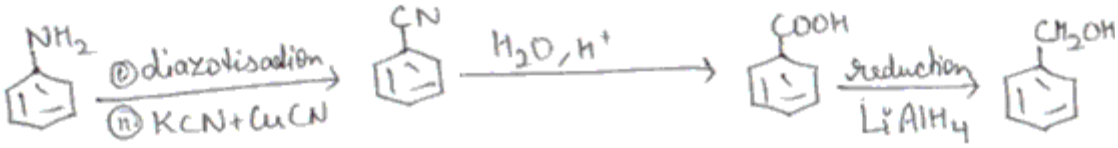
(ii)



Benzyl Chloride

2-phenylethanam

(iii)

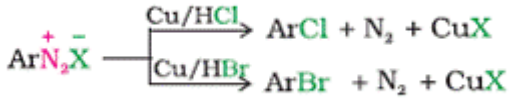


Question 7

Write a note on Gattermann reaction?

Ans.

In Gattermann reaction, Chlorine or Bromine can be introduced to the aromatic ring by treating Diazonium salt solution with halogen acids in presence of Copper.

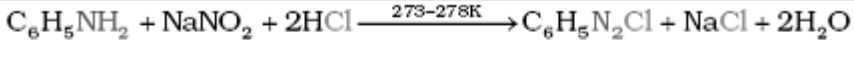


Question 8

What is Diazotization reaction?

Ans.

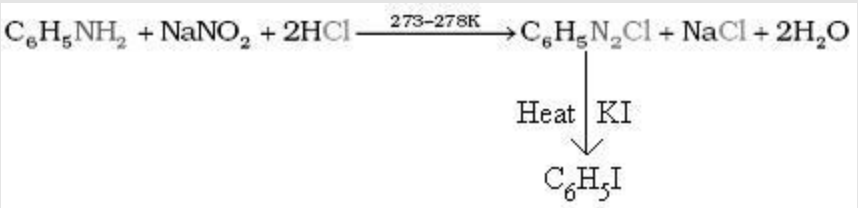
Conversion of primary aromatic amines to Diazonium salts at 273-278 K in presence of Sodium nitrite and HCl is Diazotization reaction.



Question 9

Convert Aniline to Iodobenzene?

Ans.



Question 10

How to get Fluorobenzene from Benzenediazoniumchloride?

Ans.

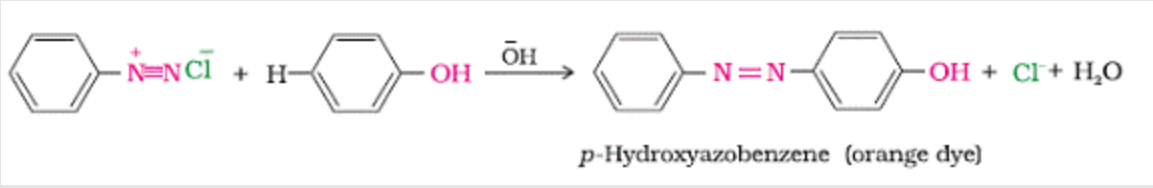
When arene diazonium chloride is treated with Fluoroboric acid, arene Diazonium Fluoroborate is precipitated which on heating forms fluorobenzene.

Question 11

What is a coupling reaction? Give an example.

Ans.

Reactions involving retention of Diazo group are coupling reaction. Arenediazonium salts reacts with highly reactive aromatic compounds such as phenols and amines to form brightly coloured azo compounds, Ar-N=N-Ar. The azo products have extended conjugate system having both the aromatic rings joined by N=N bonds. Mostly such compounds are used in the manufacture of dyes, as this compounds are coloured in nature. For example benzene diazonium chloride reacts with phenol to give an orange dye i.e. p-Hydroxyazobenzene.



Question 12

Convert Benzenediazoniumchloride to Nitrobenzene.

Ans.

Benzenediazoniumchloride is treated with fluoroboric acid to form Diazoniumfluoroborate which when heated with aqueous Sodiumnitrite solution in presence of Copper the diazonium group is replaced by -NO_2 group.

Question 13

What is Sandmayers reaction?

Ans.

This reaction is the basis of preparing Haloarenes from Benzenediazoniumsalts. In this reactior when Benzenediazonium salt solution is added to a solution of Copper(I) halide dissolved in th corresponding halogen acids, the diazonium group is replaced by a halogen atom thus produci Halobenzene.

$$ArN_2^+Cl^- \xrightarrow{CuX/HX} ArX + N_2$$

Halobenzene

For example, benzene diazoniumchloride solution when added to Copper (i) chloride in presenc hydrochloric acid, Chlorobenzene is obtained, and when benzene diazoniumchloride solution is added to copper (I) bromide in presence of Hydrogenbromide, Bromobenzene is obtained.

$$ArN_2^+Cl^- \xrightarrow{CuCl/HCl} ArCl + N_2$$

Chlorobenzene

$$ArN_2^+Cl^- \xrightarrow{CuBr/HBr} ArBr + N_2$$

Bromobenzene

Question 14

What happens when Benzene diazonium chloride reacts with Benzene in presence of alkali?

