

COMMERCE DEPARTMENT

<https://youtu.be/YiUfDvcsVvc> - ACCOUNTANCY

<https://www.youtube.com/watch?v=LhKmwHMoooU> ,

<https://www.youtube.com/watch?v=iXIqWZFSBow> ,

<https://www.youtube.com/watch?v=H2gunRq4A5E> - BUSINESS STUDIES

https://youtu.be/Ov2Sd-QRi_g - ECONOMICS

SCIENCE DEPARTMENT

https://www.youtube.com/watch?v=4jtvqLFVg0s&list=PLCzaIJYXP5YfjelGB7xJhMCV_Sq0IRC6b&index=55 ,

https://www.youtube.com/watch?v=1OfKg4ZQuKU&list=PLCzaIJYXP5YfjelGB7xJhMCV_Sq0IRC6b&index=56 - BIOLOGY

<https://youtu.be/DsuWICKnuIk> – CHEMISTRY

<https://youtu.be/J3019SiocXw> - PHYSICS

HUMANITIES DEPARTMENT

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

<https://youtu.be/K9a3g14m8jM> - POLITICAL SCIENCE

<https://www.youtube.com/watch?v=UT31GUQbh2w> - PSYCHOLOGY

<https://youtu.be/-5dfbW57EwE> - GEOGRAPHY

<https://www.youtube.com/watch?v=iPf1IoZlu1Y> – HISTORY

ENGLISH

<https://www.youtube.com/watch?v=18NUtGilAzY>

<https://www.youtube.com/watch?v=18NUtGilAzY>

MATHEMATICS

<https://youtu.be/URvh5GOgzQ0>

COMPUTER DEPARTMENT

STEPS FOR INSTALLING

<https://www.youtube.com/watch?v=oE4KeuVNqcQ>

DEMO OF PYPLOT PROGRAMS

https://www.youtube.com/watch?v=W_lkj01jReY

<https://www.youtube.com/watch?v=mMh7etgUsTo> – IP

<https://www.youtube.com/watch?v=do6Dk0CT3tc>

<https://www.youtube.com/watch?v=2o8wFecisko> -C++

OPTIONAL-II

<https://youtu.be/lArQP8sJgF8> - PHYSICAL EDUCATION

<https://youtu.be/mK7WVnEZu5Q> - FMM

https://youtu.be/7N_6MWGox64 , <https://youtu.be/PcoQnSijNYU> ,

<https://youtu.be/mtH7ReKRtIE> - HINDI

EAST POINT SCHOOL
ASSIGNMENT
ENGLISH

Advanced Writing Skills

1. Nature is healing amidst a nationwide lockdown due to the coronavirus pandemic in India. Taking a cue from the news clip by Wion News channel, <https://www.youtube.com/watch?v=18NUtGilAzY> write an article throwing some light on the issue discussed above in about 150 to 200 words. Give a suitable heading for your article.
2. Hundreds of millions of workers in India may sink deeper into poverty due to the coronavirus pandemic, says UN's labour body. Watch the news clip given at the end of the question and write an article throwing some light on the issue discussed above in about 150 to 200 words. Supply a suitable title to the article. Link - <https://www.youtube.com/watch?v=goMOcY2YAh4>

Literature section

1. **Read the extracts given below and answer the questions that follow.**

.....but soon

put that thought away and

looked out at young

trees sprinting, the merry children spilling

out of their homes.....

(a) What thought did the poet drive away from her mind?

(b) What did she see when she looked out of the car?

(c) How do you know that the joyful scene didn't help her drive away the painful thought from her mind?

(d) What are the merry children symbolic of?

(e) What do the 'sprinting trees' signify?

(f) What are "the merry children spilling out of their homes", symbolic of?

(g) Why does the poet make use of the images of 'young trees sprinting' and 'merry children spilling'?

2. **Read the extract given below and answer the questions that follow.**

Driving from my parent's

home to Cochin last Friday

morning, I saw my mother, beside me

doze, open mouthed, her face ashen like that

of a corpse and realised with pain .

that she was as old as she looked ...

(a) Where was the poet driving to?

(b) Why was her mother's face looking like that of a corpse?

(c) What did the poet notice about her mother?

(d) Why was the realisation painful?

3. **Read the extract given below and answer the questions that follow.**

.....and felt that old

familiar ache, my childhood's fear,

(a) What was the childhood fear that now troubled the poet?

(b) Explain, "that old familiar ache."

MATHEMATICS

Assignment on Differentiation

Differentiate the following functions with respect to x

1. $\sin x^5$

2. $\log \sin^2 x$

3. $e^{\sin x}$

4. $\sin 2x + (2x - 5)^2$

5. $\sin 2x \cos 3x$

6. $\frac{1}{\log \cos x}$

7. $x \log x - x$

8. $\log(\log x^2)$

9. $\sin^2 x^3$

10. $\log\left(\frac{1+x}{1-x}\right)$

11. $\cos(\log x)$

12. $\sin(\log x) - \log(\sin x)$

ACCOUNTANCY

Fundamentals: P&L APPROPRIATION A/C

1. Where would you record "Rent paid to Partner" while preparing P/L Appropriation A/c
2. Why don't we show Manager's Commission and Interest on Partner's Loan in P/L Appropriation Account?
3. David and John were partners in a firm sharing profits in the ratio of 4 : 1. Their capitals on 1.4.2006 were : David Rs.2,50,000 and John Rs.50,000. The partnership deed provided that David will get a commission of 10% on the net profit after allowing a salary of Rs.2,500 per month to John. The profit of the firm for the year ended 31.3.2007 was Rs.1,40,000. Prepare Profit and Loss Appropriation Account for the year ended 31.3.2007.
4. A, B and C were partners in a firm having capitals of Rs.60,000, Rs.60,000 and Rs.80,000 respectively. Their current account balances were: A Rs.10,000; B Rs.5,000 and C Rs.2,000 (Dr.). According to the partnership deed the partners were entitled to interest on capital @5% p.a. C being the working partner was also entitled to a salary of Rs. 6,000 p.a. The profits were to be divided as follows:
 - (a) The first Rs.20,000 in proportion to their capitals
 - (b) Next Rs.30,000 in the ratio of 5 : 3 : 2
 - (c) Remaining profits to be shared equallyThe firm made a profit of Rs.1,56,000 before charging any of the above items. Prepare the profit and loss appropriation account and pass the necessary Journal entry for the appropriation of profits.
5. X and Y were partners in a firm sharing profits and losses in the ratio of their capitals which were Rs.5,00,000 and Rs.4,00,000 respectively. The partnership agreement provided a salary of Rs.20,000 p.a. to Y and 10% p.a. interest on partners capital. The profit of the firm for the year ended 31st March, 2008 was Rs.1,46,000. Prepare P/L Appropriation Account of X and Y for the year ended 31st March 2008.

BUSINESS STUDIES

ASSIGNMENT-7

CHAPTER-12 CONSUMER PROTECTION

Q1. A consumer has a right to file a complaint and to be heard in case of dissatisfaction with goods or services according to the:

- (a) Right to Seek Redressal
- (b) Right to choose
- (c) Right to be heard
- (d) None of these

Q2. _____ a standardized mark is printed on jewelry

- (a) Agmark
- (b) ISI
- (c) Hallmark
- (d) ISO 2009

Q3. Rights of a consumer are protected under:

- (a) Consumer Protection Act, 1984
- (b) Consumer Protection Act, 1982
- (c) Consumer Protection Act, 1986
- (d) Consumer Protection Act, 1988

Q4. ISI is the quality certification mark used in case of:

- (a) Food products
- (b) Jewelry items
- (c) Agricultural products
- (d) Electronic products

Q5. In which redressal agency a complaint can be made, if the value of the goods or services along with the compensation claimed, exceed ₹20lakhs?

- (a) State Commission
- (b) District Forum
- (c) National Commission
- (d) The Supreme Court of India

Q6. Aman, a degree holder in Entrepreneurship came to know about Piplantri Village located in Rajasthan, where in 2006 an initiative was started in which 111 trees are planted every time a girl child is born.

To keep termites away from the trees the villagers have planted 2.5 million Aloe Vera plants around the trees. This has turned the village into an oasis, as the planting of trees led to higher water levels. Aman decided to visit the village to start a business unit, for the processing and marketing of Aloe Vera into juices, gels and other products. However, on visiting the village Aman found that the villagers were suffering exploitation at the hands of local merchants who were engaged in unscrupulous, exploitative trade practices like hoarding and black marketing of food products and also selling unsafe and adulterated products to the villagers. After looking at their plight, instead of a business organisation, he decided to set up an organisation for the protection and promotion of the consumer interest of the villagers.

State the functions that the organisation established by Aman will be performing. (Any three points)

Q7. Explain all the redressal agencies under the CONSUMER PROTECTION ACT,1986 in the tabular format.

Q8. In the year 2015, Under section 12(1D) of the Consumer Protection Act, the Consumer Affairs Ministry had filed a suit in National Consumer Disputes Redressal Commission (NCDRC) against Nestle India, the manufacturer of Maggi noodles, seeking about Rs.640 crore in damages for alleged unfair trade practices, false labelling and misleading advertisements.

In context of the above case:

- a) Name four other parties besides government who can file a case under Consumer Protection Act 1986.
- b) Why has the government filed a suit in National Consumer Disputes Redressal Commission (NCDRC) and at no other level of three tier redressal system?

Q9. Good Health Ltd., a pharmaceuticals company, has introduced mosquito repellent bands under the brand name 'Jaddu' in the wake of outbreak of Dengue in various parts of the country. The product attracted many people from all age groups, especially kids. However, the company failed to provide adequate guidance for the users on the label of the product in terms of time period of the effectiveness of the repellent band once its seal is opened. Because of this ambiguity, many buyers faced problems.

In context of the above case:

- a) Identify and explain the consumer right which has been overlooked by the company.
- b) Name and explain any two functions of the important product related aspect ignored by the company.

Q10. Explain any five reliefs available to a consumer when the Consumer Court is satisfied with the genuineness of the complaint.

ECONOMICS

Q1 The RBI can increase the money supply in the market by:

- a) selling government securities
- b) buying government securities
- c) borrowing money from commercial banks
- d) none of the above

Q2 The RBI can decrease the money supply in the market by:

- a) selling government securities
- b) buying government securities
- c) borrowing money from commercial banks
- d) none of the above

Q3 By increasing the 'Bank Rate', the RBI can:

- a) provide incentives to commercial banks to lend more to public
- b) provide incentives to commercial banks to lend less to public
- c) increase the money supply in the market
- d) none of the above

Q4 In monetary terminology, what is called the 'monetary base' or 'high powered money'?

- a) the total assets of RBI
- b) the total liability of RBI
- c) the total debt of the government
- d) the total foreign exchange of RBI

Q5 Calculate the value of money multiplier and the total deposit created if the initial amount is ₹. 700 crores and LRR is 10%

Q6 Calculate LRR, if the initial deposit of ₹. 500 crores lead to the establishment of total deposits of ₹. 4,000 crores.

Q7 Define Cash reserve ratio

Q8 Define Margin requirements

Q9 Define Bank rate

Q10 Define Reverse repo rate

Q11 Explain the currency authority function of central bank

Q12 Explain lender of last resort function of central bank

Q13 State any 5 differences between Central bank and Commercial banks

Q14 What are the three main functions of commercial bank

Q15 What are open market operations ? How do these work as method of credit control ?

Q16 Explain the two components of LRR.

BIOLOGY

1. State the significance of the following stages during the lifetime of a female.
Menarche
Menopause 2
2. What is the significance of LH surge through the menstrual cycle? How is polyspermy checked by the zona pellucida of the ovum? 2
3. During which stage of cell division are spermatids formed from the secondary spermatocytes? 1
4. How many spermatozoa does one secondary spermatocyte produce?
- b. Where in zygote does the first cleavage division occur? 2
5. Why does corpus luteum stay active throughout pregnancy and in the absence of fertilization, is active only for 10-12 days? 2
6. How many polar bodies are given out in production of one egg during oogenesis? 1
7. Diagrammatically show the passage of zygote and implantation in humans. 3
8. Draw a well labelled structure of a mammalian blastocyst. 2
9. What induces completion of meiosis in secondary oocyte? 1
10. Draw a flow chart of zygote's journey till implantation with specific points. 3

CHEMISTRY

HALOALKANES & HALOARENES

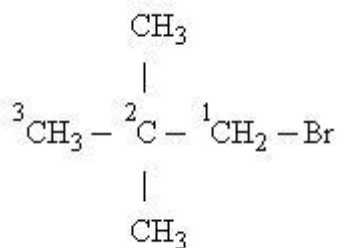
QUESTION BANK

Question 1

Write the IUPAC name of the following compound:



Ans.

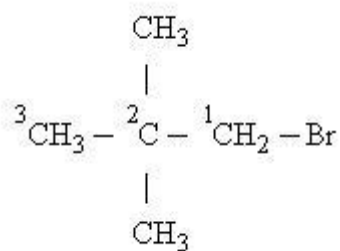


IUPAC name : 2, 2-Dimethylbromopropane.

Question 2

Write the IUPAC name of the following compound: $(\text{CH}_3)_3\text{CCH}_2\text{Br}$

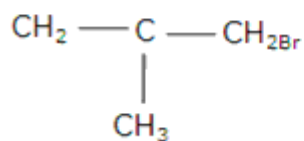
Ans.



The IUPAC name of the given structure is 2, 2-Dimethylbromopropane.

Question 3

Give the IUPAC name of the following compound.



Ans.

3-Bromo-2-methylpro-1-ene

Question 4

Give the common name of the following.

(i) 1- Bromopropane

(ii) 2-chloro propane

(iii) 1-chloro-2-methylpropane

Ans.