Ans.

Benzene diazonium chloride reacts with Benzene in presence of alkali to form Biphenyl.

$$ArN_2^+Cl^- \xrightarrow[NaOH]{Ar} Ar\text{-}Ar$$

Question 15

What happens when Benzene diazonium chloride is reduced?

Ans.

When Benzene diazonium chloride is reduced using $SnCl_2$ and HCl it produces Phenylhydrazinehydrochloride.

$$ArN_2^+Cl^- \xrightarrow[4[H]]{SnCl_2/HCl} ArNHNH_2.HCl$$

Question 16

What happens when Benzene diazoniumchloride is boiled with water?

Ans.

Benzene diazonium chloride is hydrolysed to phenol when heated with water.

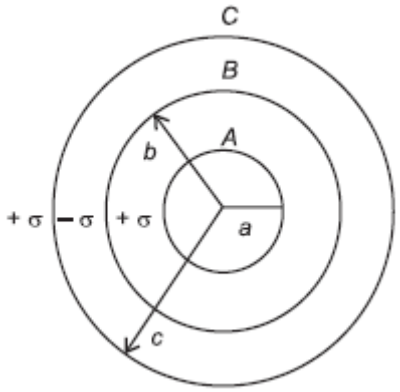
$$ArN_2^+Cl^- + H_2O \longrightarrow ArOH + N_2 + HCl$$

PHYSICS

1 (a) (a) Depict the equipotential surfaces for a system of two identical positive point charges placed at a distance *d* apart.
(b) Deduce the expression for the potential energy of a system of two point charges q_1 and q_2 brought from infinity to the points $\vec{r_1}$ and $\vec{r_2}$ respectively in the presence of external electric field $\vec{E}$.

2 Explain briefly the process of charging a parallel plate capacitor when it is connected across a dc battery.
A capacitor of capacitance *C* is charged to *V* volts by a battery. After some time the battery is disconnected and the distance between the plates is doubled. Now a slab of dielectric constant, $1 < k < 2$, is introduced to fill the space between the plates. How will the following be affected:
(a) The electric field between the plates of the capacitor.
(b) The energy stored in the capacitor. Justify your answer by writing the necessary expressions.

3 Three concentric metallic shells *A*, *B* and *C* of radii *a*, *b* and *c* ($a < b < c$) have surface charge densities + σ, – σ and + σ respectively as shown in the figure.
If shells *A* and *C* are at the same potential, then obtain the relation between the radii *a*, *b*, *c*.



4 Deduce an expression for the electric potential due to an electric dipole at any point on its axis. Mention one contrasting feature of electric potential of a dipole at a point as compared to that due to a single charge.

5 Four charges +*q*, –*q*, +*q* and –*q* are to be arranged respectively at the four corners of a square *ABCD* of side a. (a) Find the work required to put together this arrangement. (b) A charge q_0 is bought to the centre of the square, the four charges being held fixed. How much extra work is needed to do this?

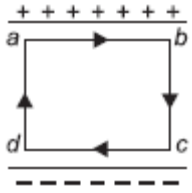
6 Define an equipotential surface. Draw equipotential surfaces: (i) in the case of a single point charge and (ii) in a constant electric field in z-direction. Why the equipotential surfaces about a single charge are not equidistant? (iii) Can electric field exist tangential to an equipotential surface? Give reason.

7 Calculate the electrostatic potential energy of a system of three point charges q_1, q_2 and q_3 located respectively at $\vec{r_1}$, $\vec{r_2}$ and $\vec{r_3}$ with respect to a common origin *O*.

8 A conducting slab of thickness *t* is introduced without touching between the plates of a parallel plate capacitor, separated by a distance *d* ($t < d$). Derive an expression for the capacitance of the capacitor.

9 Find the ratio of the potential differences that must be applied across the parallel and the series combination of two capacitors C_1 and C_2 with their capacitances in the ratio 1 : 2 so that the energy stored in the two cases, becomes the same.