(i) Common name of 1- Bromopropane is n-propylbromide

(ii) Common name of 2-chloro propane is Isopropyl chloride

(iii) Common name of 1-chloro-2-methylpropane Isobutyl chloride

Question 5

Classify the following as alkyl, allyl, benzyl, vinyl or aryl halides:

(i) $(\text{CH}_3)_2\text{CHCH}(\text{Cl})\text{CH}_3$

(ii) $(\text{CH}_3)_3\text{CCH}_2\text{CH}(\text{Br})\text{C}_6\text{H}_5$

(iii) $\text{CH}_3\text{CH}=\text{C}(\text{Cl})\text{CH}_2\text{CH}(\text{CH}_3)_2$

(iv) $\text{CH}_3\text{CH}=\text{CHC}(\text{Br})(\text{CH}_3)_2$

(v) $p\text{-ClC}_6\text{H}_4\text{CH}_2\text{CH}(\text{CH}_3)_2$

Ans.

(i) Alkyl halide: $(\text{CH}_3)_2\text{CHCH}(\text{Cl})\text{CH}_3$

(ii) Allyl halide: $\text{CH}_3\text{CH}=\text{CHC}(\text{Br})(\text{CH}_3)_2$

(iii) Benzyl halide: $(\text{CH}_3)_3\text{CCH}_2\text{CH}(\text{Br})\text{C}_6\text{H}_5$

(iv) Vinyl halide: $\text{CH}_3\text{CH}=\text{C}(\text{Cl})\text{CH}_2\text{CH}(\text{CH}_3)_2$

(v) Aryl halide: $p\text{-ClC}_6\text{H}_4\text{CH}_2\text{CH}(\text{CH}_3)_2$

Question 6

Write the isomers of the compound having formula $\text{C}_4\text{H}_9\text{Br}$.

Ans.

i. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Br}$

ii. $\text{CH}_3\text{CH}_2\text{CH}(\text{Br})\text{CH}_3$

iii. $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{Br}$

iv. $\text{CH}_3\text{CBr}(\text{CH}_3)\text{CH}_3$

Question 7

Define racemisation?

Ans.

A mixture containing two enantiomers in equal proportions is known as racemic mixture and the process of conversion of enantiomers into a racemic mixture is known as racemisation.

Question 8

What are enantiomers? Give example.

Ans.

The stereoisomers related to each other as nonsuperimposable mirror images are called enantiomers.

For example –

2-chloro butane ($\text{CH}_3\text{CH}_2\text{C}^*\text{H}(\text{Cl})\text{CH}_3$).

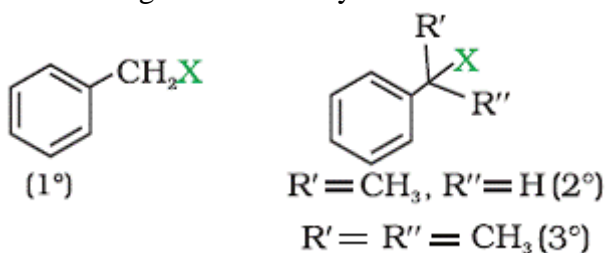
Here the carbon atom marked is the chiral centre and possesses four different groups.

Question 9

What is benzylic halide? Give the structure.

Ans.

The compounds in which the halogen atom is bonded to an sp^3 -hybridised carbon atom next to an aromatic ring is called benzylic halide.



Question 10

What is the common name of 1, 3-Dibromobenzene?

Ans.

m- Dibromobenzene.

Question 11

What is the general formula for alkyl halide?

Ans.

$\text{C}_n\text{H}_{2n+1}\text{X}$, where X is halogen atom and n is the number of carbon atom.

Question 12

Write the structures of the following organic halogen compound.

2-Chloro-3-methylpentane.

Ans.

$\text{CH}_3\text{CH}(\text{Cl})\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$

Question 13

Give the IUPAC name of the compound $\text{CH}_3\text{CH}(\text{Cl})\text{CH}(\text{Br})\text{CH}_3$.

Ans.

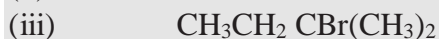
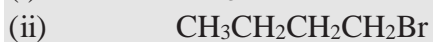
2-bromo-3-chloro-Butane

Question 1

Write the structure of the major organic product in each of the following reactions:



Ans.



Question 2

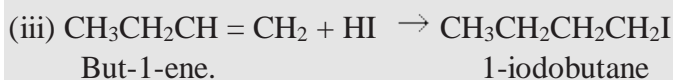
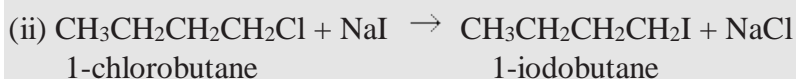
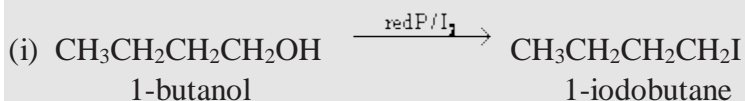
Write the equations for the preparation of 1-iodobutane from

(i) 1-butanol

(ii) 1-chlorobutane

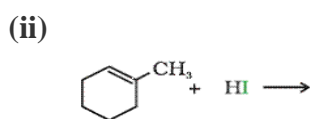
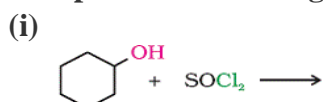
(iii) But-1-ene.

Ans.

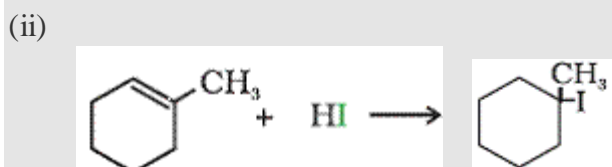
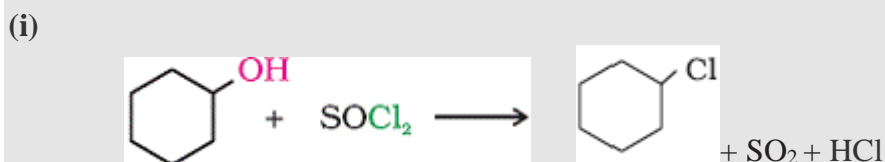


Question 3

Complete the following reactions:



Ans.



Question 4

***p*-Dichlorobenzene has higher melting point and solubility than those of *ortho*- and *meta*-isomers.**

Discuss.

Ans.

Due to its symmetry *p*-Dichlorobenzene fits in crystal lattice better as compared to *o*- and *m*-isomers. As a result the melting point and solubility of *p*-Dichlorobenzene is higher than *ortho*- and *meta*-isomers.

Question 5

Explain the statement "Alkyl halides, though polar, are immiscible with water".

Ans.

Energy is required to overcome the attractions between the haloalkane molecules and to break the hydrogen bonds between water molecules. The energy released during the formation of new attractive force between Haloalkane and the water molecule is very less as the attractions between the haloalkane and the water molecule is not as strong as the original hydrogen bonds in water. Thus Alkyl halides, though polar, are immiscible with water.

Question 6

Why is sulphuric acid not used during the reaction of alcohols with KI?

Ans.

H₂SO₄ converts KI to corresponding HI and then oxidizes it to I₂. Hence it cannot be used during the reaction of alcohols with KI.

Question 7

Name the aromatic salt formed as intermediate during the Sandmeyer's Reaction.

Ans.

Benzene diazonium halide also known as diazonium salt is formed as intermediate during the Sandmeyer's Reaction.

Question 8

Which alkyl halides show colour on exposure to light?

Ans.

Alkyl Bromide and Alky iodide.

Question 9

Give the Swarts reaction for the synthesis of fluoromethane.

Ans.



Question 10

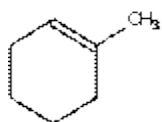
Give the order of reactivity of alcohols with a given haloacid.

Ans.

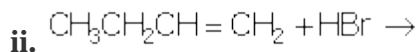
The order of reactivity of alcohols with a given haloacid is 3° > 2° > 1°.

Question 1

Complete the following reaction equations:

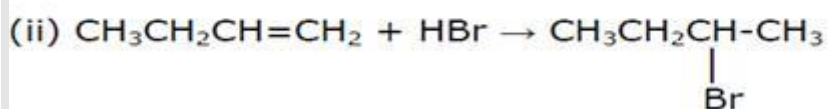
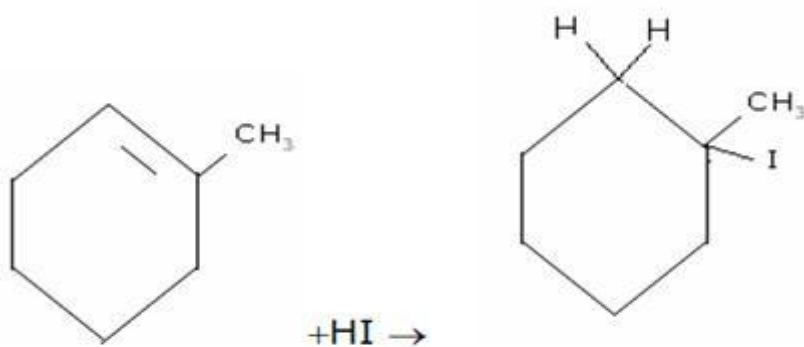


i.



Ans.

(i)



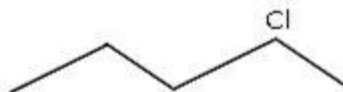
Question 2

Which one in the following pairs undergoes $\text{S}_{\text{N}}1$ substitution reaction faster and why?

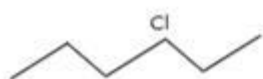
i.



Or



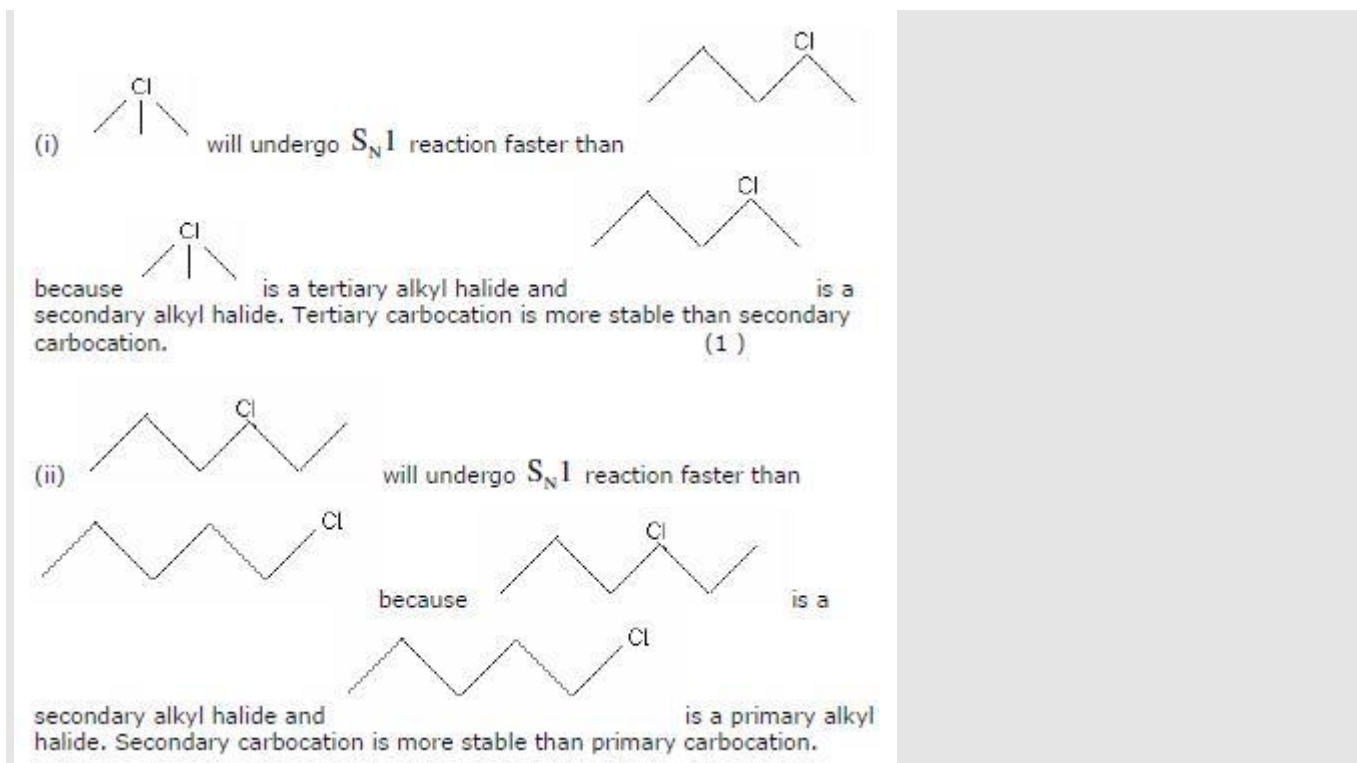
ii.



Or



Ans.



Question 3

(i) State one use each of DDT and iodoform.

(ii) Which compound in the following couples will react faster in S_N2 displacement and why?

(a) 1-Bromopentane or 2-bromopentane

(b) 1-Bromo-2-methylbutane or 2-bromo-2-methylbutane.

Ans.

(i) Use of DDT: It is used as an insecticide.

Use of iodoform: It is used as a mild antiseptic.

(ii)

(a) 1-Bromopentane will undergo faster S_N2 displacement reaction than 2-bromopentane because 1-bromopentane has less steric hindrance than 2-bromopentane. This is because 1-bromopentane is a primary alkyl halide whereas 2-bromopentane is a secondary alkyl halide.