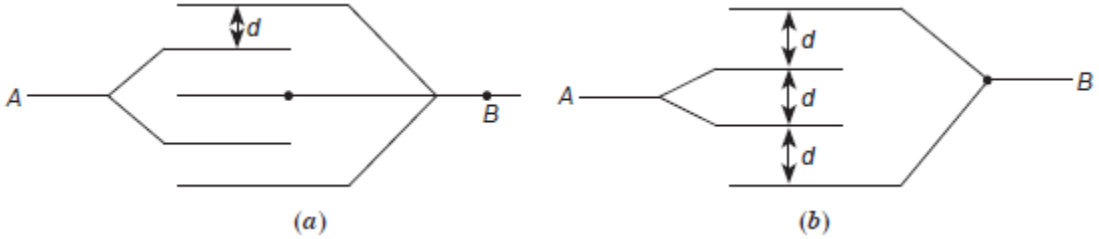
10 (a) Obtain the expression for the energy stored per unit volume in a charged parallel plate capacitor. (b) The electric field inside a parallel plate capacitor is E. Find the amount of work done in moving a charge q over a closed rectangular loop $a\ b\ c\ d\ a$.



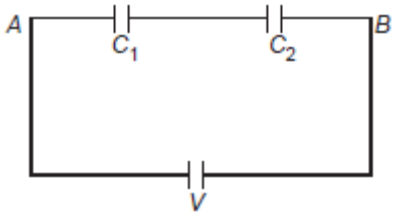
11 What is polarization of charge? With the help of a diagram show why the electric field between the plates of capacitor reduces on introducing a dielectric slab. Define the dielectric constant on the basis of these fields.

12 A dielectric slab of thickness t is introduced between the plates of a parallel plate capacitor, separated by a distance d ($t < d$). Derive an expression for the capacitance of the capacitor. What will be its capacitance when $t = d$?

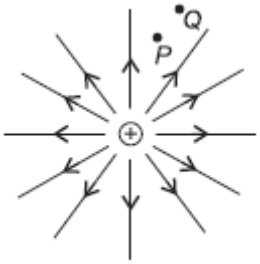
13 Five identical horizontal square metal plates each of area A are placed at a distance d apart in air and connected to the terminals A and B as shown in the figures (a) and (b). Find the effective capacitance between the two terminals A and B.



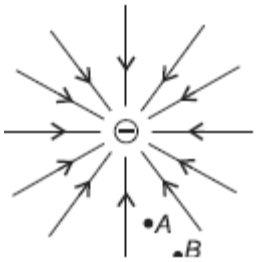
14 Two air-filled capacitors C_1 and C_2 of capacitances $2C$ and C are connected in series to a battery as shown below. (a) Find across which capacitor, the potential difference is high. (b) Draw the graph for variation of potential with distance from A to B. (c) If a dielectric of constant 2 is filled completely in the air gap of second capacitor, then what will be the final ratio of charge, potential difference and energy stored by each capacitor.



15 Figures (i) and (ii) show the field lines of the positive and negative point charges respectively. (a) Give the signs of the potential difference $V_p - V_Q$, $V_B - V_A$. (b) Give the sign of the potential energy difference of a small negative charge between the points Q and P, A and B. (c) Give the sign of the work done by the field in moving a small positive charge from Q to P. (d) Give the sign of the work done by the external agency in moving a small negative charge from B to A. (e) Does the kinetic energy of a small negative charge increase or decrease in going from B to A?



(i)



(ii)

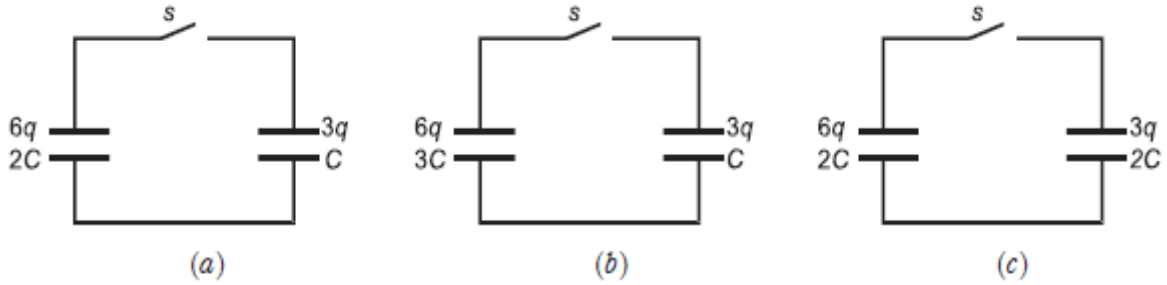
16 (a) A comb run through one's dry hair attracts small bits of paper. Why? What happens if the hair is wet or if it is a rainy day? (Remember, a paper does not conduct electricity.) (b) Ordinary rubber is an insulator. But special rubber tyres of aircraft are made slightly conducting. Why is this necessary? (c) A bird perches on a bare high power line, and nothing happens to the bird. A man standing on the ground touches the same line and gets a fatal shock. Why?

17 A charge Q is distributed over two concentric hollow spheres of radii r and R ($R > r$) respectively, such that their surface densities of charges are equal. Find the potential at the common centre.

18 Two metal spheres A and B of radius r and $2r$, whose centres are separated by a distance of $6r$, are given charge Q each and are at potential V_1 and V_2. Find the ratio of V_1/V_2. These spheres are connected to each other with the help of a connecting wire keeping the separation unchanged, what is the amount of charge that will flow through the wire?