(b) 1-Bromo-2-methylbutane will undergo S_N2 reaction faster than 2-bromo-2-methylbutane because 1-bromo-2-methylbutane has less steric hindrance than 2-bromo-2-methylbutane. This is because 1-bromo-2-methylbutane is a primary alkyl halide whereas 2-bromo-2-methylbutane is a tertiary alkyl halide.

Question 4

A solution of KOH hydrolyses $\text{CH}_3\text{CH}(\text{Cl})\text{CH}_2\text{CH}_3$ and $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$. Which one of these is more easily hydrolysed?

Ans.

$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$ undergoes hydrolysis more easily than $\text{CH}_3\text{CHClCH}_2\text{CH}_3$ in S_N2 reactions. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$ being a primary alkyl halide has less steric hindrance than $\text{CH}_3\text{CHClCH}_2\text{CH}_3$ which is secondary alkyl halide.

Question 5

Answer the following:

(i) Haloalkanes easily dissolve in organic solvents, why?

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

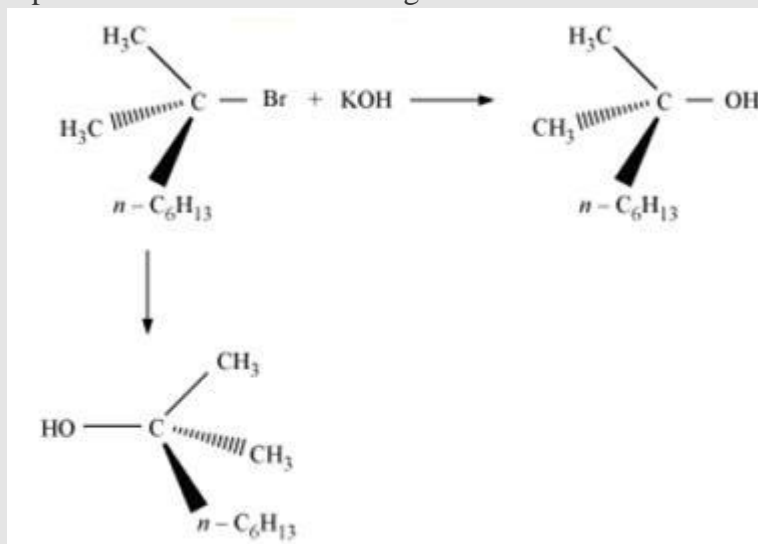
(iii) Of the two bromo derivatives, $\text{C}_6\text{H}_5\text{CH}(\text{CH}_3)\text{Br}$ and $\text{C}_6\text{H}_5\text{CH}(\text{C}_6\text{H}_5)\text{Br}$, which one is more reactive in S_N1 substitution reaction and why?

Ans.

(i) Haloalkanes can easily dissolve in organic solvents of low polarity because the new forces of attraction set up between haloalkanes and the solvent molecules are of same strength as the forces of attraction being broken.

(ii) A mixture of equal amounts of two enantiomers is known as racemic mixture.

For example: When a 3° halide undergoes substitution with KOH, the reaction proceeds through S_N1 mechanism forming the racemic mixture in which one of the products has the same configuration as a reactant, while the other product has an inverted configuration.

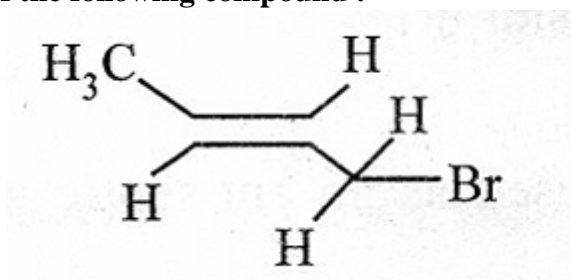


(iii) The S_N1 substitution reaction involves the formation of carbocation, which is not affected by the presence of bulky groups.

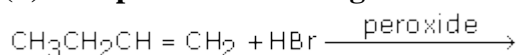
Thus, C₆H₅CH(C₆H₅)Br will be more reactive towards S_N1 substitution reaction forming racemic mixture.

Question 6

(a) State the IUPAC name of the following compound :



(b) Complete the following chemical equations:



Ans.

(a) 1-Bromobut-2-ene

(b) CH₃ CH₂ CH₂ CH₂ Br

Question 7

Explain as to why haloarenes are much less reactive than haloalkanes towards nucleophilic substitution reactions.

Or

Which compound in each of the following pairs will react faster in S_N2 reaction with -OH? Why?

(i) CH₃ Br or CH₃I

(ii) (CH₃)₃ CCl or CH₃ Cl

Ans.

Aryl halides are less reactive towards nucleophilic substitution because of any of the following reasons:

- (i) Due to resonance effect stabilization of haloarenes, the energy of activation for displacement of halogen for haloalkanes is much lower than that from haloarenes.
- (ii) sp^2 hybridization in haloarenes being more electronegative than sp^3 in haloalkanes.

Or

- (i) CH_3I , Because iodine is a better leaving group due to its larger size.
- (ii) CH_3Cl , the presence of bulky group on the carbon atom in $(CH_3)_2CCl$ has an inhibiting effect.

Question 8

Answer the following:

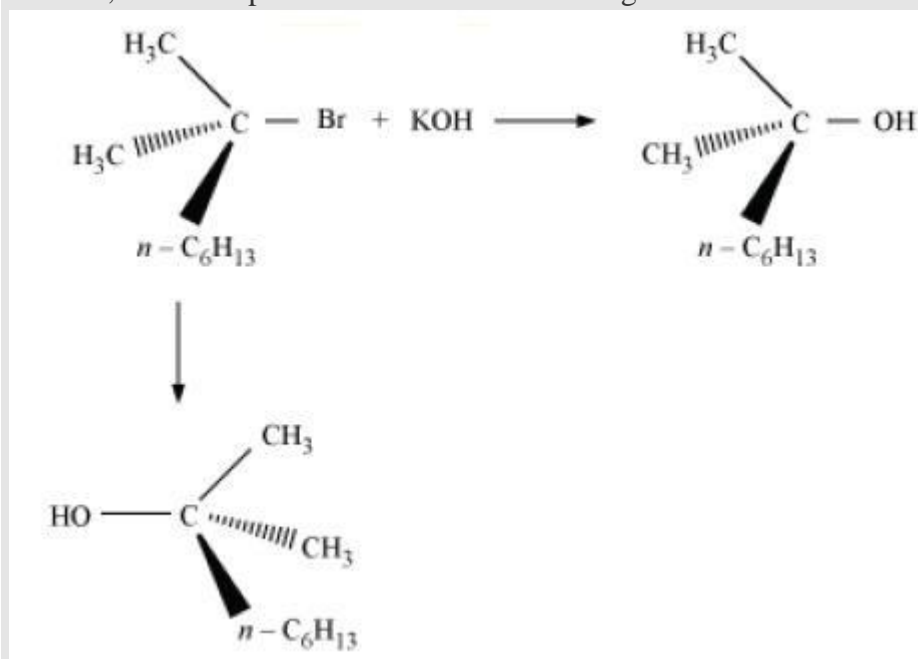
- (i) Haloalkanes easily dissolve in organic solvents, why?
- (ii) What is known as a racemic mixture? Give an example.
- (iii) Of the two bromo derivatives, $C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$, which one is more reactive in S_N1 substitution reaction and why?

Ans.

(i) Haloalkanes can easily dissolve in organic solvents of low polarity because the new forces of attraction set up between haloalkanes and the solvent molecules are of same strength as the forces of attraction being broken.

(ii) A mixture of equal amounts of two enantiomers is known as racemic mixture.

For example: When a 3° halide undergoes substitution with KOH , the reaction proceeds through S_N1 mechanism forming the racemic mixture in which one of the products has the same configuration as a reactant, while the product has an inverted configuration.



(iii) The S_N1 substitution reaction involves the formation of carbocation, which is not affected by the presence of bulky groups.

Thus, $C_6H_5CH(C_6H_5)Br$ will be more reactive towards S_N1 substitution reaction forming racemic mixture.

Question 9

A solution of KOH hydrolyses $CH_3CHClCH_2CH_3$ and $CH_2CH_2CH_2CH_2Cl$. Which one of these is more easily hydrolysed?

Ans.

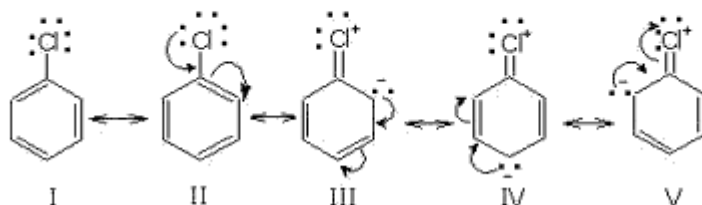
$CH_3CH_2CH_2CH_2Cl$ undergoes hydrolysis more easily than $CH_3CHClCH_2CH_3$, being a primary alkyl halide has less steric hindrance than $CH_3CHClCH_2CH_3$ which is secondary alkyl halide.

Question 10

Although chlorine is an electron withdrawing group, yet it is ortho-, para-directing in electrophilic aromatic substitution reaction. Explain why it is so?

Ans.

In aromatic compound chlorine attached to the ring acts as the electrons donor group because the lone pair of chlorine becomes involved in process of resonance and is responsible to create the negative charge at ortho and para positions so acts as ortho-para director.



Question 11

Give reasons for the following:

(i) Grignard reagent should be prepared under anhydrous conditions.

(ii) Neo-pentyl bromide undergoes nucleophilic substituting reactions very slowly.

(iii) p-Methoxybenzyl bromide reacts faster than p-nitrobenzyl bromide with ethanol to form an ether product.

Ans.

(i) Grignard reagent reacts with water and gets decomposed, so it is produced in anhydrous conditions.



(ii) Neo-pentyl bromide being a primary halide reacts slowly through $\text{S}_{\text{N}}1$, and being a sterically hindered halide reacts slowly even through $\text{S}_{\text{N}}2$ mechanism.

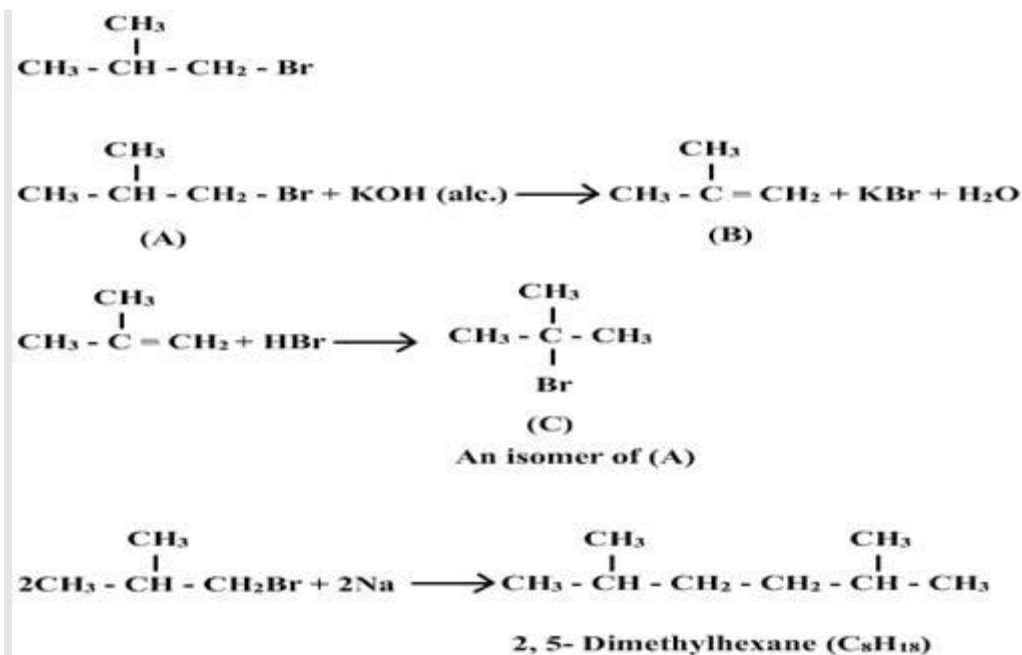
(iii) Methoxy ($-\text{OCH}_3$) group being an electron releasing group stabilizes the intermediate carbocation. On the other hand nitro group ($-\text{NO}_2$) is an electron withdrawing group and hence it destabilises the intermediate carbocation. Thus p-methoxy benzyl bromide reacts faster than p-nitrobenzyl bromide because in its case the reaction proceeds via more stable intermediate carbocation.

Question 12

A primary alkyl halide (A) C_4H_9 reacts with alcoholic KOH to give a compound (B). The compound (B) reacts with HBr to give the compound C which is an isomer of A. When A reacts with sodium metal it give a compound (D) whose molecular formula is C_8H_{18} . The compound D is different from the compound formed when n-butyl bromide reacts with sodium. Give the structural formula of A and write all the equations involved in the reaction.

Ans.

For $\text{C}_4\text{H}_9\text{Br}$, two primary halides are possible $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Br}$ (n-butyl bromide) and $(\text{CH}_3)_2\text{CHCH}_2\text{Br}$ (iso-butyl bromide). Since A is not normal -butyl bromide, it must be iso-butyl bromide.



Question 13

Give reasons for the following:

- i) Haloalkanes react with KCN to form alkyl cyanides as main product while AgCN forms isocyanide as the chief products.
- ii) Alcohols do not react with NaBr, but when H₂SO₄ is added, they form alkyl bromides.

Ans.

- i) KCN is predominantly ionic and provides cyanide ions in solution. Although both carbon and nitrogen atoms of CN can donate electron pairs but the attack takes place mainly through carbon atom and not through nitrogen atom because C-C bond is more stable than C-N bond. However AgCN is mainly covalent in nature and nitrogen is free to donate electron pair forming isocyanide as the main product.
- ii) Br⁻ is a weak base. So it cannot displace the strong base OH⁻ when H₂SO₄ is added, it leads to protonation of alcohol, as a result of which water molecule is formed. Since water molecule is a very weak base it is easily replaced by Br⁻.