19 Write three characteristics of a conductor.

20 Figure shows three circuits, each consisting of a switch and two capacitors initially charged as indicated. After the switch has been closed, in which circuit (if any) will the charges on the left hand capacitor (i) increase, (ii) decrease and (iii) remain same?



21 (a) Derive the expression for the capacitance of a parallel plate capacitor having plate area A and plate separation *d*. (b) Two charged spherical conductors of radii R_1 and R_2 when connected by a conducting wire acquire charges q_1 and q_2 respectively. Find the ratio of their surface charge densities in terms of their radii.

HISTORY

Chapter-3

Write the answer of questions not more than 100 words (carry 3 marks)

1. State the rules contained in Dharmasutras and Dharmashastras about the idea / occupation of the four Varnas ?
2. What were the rules of gotra as given in Brahmanical practice?
3. How could men and women acquire wealth ?
4. Discuss the Varna and Jati?
5. Who were Satavahanas? What they did ? Discuss.
6. Why were the Dharmashastras written ?
7. What did B. B lal note about the house in the second phase of Mahabharat period . Explain ?
8. The Mahabharat is a good source to study the social value of ancient times. Prove it ?
9. The rules of the Brahnanical text were not universally followed in ancient time . Justify giving evidences .
10. Why do the historian prefer to use literary tradition?

GEOGRAPHY

Agriculture

1. What are the important strategies for agricultural development followed in post independent India?
2. What is green revolution?
3. Mention the problems faced by Indian agriculture.

PSYCHOLOGY

(VERY SHORT QUESTION: 1 MARK)

1. A student who can manage his time well, organize and monitor his behaviour is said to have
    a) self-regulation
    b) self-efficacy
    c) self-esteem
    d) self-confidence.
2. You just found a wallet in a dark theatre. Which part of his personality according to Freud would urge you return the wallet?
3. Arvind‘s excessive concern with cleanliness and order could indicate a fixation at the _____stage of psychosexual development.
4. Carl Jung‘s theory of personality is also known as _____.

(VERY SHORT QUESTION: 2 MARKS)

5. How does self-efficacy influence behavior?
6. How does basic anxiety lead to depression?
7. What is social learning?

(SHORT QUESTION TYPE I: 3 MARKS)

8. Compare Indian and western perspective of self.
9. Discuss the role of the pleasure principle, the reality principle, and internalizing in relation to Freud ‘s three personality structure.
10. What are projective techniques? What are the advantages and limitations of projective techniques?
11. Discuss the advantages and limitations of self-report measures.

(SHORT QUESTION TYPE II: 4 MARKS)

12. What is self-regulation? State the different techniques for self-control.
13. How do the Neo-Freudians differ from Freud? Explain how Karen Horney explains the development of psychological disorders.
14. Personality is described as an adaptation of individual or groups to the demands of culture‖ Discuss.
15. Differentiate between the following
    a) Self-esteem and self-efficacy
    b) Type and trait approaches of personality.
    c) Regression and fixation

LEGAL STUDIES

Q1. What are the essential conditions to constitute Lis-pendens?

Q2. A sells his house for Rs. 2 lakhs to B. A is the seller and B is the buyer. Rs. 2 lakhs is the consideration, which is money. What is such transaction called and what are its essential essentials?

Q3. Mention the different rights and liabilities of the parties in a valid Lease?

Q4. What do you understand by the term sub-Lease?

Q5. Differentiate between Sale, exchange and Gift.

OPTIONAL II
HINDI

Question 1:
लेखक ने अपने पिता जी की किन-किन विशेषताओं का उल्लेख किया है?

ANSWER:
लेखक ने अपने पिता जी की निम्नलिखित विशेषताओं का उल्लेख किया है-

• उनके पिता फ़ारसी भाषा के अच्छे विद्वान थे।

• वे प्राचीन हिंदी भाषा के प्रशंसक थे।

• वे फ़ारसी भाषा में लिखी उक्तियों के साथ हिन्दी भाषा में लिखी गई उक्तियों को मिलाने के शौकीन थे।

• वे प्रायः रात में सारे परिवार को रामचरितमानस तथा रामचंद्रिका का बड़ा चित्रात्मक ढ़ंग से वर्णन करके सुनाते थे।

• भारतेंदु के नाटक उन्हें बहुत प्रिय थे।

Page No 77:
Question 2:
बचपन में लेखक के मन में भारतेंदु जी के संबंध में कैसी भावना जगी रहती थी?

ANSWER:
बचपन में लेखक के मन में भारतेंदु जी के संबंध में मधुर भावना व्याप्त थी। वह राजा हरिश्चंद्र तथा कवि हरिश्चंद्र में अंतर को समझ नहीं पाते थे और दोनों को एक ही दृष्टि से देखते थे। यदि कोई उनके सम्मुख हरिश्चंद्र का नाम लेता, तो उनके सम्मुख उन दोनों से युक्त मिले-जुले भावों का उद्भव होता था। इसी कारण उनके मन में एक माधर्य भाव का संचार होता था।
Page No 77:
Question 3:
उपाध्याय बदरीनारायण चौधरी 'प्रेमघन' की पहली झलक लेखक ने किस प्रकार देखी?

ANSWER:
लेखक के पिता की बदली, मिर्जापुर के बाहर नगर में हुई थी। वहाँ रहते हुए उन्हें एक दिन ज्ञात हुआ कि भारतेन्दु हरिश्चंद्र के सखा जिनका नाम उपाध्याय बदरीनारायण चौधरी है और जो 'प्रेमघन' उपनाम से लिखते हैं, वे यहाँ रहते हैं। लेखक उन्हें मिलने को आतुर हो उठा और अपने मित्रों की मंडली के साथ योजना अनुसार एक-डेढ़ मिल चलकर उनके घर के नीचे जा खड़ा हुआ। इसके लिए उन्होंने ऐसे बालकों को भी खोज लिया, जो उनके घर से तथा प्रेमघनजी से भली-भांति परिचित थे। उनके घर की ऊपरी बालकनी लताओं से सुज्जित थी। लेखक ऊपर की और लगातार देखता रहा कुछ देर में उसे प्रेमघन की झलक दिखाई पड़ी। उनके बाल कंधों तक लटक रहे थे। लेखक जब तक कुछ समझ पाता वे अंदर चले गए।

Page No 77:
Question 4:
लेखक का हिंदी-साहित्य के प्रति झुकाव किस प्रकार बढ़ता गया?

ANSWER:
लेखक के पिता फ़ारसी के ज्ञाता थे तथा हिंदी प्रेमी भी थे। उनके घर में भारतेन्दु रचित हिन्दी नाटकों का वाचन हुआ करता था। रामचरितमानस तथा रामचंद्रिका का भी सुंदर वाचन होता था। पिता द्वारा लेखक को बचपन से ही साहित्य से परिचय करवा दिया गया था। भारतेन्दु लिखित नाटक लेखक को आकर्षित करते थे। अतः इस आधार पर कहा जा सकता है कि पिताजी ने ही उनके अंदर हिंदी साहित्य के प्रति प्रेम के बीज बोए थे। इस तरह हिंदी साहित्य की ओर झुकाव होना स्वाभाविक था। आगे चलकर पंडित केदारनाथ जी ने इसमें मील के पत्थर का कार्य किया। लेखक जिस पुस्तकालय में हिंदी की पुस्तकें पढ़ने जाया करते थे, उसी के संस्थापक केदारनाथ जी थे। वे लेखक को प्रायः पुस्तक ले जाते हुए देखते थे। बच्चे के अंदर हिंदी पुस्तकों और लेखकों के प्रति आदरभाव देखकर वह बहुत प्रभावित हुए। उन्हीं के कारण सौलह वर्ष की अवस्था में लेखक को हिंदी प्रेमियों की मंडली से परिचय हुआ। इस मंडली के सभी लोग हिंदी जगत में महत्वपूर्ण स्थान रखते थे, जिनमें काशी प्रसाद जायसवाल, भगवानदास हालना, पंडित बदरीनाथ गौड़, पंडित उमाशंकर द्विवेदी इत्यादि थे। इन सबके रहते हुए लेखक का साहित्य के प्रति झुकाव और तेज़ी से बढ़ने लगा।
Page No 77:
Question 5:
'निस्संदेह' शब्द को लेकर लेखक ने किस प्रसंग का ज़िक्र किया है?

ANSWER:
'निस्संदेह' शब्द को लेकर लेखक ने इस प्रसंग का ज़िक्र किया है। जब लेखक का परिचय हिन्दी प्रेमी मंडली से हुआ, तो वहाँ प्रायः लिखने तथा बोलने के लिए हिंदी भाषा का प्रयोग किया करते थे। बातचीत करते समय निस्संदेह शब्द का अधिक प्रयोग किया जाता था। दूसरे लेखक के घर के आसपास ऐसे लोग अधिक रहा करते थे, जो मुख्तार, कचहरी के अफसर या कर्मचारी तथा वकील हुआ करते थे। ये लोग राजभाषा होने के कारण उर्दू का प्रयोग अधिक किया करते थे। ऐसे लोगों को लेखक तथा उसकी मंडली द्वारा हिंदी बोलना अजीब लगता था। इन्हीं लोगों ने लेखक तथा उनकी मित्र-मंडली का नाम 'निस्संदेह' रख दिया था।

FMM

Chapter-1

Q1. What is an index?
Q2. Differentiate between primary market and secondary market.
Q3. What are the products in financial markets?
Q4. Name some participants in the financial markets.
Q5. Explain the process of financial intermediation.