Question 14

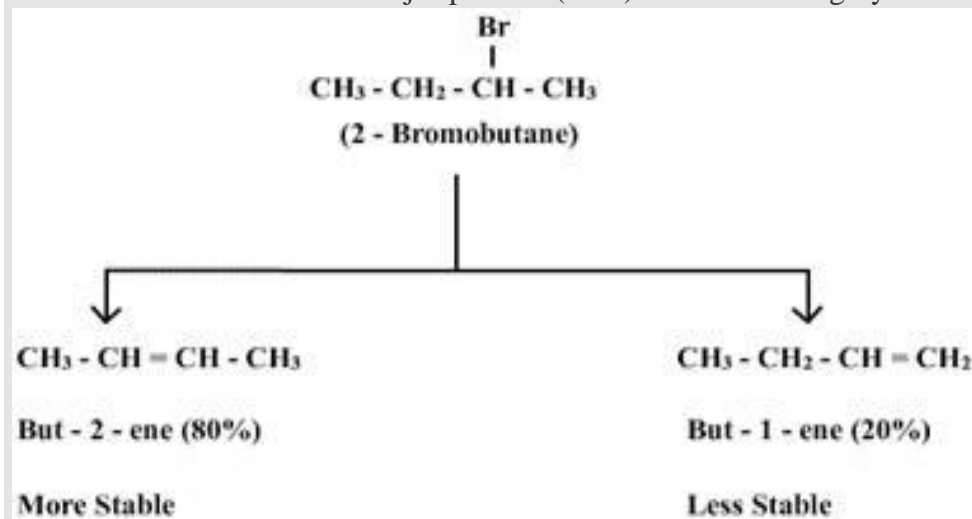
What is Saytzeff rule? Illustrate with suitable example.

Ans.

According to Saytzeff rule in dehydrohalogenation reactions the Haloalkane can form more than one alkene due to the availability of more than one alpha hydrogen atoms. In such a case the preferred alkene is that alkene which has greater number of alkyl groups attached to the doubly bonded carbon atoms.

For example: the dehydrohalogenation of 2-bromobutane yields two products 1 butene and 2 butene.

Out of these 2 butene is the major product (80%) as it is more highly substituted and it is more stable



Question 15

Give the nitration and sulphonation reaction of chlorobenzene.

Ans.

(i) Nitration:



(ii) Sulphonation:



Question 16

Which compound in each of the following pairs will react faster in $\text{S}_{\text{N}}2$ reaction with -OH ?

(i) CH_3Br or CH_3I (ii) $(\text{CH}_3)_3\text{CCl}$ or CH_3Cl

Ans.

(i) CH_3I will react faster than CH_3Br because the order of reactivity is as follows



(ii) CH_3Cl will react faster than $(\text{CH}_3)_3\text{CCl}$ because the order of reactivity is as follows in $\text{S}_{\text{N}}2$ reaction.

Question 17

What is the directive influence of chlorine in chlorobenzene?

Ans.

The -Cl group is ortho and para directing in chlorobenzene.

Question 18

What is Grignard reagent?

Ans.

It is an organometallic compound having formula RMgX also called alkyl magnesium halide.

Question 19

Give the order of reactivity for $\text{S}_{\text{N}}1$ reaction in methyl, primary, secondary and tertiary halide.

Ans.

Methyl halide > Primary halide > secondary halide > Tertiary halide

$\xrightarrow{\text{order of reactivity}}$

Question 20

What are ambident nucleophiles?

Ans.

Nucleophiles that possess two nucleophilic centres are called ambident nucleophiles. Example cyanide



Question 1

(i) State one use each of DDT and iodoform.

(ii) Which compound in the following couples will react faster in $\text{S}_{\text{N}}2$ displacement and why?

(a) 1-Bromopentane or 2-bromopentane

(b) 1-Bromo-2-methylbutane or 2-bromo-2methylbutane.

Ans.

(i) Use of DDT: It is used as an insecticide.

Use of iodoform: It is used as an antiseptic.

(ii) (a) 1 - Bromopentane will undergo faster $\text{S}_{\text{N}}2$ displacement reaction than 2-bromopentane because 1-bromopentane has less steric hindrance than 2 -bromopentane. This is because 1- bromopentane is a primary alkyl halide whereas 2-bromopentane is a secondary alkyl halide.

(b) 1- Bromo-2-methylbutane will undergo $\text{S}_{\text{N}}2$ reaction faster than 2- Bromo-2-methylbutane because 1- Bromo-2-methylbutane has less steric hindrance than 2- Bromo-2-methylbutane. This is because 1-Bromo-2-methylbutane is a primary alkyl halide whereas 2- Bromo-2-methylbutane is a tertiary alkyl halide.

Question 2

What is DDT and why its use is banned in United States?

Ans.

DDT is p, p'-Dichlorodiphenyltrichloroethane and is used as insecticide. It is banned for the following reason

(i) Its high toxicity towards fish.

(ii) DDT is not metabolized very rapidly by animals but get deposited and stored in the fatty tissues.

Question 3

Give the three uses of each of the following:

(i) Dichloromethane

(ii) Tetrachloromethane

Ans.

Dichloromethane: It can be used

(i) As solvent

(ii) As paint remover

(iii) As aerosol propellant

Tetrachloro methane: It can be used

(i) As a solvent

(ii) As a fire extinguisher

(iii) As a degreasing agent

Question 4

What is the reason that Haloarenes are less reactive than haloalkane towards nucleophilic substitution reaction?

Ans.

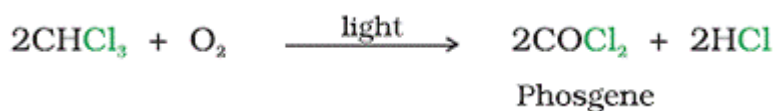
In haloalkane, the halogen is attached to sp^3 hybridised carbon atom while in case of haloarene it is attached to sp^2 hybridised carbon atom. The sp^2 hybridized carbon have greater s -character than sp^3 -hybridised carbon and thus more electronegative and can hold the electron pair of C—X bond more tightly than in haloalkane. The, C—Cl bond length in haloalkane is greater than in haloarene. Since it is difficult to break a shorter bond than a longer bond, therefore, Haloarenes are less reactive than haloalkanes towards nucleophilic substitution reaction.

Question 5

Why chloroform is kept closed in dark colored bottles?

Ans.

Chloroform is oxidized slowly by air in the presence of light to an extremely poisonous gas, carbonyl chloride, also known as Phosgene



Hence it is kept closed in dark colored bottles.

Question 6

Give the role of carbon tetrachloride and Freon on environmental degradation.

Ans.

Both the carbon tetrachloride and Freon causes depletion of ozone layer when released in air because they remain unchanged and diffuses into stratosphere. The depletion of ozone layer increases the exposure of UV rays to human being which results in skin cancer, eye disorder and immune system diseases.

Question 7

Why the use of chloroform as anesthetic is decreasing?

Ans.

Inhaling chloroform vapors depresses the central nervous system and its chronic exposure may cause damage to the liver and kidneys due to metabolism of chloroform to phosgene gas. Hence the use of chloroform as anesthetic is decreasing.

Question 8

Give two hazardous effects of methylene dichloride.

Ans.

- i) It harms the central nervous system.
- (ii) On direct contact with skin causes severe burning.

Question 9

What is iodoform? Give one use of it.

Ans.

Triiodomethane is called iodoform and can be used as antiseptic due to liberation of free iodine.

Question 10

What are freons? Give one example.

Ans.

Freons are chloro fluoro carbons used as refrigerants. Example CCl_2F_2 .

Question 11

Give the full name of DDT.

Ans.

p,p'-Dichlorodiphenyltrichloroethane

PHYSICS

CH -1 THREE MARKS QUESTIONS SOLUTION

ENGLISH

Write Coulomb's law in vector form. Also show that it obeys Newton's third law of motion.

ANS:

For like charges, $\vec{F}_{12} = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r^3} \vec{r}_{21}$

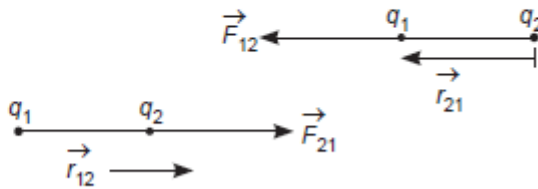
where \vec{F}_{12} is the force experienced by the 1st charge due to 2nd one and $\vec{r}_{21} = \vec{r}_1 - \vec{r}_2$.

Similarly, $\vec{F}_{21} = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r^3} \vec{r}_{12}$, $\vec{r}_{12} = \vec{r}_2 - \vec{r}_1$

\therefore

$$\vec{r}_{12} = -\vec{r}_{21}$$

$$\vec{F}_{12} = -\vec{F}_{21}$$



\therefore Newton's third law is obeyed by the Coulomb's law.

Define the term 'electric dipole moment'. Is it a scalar or vector?

Deduce an expression for the electric field at a point on the equatorial plane of an electric dipole of length $2a$.

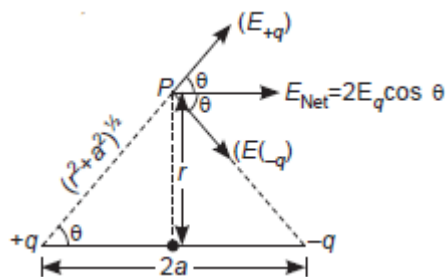
ANS:

Electric dipole moment is a measurement of the strength of electric dipole. It is given by $\vec{p} = q(2\vec{a})$ Cm where \vec{p} is the electric dipole moment and $2a$ is the separation between the charges. It is a vector quantity directed from negative to positive charge on the line joining them.

Let the dipole be made of two equal and opposite charges $+q$ and $-q$, separated by $2a$. Consider a point P at a distance r from the mid-point.

$$|\vec{E}_{\pm q}| = \frac{kq}{(r^2 + a^2)}$$

Field at P due to each charge will be of equal magnitude pointing as shown.



Resolving electric fields due to two charges. We can see that Y-axis

components get cancelled out.

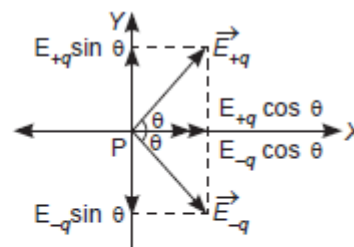
$$\begin{aligned} \therefore \text{Net field at } P, \quad E &= 2E_q \cos \theta \\ E &= \frac{2kq}{(r^2 + a^2)} \cdot \frac{a}{(r^2 + a^2)^{1/2}} = \frac{2aqk}{(r^2 + a^2)^{3/2}} = \frac{kp}{(r^2 + a^2)^{3/2}} \\ & \quad (\because \cos \theta = \frac{a}{(r^2 + a^2)^{1/2}}) \end{aligned}$$

(pointing anti-parallel to dipole moment)

If $r \gg a$, i.e. a^2 can be neglected in comparison to r^2 .

$$\therefore E = \frac{kp}{r^3}$$

(anti-parallel to \vec{p})



3

An electric dipole is held in a uniform electric field.

(i) Using suitable diagram, show that it does not undergo any translatory motion, and (ii) derive an expression for the torque acting on it and specify its direction.

ANS:

3

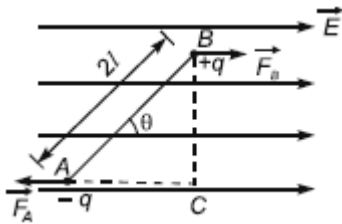
3

3

(i) Force on $+q$, $\vec{F}_B = +q\vec{E}$

Force on $-q$, $\vec{F}_A = -q\vec{E}$

As forces are equal in magnitude and opposite in direction, therefore, net



force = 0.

(ii) $\tau = F \times$ perpendicular distance between \vec{F}_A and \vec{F}_B

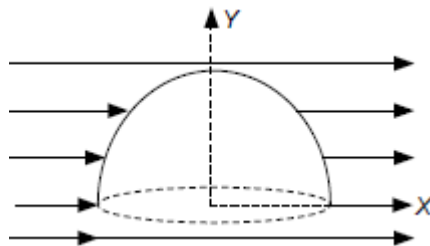
$$\tau = F (2l \sin \theta) = qE 2l \sin \theta$$

$$\vec{\tau} = \vec{p} \times \vec{E} \quad (\because \vec{p} = q2\vec{l})$$

4

A hemispherical surface lies as shown in an uniform electric field region. Find the net electric flux through the curved surface if electric field is

(a) along x-axis, and



(b) along y-axis.

ANS:

(a) Since, the number of field lines entering the hemisphere is equal to number of field lines leaving. Hence, the net electric flux through it is zero.