PHYSICAL EDUCATION

YOGA AND LIFESTYLE

Multiple Choice Questions

Q1. The word yoga was first mentioned in

(a) Bhagvad Gita (b) Rig Veda (c) Yajura Veda (d) Upanishads

Q2. International Yoga Day is celebrated on

(a) July 21
(b) January 1
(c) June 21
(d) August 15

Q3. Obesity can be checked by the regular practice of certain asanas. Among the most beneficial is

(a) Vajrasana (b) Shavasana (c) Bhujangasana (d) Pawanmuktasana

Q4. Trikonasana must not be practised by those suffering from

(a) Diabetes (b) Lower backache (c) Asthma (d) Obesity

Q5. Occupational Asthma is caused by

(a) Cold air
(b) Dry air
(c) Pollen
(d) Dust and smoke

Short Answer Type Questions

Q1. What is obesity? How can we know if we are obese?

Q2. Explain Bhujangasana and its procedure.

Q3. How can yoga help in preventing diabetes?

Q4. Discuss any three methods to prevent asthma.

Q5. What asanas are used to treat backache?

Long Answer Type Questions

Q1. What are lifestyle diseases? How can we prevent them?

Q2. Explain the benefits, contraindications and techniques of performing Paschimottanasana.

Q3. What is hypertension? Discuss the benefits and contraindications of Vajrasana and Ardhachakrasana.

Q4. Back pain is an impediment. Explain how yoga can help and describe any one asana in detail to get rid of backache.

Q5. Explain the role of yogasanas in asthma and explain any two asanas in detail

PAINTING

CHAPTER 2 – THE RAJASTHANI SCHOOL OF MINIATURE PAINTING
(PAINTINGS-RAJA ANIRUDDHA SINGH HARA AND MARU RAGINI)
MULTIPLE CHOICE QUESTIONS

Q.1) The 'MARU RAGINI' painting of Rajasthani school belongs to:

A. Bikaner sub-school
B. Jaipur sub-school
C. Mewar sub-school
D. Kota sub-school

Q.2) The artist of 'MARU RAGINI' painting of Rajasthani school is:

A. Utkal Ram
B. Sahibdin
C. Nihal Chand
D. Dana

Q.3) Who is the artist of the painting 'RAJA ANIRUDDHA SINGH HARA' of Rajasthani School ?

A. Utkal Ram
B. Guman
C. Dana
D. Sahibdin

Q.4) What is the medium used for making 'RAJA ANIRUDDHA SINGH HARA' painting of Rajasthani school ?

A. Oil colour
B. Acrylic colour
C. Water colour on paper
D. None of the above

SHORT ANSWER TYPE QUESTIONS

Q.1) Write a short note on colour scheme of 'MARU RAGINI' painting.

Q.2) Mention two points on the subject matter of 'RAJA ANIRUDDHA SINGH HARA' Painting.

LONG ANSWER TYPE QUESTIONS

Q.1) On the basis of your study, describe the compositional arrangement of the following:

A. Maru Ragini painting
B. Raja Aniruddha Singh Hara painting

CLASS –XII
ASSIGNMENT- 3

SUBJECT – POL SC
TOPIC – Challenges of Nation Building

1) Fill in the blanks:
   a) India gained independence on _____.
   b) _____ was the first prime minister of India.
   c) The famous speech of JawaharLal Nehru is known as _____.
   d) Freedom came with the _____ of India.
   e) India became a republic on _____.
2) Explain the three challenges faced by independent India.
3) What were the two goals set to be achieved by independent India?
4) Which party gave the 'two nation' theory? What was it?
5) What principle was followed while partitioning India?

   OR

   What was the basis of India's Partition?
6) What kind of difficulties were involved in the process of partition?
7) What were the consequences of partition?
8) Why did the idea of a secular nation emerge in India?
9) What was Mahatma Gandhi's sacrifice for India?
10) How was the British India divided before independence?
11) How many princely states were there before independence?
12) What was the response of the following three princely states to the question of joining India after independence:
   a) Travancore
   b) Hyderabad
   c) Bhopal
13) Why was the integration of princely states a problem for India?
14) Who was the deputy prime minister and the firsts home minister of independent India? How did he solve the problem of integration of princely states?
15) What three considerations guided the government's approach to the princely states?
16) Fill in the blanks:
   a) The document signed by the rulers of princely states while becoming a part of the union of India was called _____.
   b) Four Indian princely states which posed difficulties were_____, _____, _____ and _____.
   c) The issue of _____ was resolved after a plebiscite.
   d) There were _____ small states in today's Orissa.

e) Saurashtra region of Gujrat had _____ big states and _____ small states.
f) _____signed a Standstill Agreement with India in November 1947.