(b) As no charge is enclosed, therefore net electric flux is given by

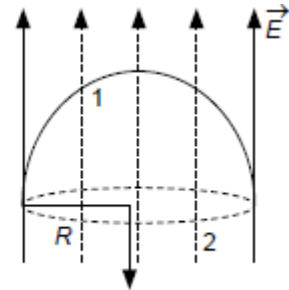
$$\phi = \phi_1 + \phi_2 = 0$$

where $\phi_1 =$ Electric flux through the curved surface area

$\phi_2 =$ Electric flux through the plane surface area

$$\therefore \phi_1 = -\phi_2$$

$$\Rightarrow \phi_1 = -E \cdot \pi R^2 \cos 180^\circ = E \cdot \pi R^2$$



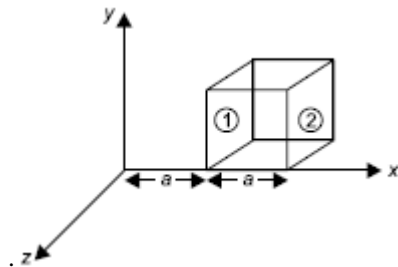
5

State Gauss's law in electrostatics. A cube with each side a is kept in an electric field given by $\vec{E} = Cx\hat{i}$, (as is shown in the figure) where C is

a positive dimensional constant. Find out

(i) the electric flux through the cube, and

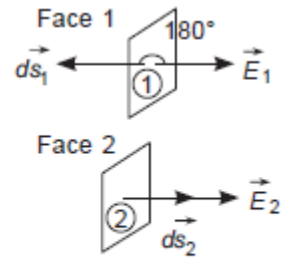
(ii) the net charge inside the cube



ANS: Gauss's law : The surface integral of electric field (electric flux) over any closed surface is $\frac{1}{\epsilon_0}$ times the charge enclosed in it.

(i) Electric flux, $\phi_E = \oint \vec{E} \cdot \vec{ds} = \frac{q}{\epsilon_0}$

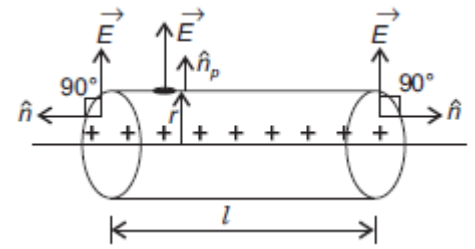
(ii) As the electric field is along the x-axis, therefore faces 1 and 2 which are perpendicular to x-axis will contribute to the electric flux. And, contribution to the flux due to all other faces will be zero.



$$\therefore \phi = \int \vec{E}_1 \cdot \vec{ds}_1 + \int \vec{E}_2 \cdot \vec{ds}_2 = -Ca^3 + 2Ca^3 = Ca^3 \text{ and } \phi = \frac{q}{\epsilon_0} \Rightarrow q = \epsilon_0 Ca^3$$

6 Using Gauss's theorem, deduce an expression for the electric field intensity at any point due to a thin, infinitely long wire of charge/length λ C/m. 3

ANS: Consider a linear charge distribution with charge density λ . We imagine a symmetrical Gaussian surface around length l of this distribution in such a way that the point P where we have to calculate electric field lies on it.



Electric flux through the circular faces of this Gaussian surface is zero.
Electric flux through the curved surface of this Gaussian surface is zero.

$$\phi_s = \int \vec{E} \cdot \vec{ds} = E ds \cos 90^\circ = 0 \quad (\because \theta = 90^\circ)$$

Electric flux through the curved surface is given by

$$\begin{aligned} \phi_{cs} &= \int \vec{E} \cdot \vec{ds} = \int E ds \cos 0^\circ \\ \phi_{cs} &= E \int ds = E(2\pi r l), \text{ here } r = \text{radius} \quad (\because \theta = 0^\circ) \end{aligned}$$

Net flux through the Gaussian surface is given by

$$\phi_E = \phi_s + \phi_{cs} = E(2\pi r l) \quad \dots(i)$$

According to the Gauss's theorem

$$\phi_E = \frac{q}{\epsilon_0} = \frac{\lambda l}{\epsilon_0} \quad (\because q = \lambda l) \quad \dots(ii)$$

From equations (i) and (ii), we get

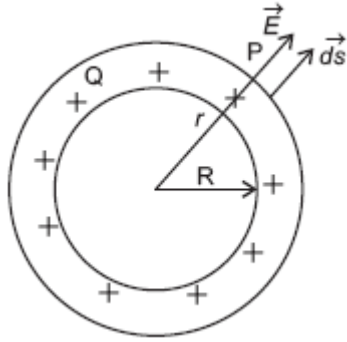
$$E = \frac{\lambda}{2\pi\epsilon_0 r} \Rightarrow E \propto \frac{1}{r}$$

7 Using Gauss's theorem, show mathematically that for any point outside the shell, the field due to a uniformly charged thin spherical shell is the same as if the entire charge of the shell is concentrated at the centre. Why do you expect the electric field inside the shell to be zero according to this theorem? 3

ANS:

Consider uniformly charged thin spherical shell. Let the total charge on the shell be Q . To calculate electric field at a point outside the shell, we consider a symmetrical Gaussian surface (here again a spherical shell) around the shell in such a way that the point of observation lies on it.

Electric flux through Gaussian surface = $E \cdot 4\pi r^2 \dots(i)$



According to the Gauss's theorem, $\phi = \frac{Q}{\epsilon_0}$... (ii)

where Q is the charge enclosed by Gaussian surface.

From equations (i) and (ii), we get $E \cdot 4\pi r^2 = \frac{Q}{\epsilon_0} \Rightarrow E = \frac{Q}{4\pi\epsilon_0 r^2}$

which is same as due to a point charge of magnitude Q located at the centre of the shell of radius r . For any point inside the shell, the charge enclosed by Gaussian surface is zero. Hence, the electric field is zero at any point inside the shell.

8

A thin conducting spherical shell of radius R has charge Q spread uniformly over its surface. Using Gauss's law, derive an expression for an electric field at a point outside the shell.

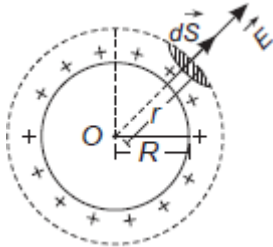
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Draw a graph of electric field $E(r)$ with distance r from the centre of the shell for $0 \leq r \leq \infty$.

ANS:

Consider the given spherical shell of radius R holding charge Q spread uniformly over its surface. Construct a Gaussian surface of radius r (concentric and symmetrical).

The field lines will pass perpendicularly through the Gaussian surface in all the direction.



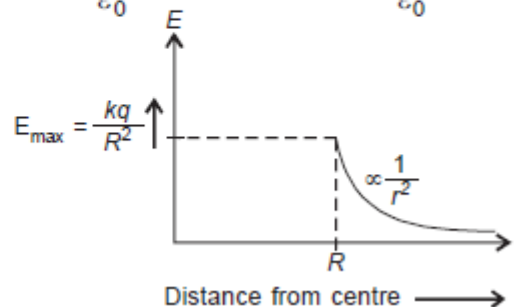
So, the effective Gaussian surface area having normal field will be $4\pi r^2$.

Using Gauss's theorem, $\oint \vec{E} \cdot d\vec{S} = \frac{q_{en}}{\epsilon_0}$, we get

$$\oint E dS \cos 0^\circ = \frac{Q}{\epsilon_0} \Rightarrow E \oint dS = \frac{Q}{\epsilon_0} \Rightarrow E \cdot 4\pi r^2 = \frac{Q}{\epsilon_0}$$

$$\therefore E = \frac{Q}{4\pi\epsilon_0 r^2}$$

For all points inside the shell, since $q_{en} = 0$, $E = 0$. The graph showing the variation of E with distance r from the centre is given aside.

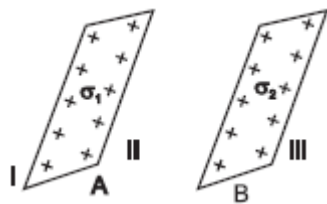


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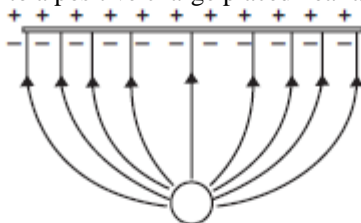
(a) A point charge ($+Q$) is kept in the vicinity of uncharged conducting plate. Sketch electric field lines between the charge and the plate.

(b) Two infinitely large plane thin parallel sheets having surface charge densities σ_1 and σ_2 ($\sigma_1 > \sigma_2$) are shown in the figure. Write the magnitudes and directions of net fields in the regions marked II and III.

3



ANS: (a) The lines of force due to a positive charge placed near a metal plate are as shown in the figure.



(b) In the region II between the plates \vec{E}_A and \vec{E}_B are opposite to each other.

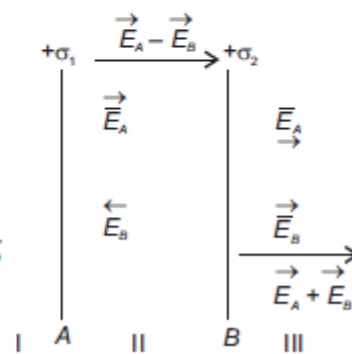
As $\sigma_1 > \sigma_2$, $|\vec{E}_A| > |\vec{E}_B|$

and resultant field = $E_A - E_B = \frac{\sigma_1}{2\epsilon_0} - \frac{\sigma_2}{2\epsilon_0}$

$\therefore \vec{E}_{II} = \frac{1}{2\epsilon_0}(\sigma_1 + \sigma_2)$ from A to B

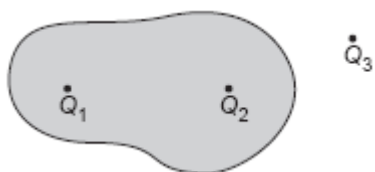
In the region III, both \vec{E}_A and \vec{E}_B are supporting each other.

$\therefore \vec{E}_{III} = \frac{1}{2\epsilon_0}(\sigma_1 + \sigma_2)$ away from B.



- 10 A positive point charge (+q) is kept in the vicinity of an uncharged conducting plate. Sketch electric field lines originating from the point on to the surface of the plate. Derive the expression for the electric field at the surface of a charged conductor. 3

- 11 Three charges Q_1 , Q_2 and Q_3 are placed inside and outside a closed Gaussian surface as shown in the figure. 3



Answer the following:

- Which charges contribute to the electric field at any point on the Gaussian surface?
- Which charges contribute to the net flux through this surface?
- If $Q_1 = -Q_2$, will electric field on the surface be zero?

ANS: (a) All three charges Q_1 , Q_2 and Q_3 will contribute to the electric field.

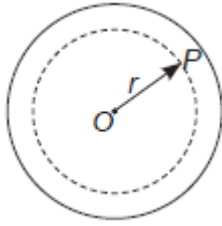
(b) Only the enclosed charges, i.e. Q_1 and Q_2 .

(c) No, the electric field will exist on the surface.

- 12 State Gauss's theorem in electrostatics. Prove that no electric field exists inside a hollow charged sphere. 3

ANS:

According to the Gauss's theorem, the total electric flux through a closed surface is $\frac{1}{\epsilon_0}$ times the magnitude of net charge enclosed by the surface. Consider a hollow charged sphere. Take a point inside the sphere where electric field is to be calculated. Draw a Gaussian surface of radius r having point P on its surface.



Now,
$$\phi = \oint_S \vec{E} \cdot \vec{ds} = E \oint_S ds = E \cdot 4\pi r^2$$

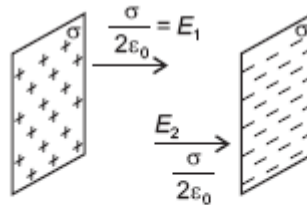
According to the Gauss's theorem,

$$E \cdot 4\pi r^2 = \frac{q}{\epsilon_0} \quad (\because q = 0)$$

$$\therefore E = 0$$

13 Use the Gauss's law to derive an expression for the electric field between two uniformly charged large parallel sheets with surface charge densities σ and $-\sigma$ respectively. 3

ANS: When two plates with charge densities $+\sigma$ and $-\sigma$ are separated by a distance then the region between them will



$$\therefore E = E_1 + E_2$$

$$E = \frac{\sigma}{2\epsilon_0} + \frac{\sigma}{2\epsilon_0} = \frac{\sigma}{\epsilon_0}$$

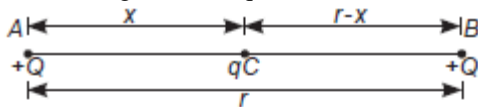
experience a field E as shown here.

14 Two identical point charges Q are kept at a distance r from each other. A third point charge is placed on the line joining the above two charges such that all the three charges are in equilibrium. What is the magnitude, sign and position of the third charge? 3

ANS:

Let third charge ' q ' is placed at a distance x from a charge Q at A .

As the charges are in equilibrium therefore net force on any of the charges is zero.



\therefore At C

$$\vec{F}_{CA} = -\vec{F}_{CB}$$

$$\therefore |\vec{F}_{CA}| = |-\vec{F}_{CB}|$$

$$k \cdot \frac{|q \cdot Q|}{x^2} = \frac{k|q \cdot Q|}{(r-x)^2}$$

$$\therefore r - x = x$$

$$x = r/2 \quad \dots(i)$$

$$\text{Also } \vec{F}_{AC} + \vec{F}_{AB} = 0$$

$$\vec{F}_{AC} = -\vec{F}_{AB}$$

which is possible when q is negative.

$$|\vec{F}_{AC}| = |\vec{F}_{AB}|$$

$$\frac{k|Q \cdot q|}{x^2} = \frac{k|Q \cdot Q|}{r^2}$$

Using eqn. (i), we get

$$\therefore q = \frac{|Q|}{4}$$

\therefore Position of third charge = $r/2$

Sign of third charge = -ve

Magnitude of third charge = $\frac{|Q|}{4}$

15 An infinitely long cylinder of radius R carries a uniform volume charge density $\rho \text{ Cm}^{-3}$. Obtain an expression for electric field at a point (a) inside and (b) outside the cylinder. 3

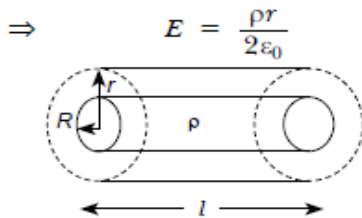
ANS:

(a) $r < R$ (inside)

Area of Gaussian surface = $2\pi r l$

Charge enclosed = $\frac{q}{(\pi r^2 l)} (\pi r^2 l) = \rho(\pi r^2 l)$

By the Gauss's law, $E \cdot 2\pi r l = \frac{\rho(\pi r^2 l)}{\epsilon_0}$



(b) $r > R$ (outside)

Area of Gaussian surface = $2\pi r l$

Charge enclosed = $\rho \cdot \pi R^2 l$

By the Gauss's law

$$E \cdot 2\pi r l = \frac{\rho \pi R^2 l}{\epsilon_0} \Rightarrow E = \frac{\rho R^2}{2\epsilon_0 r}$$

16 An uncharged comb after combing hair, when brought near the paper bits attracts them. Answer the following: 3

(a) Does the mass of comb/paper bit get changed?