17) How did Hyderabad and Manipur become a part of India?
18) What is reorganization of states?
19) What considerations had to be kept in mind while reorganizing states?
20) On what principle was reorganization of Indian states done?
21) Why were some people against the linguistic division?
22) Explain Vishalandhra Movement.
23) When was separate Andhra state formed?
24) When was States Reorganization Commission appointed? Why was it appointed?
25) What was the report of States Reorganization Commission?
26) When was States Reorganization Act passed? What was it?
27) How has the formation of linguistic states helped India?

1. Identify the correct statement(s) to drop a column from table
   a. DELETE COLUMN COLUMN_NAME
   b. DROP COLUMN COLUMN_NAME
   c. ALTER TABLE TABLE_NAME DROP COLUMN COLUMN_NAME
   d. ALTER TABLE TABLE_NAME DROP COLUMN_NAME

2. Suppose a table BOOK contain columns (BNO, BNAME, AUTHOR, PUBLISHER), Raj is assigned a task to see the list of publishers, when he executed the query as:
SELECT PUBLISHER FROM BOOK;
He noticed that the same publisher name is repeated in query output. What could be possible solution to get publisher name uniquely? Rewrite the following query to fetch unique publisher names from table.

3. **HOTS**
Consider a database table T containing two columns X and Y each of type integer. After the creation of the table, one record (X=1, Y=1) is inserted in the table.

Let MX and My denote the respective maximum values of X and Y among all records in the table at any point in time. Using MX and MY, new records are inserted in the table 128 times with X and Y values being MX+1, 2*MY+1 respectively. It may be noted that each time after the insertion, values of MX and MY change. What will be the output of the following SQL query after the steps mentioned above are carried out?

SELECT Y FROM T WHERE X = 7

   A. 127
   B. 255
   C. 129
   D. 257

4. Which SQL function is used to find the highest and lowest value of numeric and date type column?

5. What is the default order of sorting using ORDER BY?

6. What is the difference between CHAR and VARCHAR?

7. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii) which are based on tables

TABLE : ACCOUNT

ANO	ANAME	ADDRESS
101	Nirja Singh	Bangalore
102	Rohan Gupta	Chennai
103	Ali Reza	Hyderabad
104	Rishabh Jain	Chennai
105	Simran Kaur	Chandigarh

TABLE: TRANSACT

TRNO	ANO	AMOUNT	TYPE	DOT
T001	101	2500	Withdraw	2017-12-21
T002	103	3000	Deposit	2017-06-01
T003	102	2000	Withdraw	2017-05-12
T004	103	1000	Deposit	2017-10-22
T005	102	12000	Deposit	2017-11-06

8.

(i) To display details of all transactions of TYPE Withdraw from TRANSACT table
(ii) To display ANO and AMOUNT of all Deposit and Withdrawals done in month of „May" 2017 from table TRANSACT
(iii) To display first date of transaction (DOT) from table TRANSACT for Account having ANO as 102
(iv) To display ANO, ANAME, AMOUNT and DOT of those persons from ACCOUNT and TRANSACT table who have done transaction less than or equal to 3000
(v) SELECT ANO, ANAME FROM ACCOUNT
WHERE ADDRESS NOT IN ('CHENNAI', 'BANGALORE');
(vi) SELECT DISTINCT ANO FROM TRANSACT
(vii) SELECT ANO, COUNT(*), MIN(AMOUNT) FROM TRANSACT
GROUP BY ANO HAVING COUNT(*)> 1
(viii) SELECT COUNT(*), SUM(AMOUNT) FROM TRANSACT
WHERE DOT <= '2017-10-01'

9 Consider the following tables EMP and SALGRADE, write the query for (i) to (vi) and output for (vii) to (x)

TABLE: EMPLOYEE

ECODE	NAME	DESIG	SGRADE	DOJ	DOB
101	Vikrant	Executive	S03	2003-03-23	1980-01-13
102	Ravi	Head-IT	S02	2010-02-12	1987-07-22
103	John Cena	Receptionist	S03	2009-06-24	1983-02-24
105	Azhar Ansari	GM	S02	2009-08-11	1984-03-03
108	Priyam Sen	CEO	S01	2004-12-29	1982-01-19

TABLE: SALGRADE

SGRADE	SALARY	HRA
S01	56000	18000
S02	32000	12000
S03	24000	8000

(i) To display details of all employee in descending order of their DOJ
(ii) To display NAME AND DESIG of those employees whose sgrade is either „S02" or „S03"
(iii) To display NAME, DESIG, SGRADE of those employee who joinded in the year 2009
(iv) To display all SGRADE, ANNUAL_SALARY from table SALGRADE [where ANNUAL_SALARY = SALARY*12]
(v) To display number of employee working in each SALGRADE from table EMPLOYEE
(vi) To display NAME, DESIG, SALARY, HRA from tables EMPLOYEE and SALGRADE where SALARY is less than 50000
(vii) Select MIN(DOJ), MAX(DOB) from employee;
(viii) Select SGrade,Salary+HRA from SalGrade where Sgrade=" S02"
(ix) Select count(distinct sgrade) from employee
(x) Select sum(salary), avg(salary) from salgrade