(b) Is paper bit still uncharged?

(c) What is the difference between the charging of a comb and the charging of the paper bits?

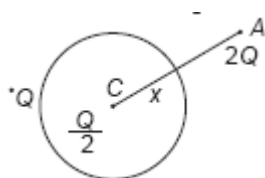
ANS: (a) Yes, by negligible amount.

(b) Yes.

(c) The charging of comb is due to charging by friction.

The charging of paper bits is due to charging by induction.

17 A thin metallic spherical shell of radius R carries a charge Q on its surface. A point charge $\frac{Q}{2}$ is placed at its centre C and an other charge $+2Q$ is placed outside the shell at a distance x from the centre as shown in figure. Find (i) the force on the charge at the centre of shell and at the point A , (ii) the electric flux through the shell. 3



ANS: (i) As there is no electric field inside thin charged metallic spherical shell, the force on the charge $\frac{Q}{2}$ is zero.

$$F = E \times 2Q = \left(\frac{1}{4\pi\epsilon_0} \frac{3Q}{2x^2} \right) \cdot 2Q$$

$$= \frac{1}{4\pi\epsilon_0} \frac{3Q^2}{x^2}$$

Force on charge $2Q$ at point A.

$$\phi_E = \frac{Q}{2\epsilon_0}$$

(ii) Electric flux through the shell,

HISTORY

TOPIC: Kings, Farms and Towns

1. What were the 3 main trends in the development of towns, changes in agriculture and developments of early states in subcontinent in the 6th BC?
2. What are the main sources of study for the period of 1500 years after the Harappan civilization?
3. Name the major cities located along the river valleys.
4. What was the significance of the city of Rajgir?
5. Name the famous book that tells us about the long distance trade.
6. Why do you think rulers would have made arrangements for irrigation?
7. What was one of the major causes of inequality amongst the rural society of ancient India?
8. What is a Mahajanapada? Name some of the important Mahajanapadas of the 6th BC.
9. What is the difference between a Janpada and a Gana and Sangha?
10. What powers did the Rajas hold?
11. Mention the main kingdoms, which emerged in the South.
12. Who was James Prinsep? Why is his name famous in Indian history as a source person?
13. Why were kings called Piyadassis?
14. Explain 3 main characteristics of Ganas and Sanghas.
15. In which areas of India, major cities were located? Name a few of them of N.W., Central and Eastern part of India.
16. What is transplantation?
17. What is Dhamna? Who were the Dhamna Mahamatyas?
18. Explain the meaning of Rajukas, Bherigoshas, Shramanas, Dhamnagoshas, Tirthas, Pana, Samahanta, Sannidhata, Tammilakam, Vellalars, Arasar, Enadi, Kadaisar, Pariyans, Virakal, Uttrapatha, Yavanpriya, Shataka, Primogeniture, Guilds, Visht, Vishyas, Bhakti, Avatara.
19. Who was Kautilya? Who was ruling Magadha when Chandragupta Maurya became king?
20. How did the battle of Kalinga transform Ashoka?
21. What factors brought the end of Indus civilization?
22. Write a short note on the efforts made by the prominent archaeologists in finding Indus civilization? What techniques were used in finding them?
23. What were the difficulties faced by archaeologists in interpreting the religious beliefs of the Harappan people?

POLITICAL SCIENCE

CHAPTER 8 ENVIRONMENT AND NATURAL RESOURCES

Q1. What is Agenda 21?

Q2. What do you mean by Global Commons?

Q3. What is UNFCCC?

Very Short Answer Type Questions [2 Marks]

Q1. Suggest any two steps to be taken by the government to check pollution and save environment.

Q2. Give any two environmental concerns of global politics

Q3. Explain the most obvious threat to the survival of indigenous people

Short Answer Type Questions [4 Marks]

Q1. Explain India's stand on environmental issues. What steps have been suggested by India in this respect?

Q2. Water is a crucial resource to global politics. Explain with examples.

Passage Based Questions [5 Marks]

1. Read the following passage carefully and answer the questions:

The Indian government is already participating in global efforts through a number of programmes. For example, India's National Auto fuel Policy mandates cleaner fuels for vehicles. The Energy Conservation Act, passed in 2001, outlines initiatives to improve energy efficiency. Similarly, the Electricity Act of 2003 encourages the use of renewable energy. Recent trends in importing natural gas and encouraging the adoption of clean coal technologies show that India has been making real efforts. The government is also keen to launch a National Mission on Biodiesel, using about 11 million hectares of land to produce biodiesel by 2011-2012. And India has one of the largest renewable energy programmes in the world.

Questions

1. How India has participated in global efforts to protect environment?
2. What are Energy Conservation Act and Electricity Act?
3. Mention the efforts made by Indian government for biodiesel.

2. Read the following passage carefully and answer the questions:

The global economy relied on oil for much of the 20th century as a portable and indispensable fuel. The immense wealth associated with oil generates political struggles to control it, and the history of petroleum is also the history of war and struggle. Nowhere is this more obviously the case than in West Asia and Central Asia, West Asia, specifically the Gulf region, accounts for about 30 per cent of global oil production. But it has about 64 per cent of the planet's known reserves, and is therefore the only region able to satisfy any substantial rise in oil demand. Saudi Arabia has a quarter of the world's total reserves and is the single largest producer. Iraq's known reserves are second only to Saudi Arabia's. And, since substantial portions of Iraqi territory are yet to be fully explored, there is a fair chance that actual reserves might be far larger. The United States, Europe, Japan, and increasingly India and China, which consume this petroleum, are located at a considerable distance from the region.

Questions

1. Which region has much potential for oil production?
2. Which area is supposed to have far larger reserves than actually it has?
3. Why the history of petroleum is called the history of war and struggle?

Picture/Map Based Questions [5 Marks]

1. Study the picture given below and answer the questions that follow:



Questions

1. What does the picture represent?
2. Why do you think the fingers are designed like chimneys and the world made into a lighter?
3. What message does this picture convey?

Q2



Questions

1. What does the cartoon represent?
2. Which countries are being shown here?
3. What message does this picture convey?

GEOGRAPHY

Topic- GIS

1. What is Spatial Information System?
2. Give the full form of the following
A.DBMS B.GPS C. GIS
3. Define GIS.
4. Mention two types of data which represents geographical information.
5. List out the advantages of GIS.
6. Describe the components of GIS.

PSYCHOLOGY

(VERY SHORT QUESTION: 2 MARKS)

1. How can you define abnormal behavior as a deviation from social norms?
2. How does psychodynamic model describe abnormal behavior?
3. What is Diathesis Stress model? Explain with an appropriate example.
4. Write two important features of middle ages.
5. What change was observed in the Renaissance period about the concept of abnormal behavior?
6. Why is 17th and 18th centuries known as “Age of Reason & Enlightenment”?
7. Name three disorders and the neurotransmitters causing those disorders.

(SHORT QUESTION TYPE I: 3 MARKS)

8. A soldier is not able to walk after miraculous escape in terrorist attack in Mumbai. Physicians fail to find any medical cause for this inability to walk. Identify the disorder and give the other symptoms.
9. How do externalizing disorders differ from internalizing disorders.
10. Discuss abnormal behavior as maladaptive with the help of an example.
11. Discuss the role of genetic and biological factors influencing abnormal behavior.
12. Explain any one pervasive developmental disorder.
13. Give symptoms of obsessive-compulsive disorder.
14. What do you understand by dissociation? Explain its types.
15. What are the various types of mood disorders?

(SHORT QUESTION TYPE II: 4 MARKS)

16. Bi-polar disorders have highest risk of suicide. Elaborate the factors and symptoms associated with suicide.
17. What are phobias? If someone had an intense fear of snakes, could this simple phobia be a result of faulty learning? Analyze how the phobia could be developed.
18. What is ‘schizophrenia’? State various symptoms associated with schizophrenia, explain any two.
19. What do you understand by the term ‘externalizing disorders’? Explain the externalizing disorders found among children.
20. Explain diathesis stress model.

LEGAL STUDIES

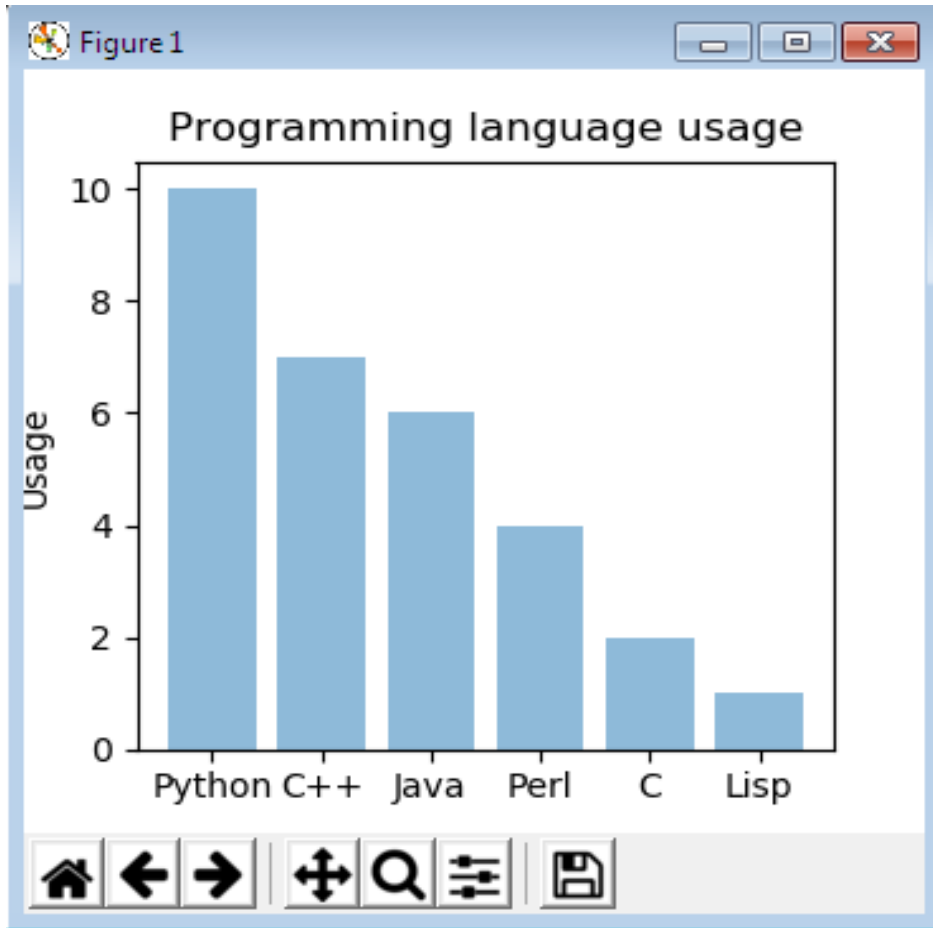
- Q1. What do you mean by Interim Relief?
- Q2. Mention the different types of Arbitration?
- Q3. Give examples of the institution governing the arbitration?
- Q4. The Arbitration and Conciliation Act, 1996 is similar modeled to _____ model law?
- Q5. How were the disputes settled in the ancient times?
- Q6. Mention any two benefits of Lok Adalat?
- Q7. What are the objectives of NALSA, 1987?
- Q8. What is the meaning of Ombudsman? Can you identify equivalent institutions within India? Discuss their roles and limitations.
- Q9. Trace the progress and development of the contemporary Lokpal movement in India.

INFORMATICS PRACTICES

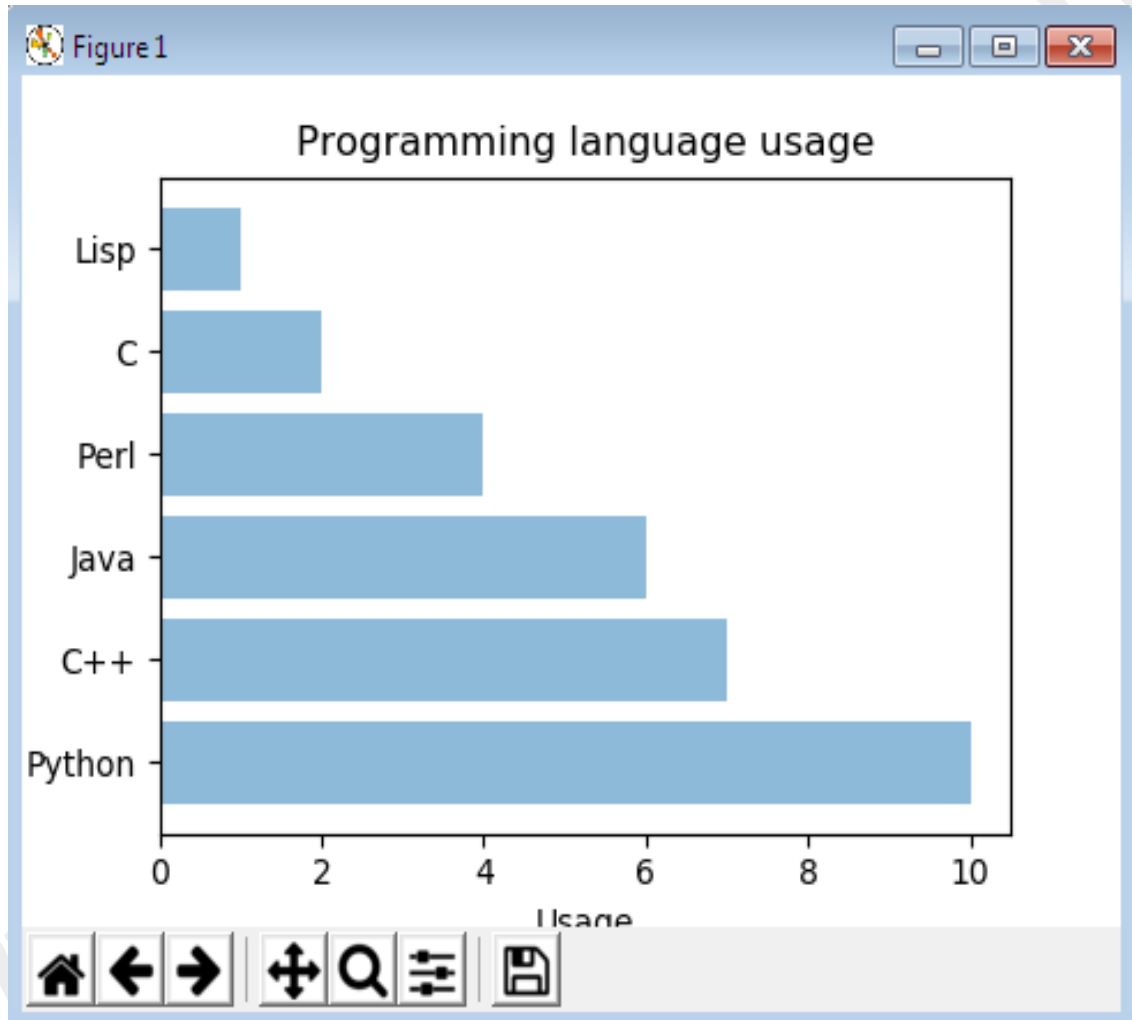
PLOTTING WITH PYPLOT

PROGRAMS

```
#Python program to display bar chart with following data prog_languages = ('Python', 'C++',  
'Java', 'Perl', 'C', 'Lisp') performance = [10,7,6,4,2,1]  
import matplotlib.pyplot as plt; import numpy as np  
prog_languages = ('Python', 'C++', 'Java', 'Perl', 'C', 'Lisp') y_pos =  
np.arange(len(prog_languages))  
performance = [10,7,6,4,2,1]  
plt.bar(y_pos, performance, align='center', alpha=0.5) plt.xticks(y_pos, prog_languages)  
plt.ylabel('Usage') plt.title('Programming language usage')  
plt.show()
```

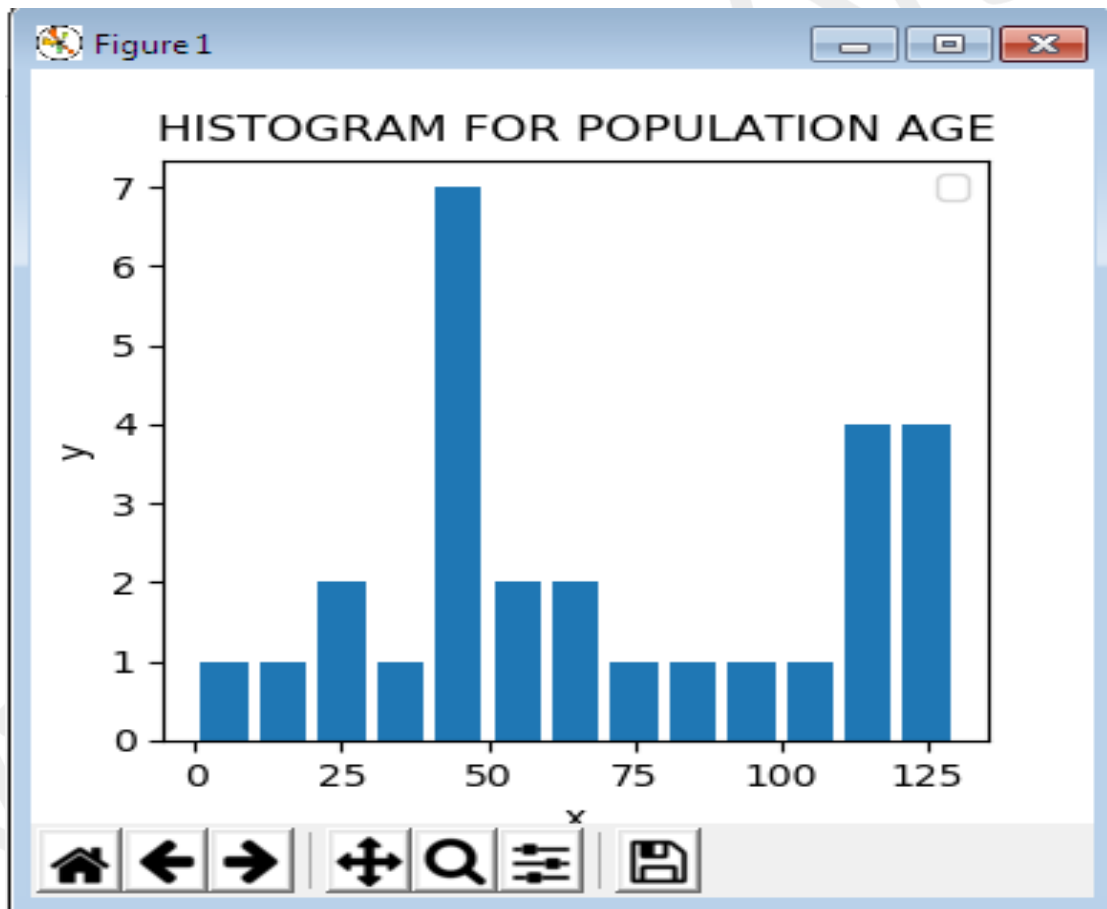


```
#Python program to display horizontal bar chart with following data prog_languages = ('Python', 'C++', 'Java',  
'Perl', 'C', 'Lisp') performance = [10,7,6,4,2,1]  
import matplotlib.pyplot as plt; import numpy as np  
prog_languages = ('Python', 'C++', 'Java', 'Perl', 'C', 'Lisp') y_pos =  
np.arange(len(prog_languages))  
performance = [10,7,6,4,2,1]  
plt.barh(y_pos, performance, align='center', alpha=0.5) plt.xticks(y_pos, prog_languages)  
plt.xlabel('Usage') plt.title('Programming language usage')  
plt.show()
```



```
#Python program to display histogram of following data population_ages =  
[24,55,62,45,11,22,34,42,42,4,99,102,110,120,  
121,122,130,111,115,112,80,75,65,54,44,43,42,48]  
bins = [0,10,20,30,40,50,60,70,80,90,100,110,120,130]
```

```
import matplotlib.pyplot as plt  
population_ages = [24,55,62,45,11,22,34,42,42,4,99,102,110,120,  
121,122,130,111,115,112,80,75,65,54,44,43,42,48]  
bins = [0,10,20,30,40,50,60,70,80,90,100,110,120,130]  
plt.hist(population_ages, bins, histtype='bar', rwidth=0.8) plt.xlabel('x')  
plt.ylabel('y')  
plt.title('HISTOGRAM FOR POPULATION AGE')  
plt.legend()  
plt.show()
```



Create box plot in python with fills and labels:

For marks scored for 5 test in 4 subjects import matplotlib.pyplot as plt

```
marks1 = [82,76,24,40,67]
```

```
marks2=[62,5,91,25,36]
```

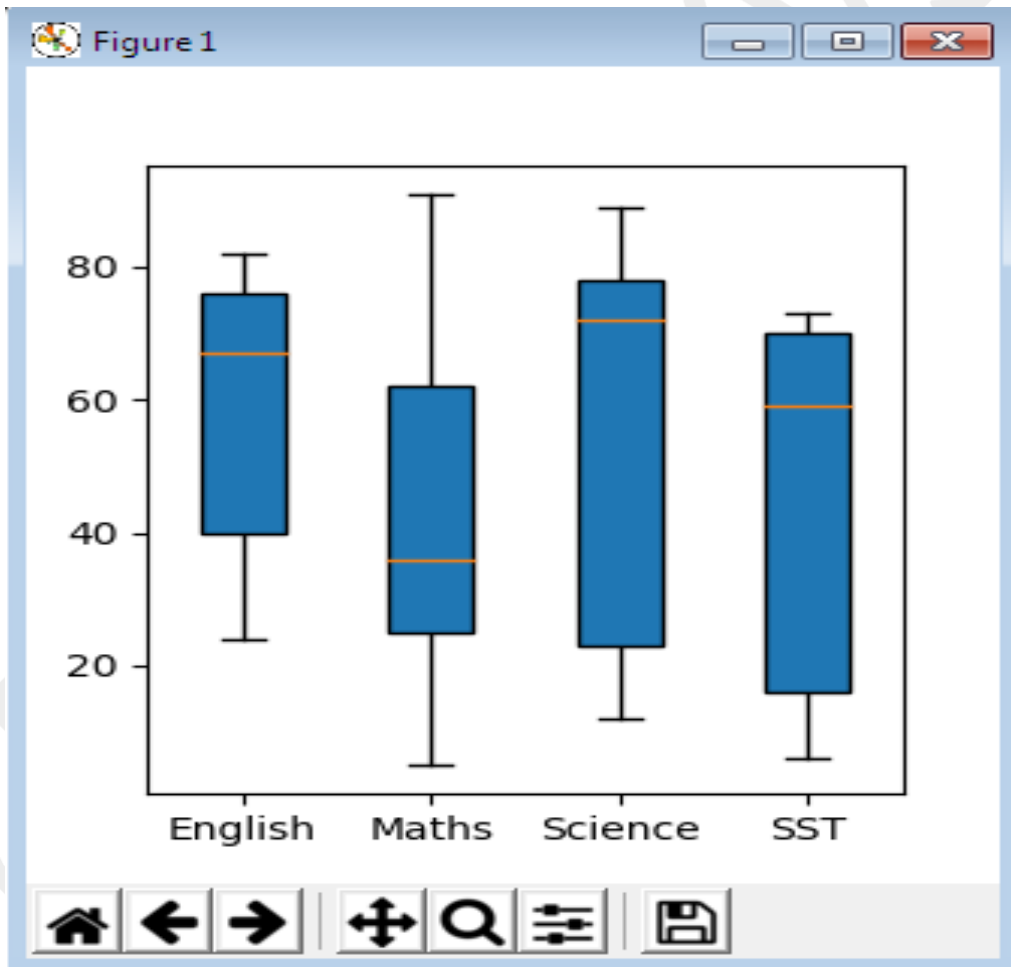
```
marks3=[23,89,12,78,72]
```

```
marks4=[59,73,70,16,6]
```

```
box_plot_data=[marks1,marks2,marks3,marks4]
```

```
plt.boxplot(box_plot_data,patch_artist=True,labels=['English','Maths ','Science','SST'])
```

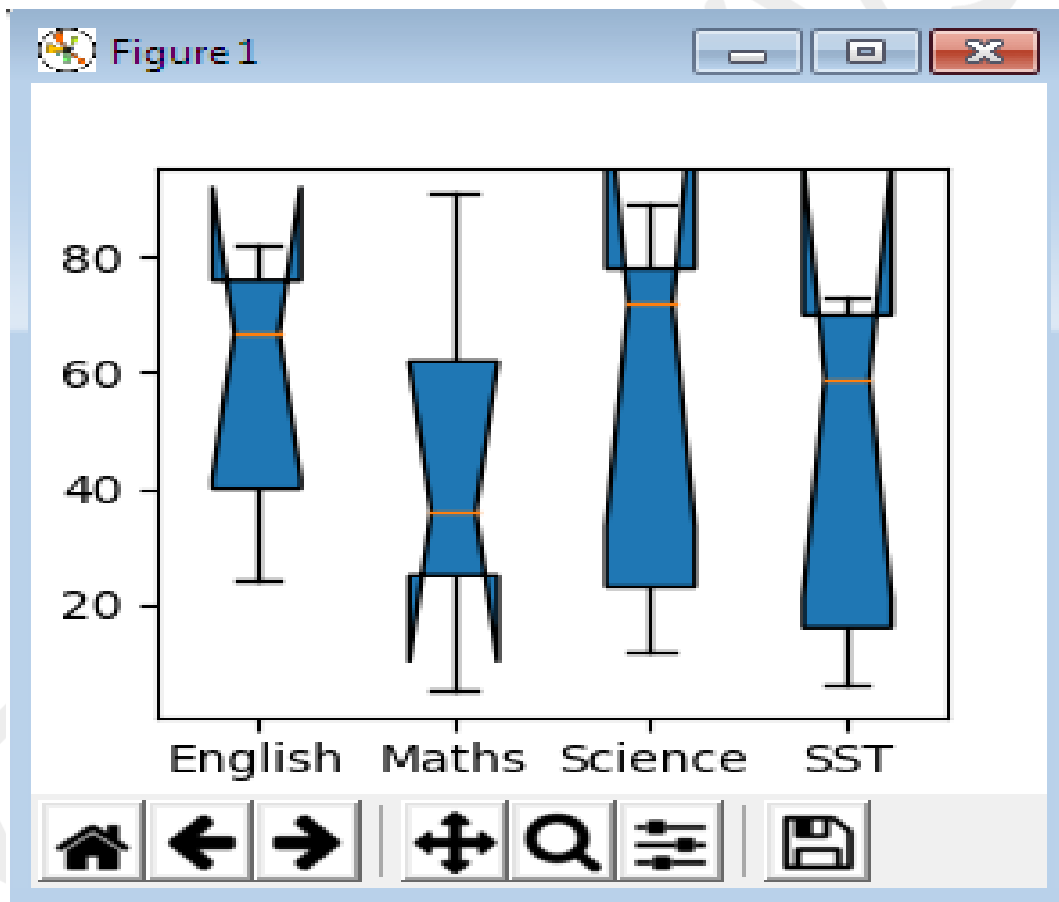
```
plt.show()
```



Create box plot in python with notch import matplotlib.pyplot as plt

```
marks1 = [82,76,24,40,67]  
marks2=[62,5,91,25,36]  
marks3=[23,89,12,78,72]  
marks4=[59,73,70,16,6]
```