CLASS -XII
ASSIGNMENT
IP AND CS

TOPIC :MYSQL

10 Write SQL queries for (i) to (iv) and write outputs for SQL queries (v) to (viii), which are based on the table given below:

Table: TRAINS

TNO	TNAME	START	END
11096	Ahimsa Express	Pune Junction	Ahmedabad Junction
12015	Ajmer Shatabdi	New Delhi	Ajmer Junction
1651	Pune Hbj Special	Pune Junction	Habibganj
13005	Amritsar Mail	Howrah Junction	Amritsar Junction
12002	Bhopal Shatabdi	New Delhi	Habibganj
12417	Prayag Raj Express	Allahabad Junction	New Delhi
14673	Shaheed Express	Jaynagar	Amritsar Junction
12314	Sealdah Rajdhani	New Delhi	Sealdah
12498	Shane Punjab	Amritsar Junction	New Delhi
12451	Shram Shakti Express	Kanpur Central	New Delhi
12030	Swarna Shatabdi	Amritsar Junction	New Delhi

Table: PASSENGERS

PNR	TNO	PNAME	GENDER	AGE	TRAVELDATE
P001	13005	R N AGRAWAL	MALE	45	2018-12-25
P002	12015	P TIWARY	MALE	28	2018-11-10
P003	12015	S TIWARY	FEMALE	22	2018-11-10
P004	12030	S K SAXENA	MALE	42	2018-10-12
P005	12030	S SAXENA	FEMALE	35	2018-10-12
P006	12030	P SAXENA	FEMALE	12	2018-10-12
P007	13005	N S SINGH	MALE	52	2018-05-09
P008	12030	J K SHARMA	MALE	65	2018-05-09
P009	12030	R SHARMA	FEMALE	58	2018-05-09

(i) To display details of all Trains which starts from New Delhi
(ii) To display PNR, PNAME, GENDER and AGEof all passengers whose AGE is below 50
(iii) To display total numbers of MALE and FEMALE passengers
(iv) To display of all passengers travelling in trains whose TNO is 12015
(v) SELECT MAX(TRAVELDATE),MIN(TRAVELDATE) FROM PASSENGERS WHERE GENDER=" FEMALE" ;
(vi) SELECT END, COUNT(*) FROM TRINS GROUP BY END HAVING COUNT(*)>1;
(vii) SELECT DISTINCT TRAVELDATE FROM PASSENGERS;
(viii) SELECT TNAME, PNAME FROM TRAINS T, PASSENGERS P WHERE T.NO=P.TNO AND AGE BETWEEN 50 AND 60

<table>
<tr><td>11</td><td>Write a MySQL query to create the given table (MEMBER)
<table>
<tr><td>Column name</td><td>Datatype</td><td>Size</td></tr>
<tr><td>ID</td><td>Char</td><td>6</td></tr>
<tr><td>Name</td><td>Varchar</td><td>30</td></tr>
<tr><td>Fee</td><td>Int</td><td>10</td></tr>
<tr><td>DOJ</td><td>Date</td><td></td></tr>
</table></td></tr>
<tr><td>12</td><td>What is the Difference between ALTER Table command and UPDATE command?</td></tr>
<tr><td>13</td><td>(i) Sanjay was deleting the record of empno=1234, but at the time of execution of command he forgot to add condition empno=1234, what will be the effect of delete command in this case?
(ii) Sameer is executing the query to fetch the records of employee who are getting salary between 4000 to 8000, he executed the query as -
Select * from employee where salary between 4000 to 8000; But he is not getting the correct output, Rewrite the correct query.</td></tr>
<tr><td>14</td><td>Write MYSQL command to see the list of tables in current database</td></tr>
<tr><td>15</td><td>Sunil decides to delete a PhoneNo column from a MySQL Table (student) after insert the data into the table. Write the command to delete that particular column in student table.</td></tr>
<tr><td>16</td><td>A table Employee contains 5 Rows and 4 Columns and another table PROJECT contains 5 Rows and 3 Columns. How many rows and columns will be there if we obtain Cartesian product of these two tables?</td></tr>
<tr><td>17</td><td>Ranjeet created a table named student, He wants to see those students whose name ending with p. He wrote a query-
SELECT * FROM student WHERE name=”p%”;
But the query is not producing the desired output, Help Ranjeet to run the query by removing the errors from the query and rewriting it.</td></tr>
</table>