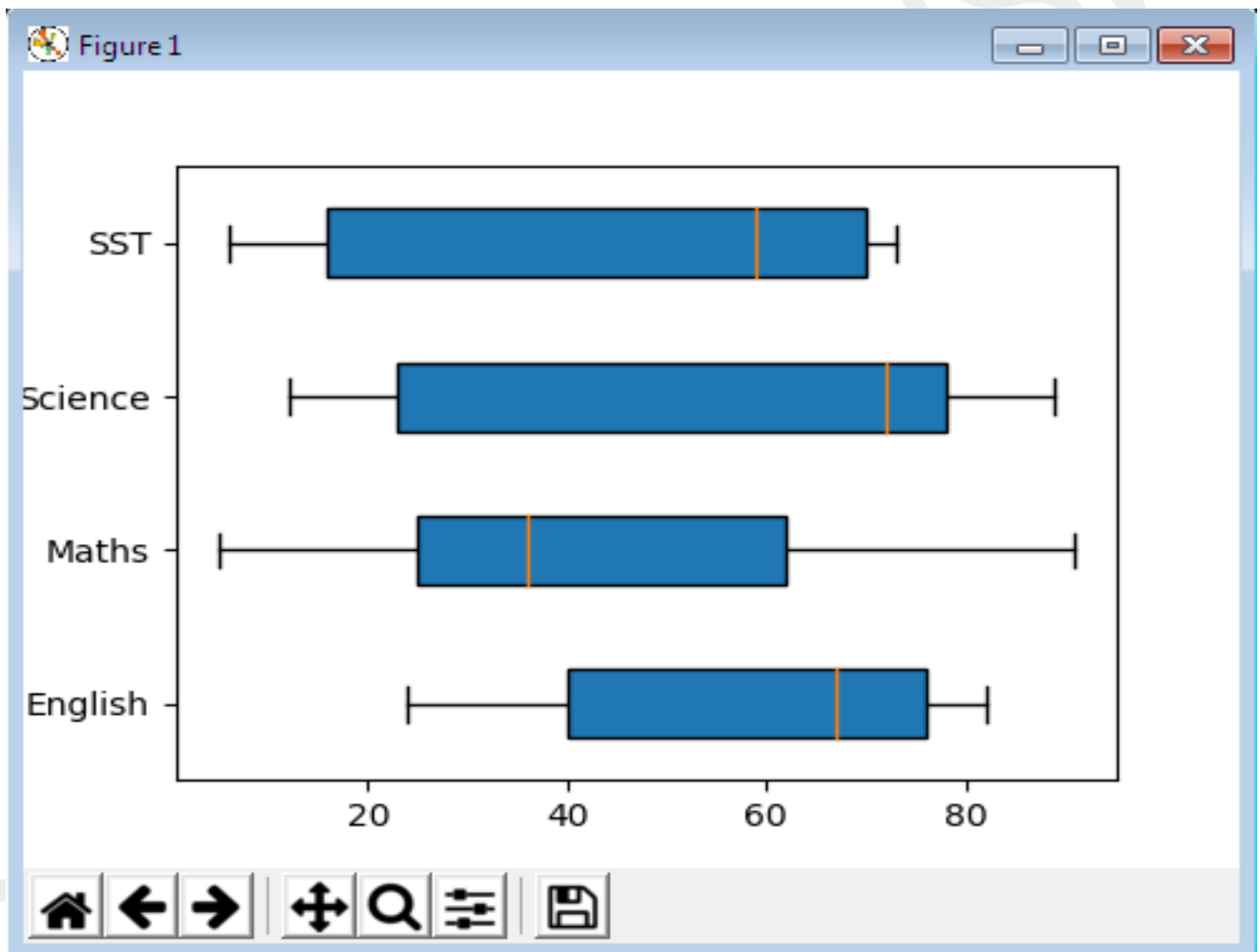
```
box_plot_data=[marks1,marks2,marks3,marks4]  
plt.boxplot(box_plot_data,notch='True',patch_artist=True,labels=['E nGLISH','Maths','Science','SST'])  
plt.show()
```



Horizontal box plot in python import
matplotlib.pyplot as plt

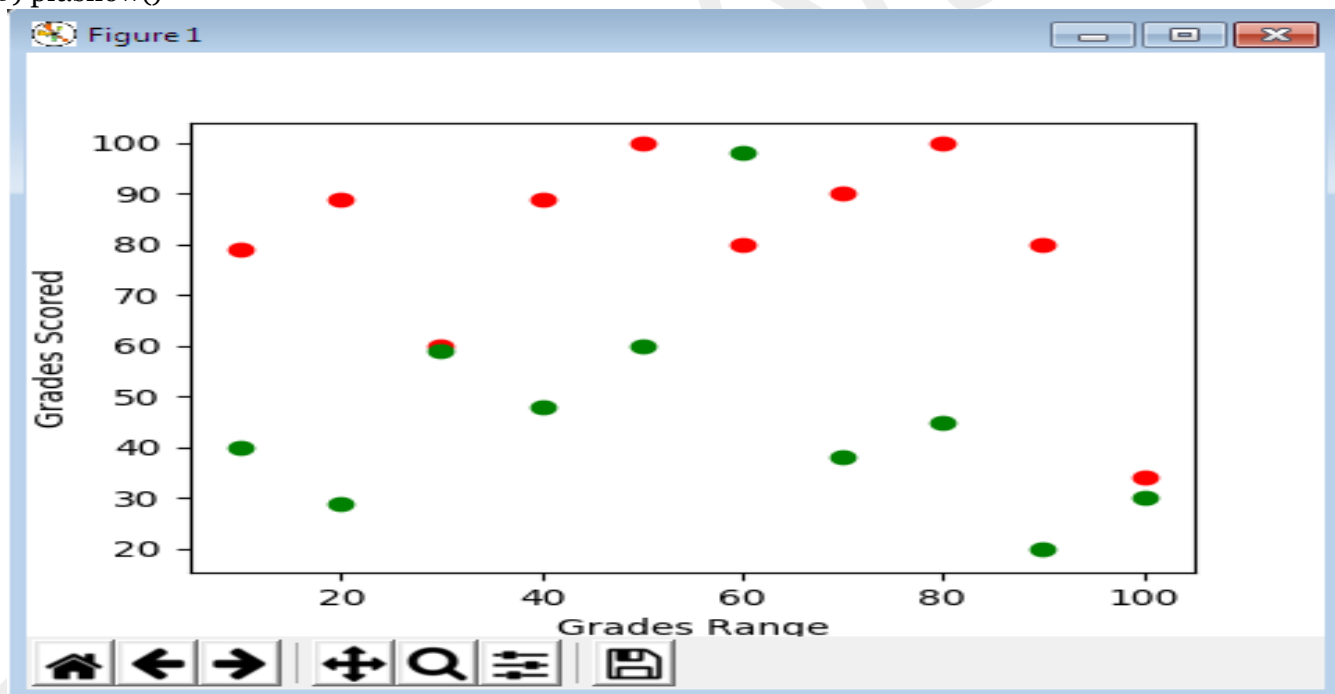
```
marks1 = [82,76,24,40,67]  
marks2=[62,5,91,25,36]  
marks3=[23,89,12,78,72]  
marks4=[59,73,70,16,6]
```

```
box_plot_data=[marks1,marks2,marks3,marks4]  
plt.boxplot(box_plot_data,vert=0,patch_artist=True,labels=['English'  
, 'Maths', 'Science', 'SST']) plt.show()
```



```
#Python program to display Scatter plot of following data girls_grades =  
[79, 89, 60, 89, 100, 80, 90, 100, 80, 34]  
boys_grades = [40, 29, 59, 48, 60, 98, 38, 45, 20, 30]  
grades_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]
```

```
import matplotlib.pyplot as plt  
import pandas as pd  
girls_grades = [79, 89, 60, 89, 100, 80, 90, 100, 80, 34]  
boys_grades = [40, 29, 59, 48, 60, 98, 38, 45, 20, 30]  
grades_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]  
plt.scatter(grades_range, girls_grades, color='r')  
plt.scatter(grades_range, boys_grades, color='g')  
plt.xlabel('Grades Range')  
plt.ylabel('Grades  
Scored') plt.show()
```



#Above scatter plot shows the performance of girls and boys based on marks, red dot shows girls performance while green shows boys performance and one girl with low performance

C++

Chapter Name: - Computer Networks

1. Name two communication channel for network. (AI 2007)
2. Mention one advantage of networking. (AI 2001)
3. What are the network devices? (Delhi 2009)
4. What is purpose of using Router. (Delhi 2014)
5. Define HTTPS? (CBSE 2015)
6. What do you mean by Web Address and IP Address?
7. What is a network? Why is it needed? (Outside Delhi 2001,2011,2014).
8. Describe remote login and remote desktop? (AI 2012).
9. What is difference between Hub, Switch and Router? (Outside Delhi)
10. DNS is the abbreviation of ? (Model Question paper 2019-20).
11. Write two characteristics of Wi-Fi? (CBSE 2013)
12. What is the difference between LAN and WAN? (Outside Delhi 2001,2011, cbse 2018).
13. Identify the domain name and URL from the following:
<http://www.income.in/home.aboutus.htm>. (AI 2012, CBSE SQP 2015,2019-20)
14. Assume that 50 employees are working in an organization. Each employee has been allotted a separate workstation to work. In this way, all computers are connected through the server and all these workstations are distributed over two floors. In each floor, all the computers are connected to a switch. Identify the type of network? (Outside Delhi)
15. What are the effects of Network Congestion?
16. What do you mean by IP address? Explain. How is it useful in computer security? (cbse 2017).
17. Write the expanded names for the following abbreviated terms used in Networking and communications:
(i) GPRS (ii)Wi-Fi (iii) SMTP (iv)HTTP (v)URL
(vi) POP
(vii) LAN (viii) WAN (ix)TCP/IP (x)URL
18. What is Bridge? (CBSE D 1999, Model Question Paper)
19. What is an Electronic Mail? Give its Advantages. (CBSE QB)
20. What are Routers? (Model Question paper 2019-20).
21. What are repeaters? (Model Question paper 2019-20).
22. What is difference between LAN and Internet? (CBSE D 98)
23. What is purpose of using FTP?
24. What out of the following will you use to have an audio-visual chat with an expert sitting in a far-away place to fix-up a technical issue? (i) email (ii)VoIP (iii) FTP
25. Mention two line-of-sight unguided media.
26. Which protocol is used for the transfer of hypertext document on the Internet? (CBSE SP 11).
27. What is the Geographical scope of LAN, MAN and WAN? (CBSE D 98, Model Question Paper 2019-20)
28. What are the facilities provided by the SERVER in a Network environment? (CBSE D 98, Model Question Paper 2019-20)
29. What are protocols? (CBSE D 98, Model Question Paper 2019-20)
30. What is a stand-alone computer? (Model Question Paper 2019-20)

OPTIONAL II

HINDI

कवि ने लोगों के आत्मनिर्भर, मालामाल और गतिशील होने के लिए किन तरीकों की ओर संकेत किया है? अपने शब्दों में लिखिए।

ANSWER:

कवि के अनुसार आत्मनिर्भर, मालामाल और गतिशील होने के लिए लोगों ने गलत रास्तों को अपनाया है। लोग अपने स्वार्थ सिद्धि के लिए किसी का भी गला काटने से परहेज़ नहीं करते हैं। देश को खोखला बनाने में ये बहुत सहयोग दे रहे हैं। देश का पैसा गबन कर विदेशी बैंकों में डाल रहे हैं। बेईमानी करने में इन्हें ज़रा संकोच नहीं होता। इस मारे ये मालामाल, आत्मनिर्भर तथा गतिशील बने हुए हैं। कवि ने इनके ऐसे ही भ्रष्ट तरीकों की ओर संकेत किया है।

Page No 33:

Question 2:

हाथ फैलाने वाले व्यक्ति को कवि ने ईमानदार क्यों कहा है? स्पष्ट कीजिए।

ANSWER:

हाथ फैलाने वाला व्यक्ति स्वयं को भ्रष्टाचार में लिप्त नहीं करता। इस कारण उसकी ऐसी दशा हो जाती है कि उसे दूसरों के आगे हाथ फैलाने पड़ते हैं। उसका परिवार दर-दर की ठोकरें खाने को विवश हो जाता है। यदि वह अन्य लोगों की भांति भ्रष्टाचार में लिप्त हो जाता, तो उसकी चाँदी हो जाती। उसके पास दुनिया की हर सुख-सुविधा विद्यमान होती। परन्तु वह स्वयं को इन सबसे दूर रखता है। वह गरीबी का जीवन तथा दूसरे के आगे हाथ फैलाना उचित समझता है लेकिन बेईमानी की एक दिन की रोटी कमाना उचित नहीं समझता। इसलिए कवि ने उसे ईमानदार कहा है। उसकी दशा उसकी ईमानदारी का प्रमाण है।

Page No 33:

Question 3:

कवि ने हाथ फैलाने वाले व्यक्ति को लाचार, कामचोर, धोखेबाज़ क्यों कहा है?

ANSWER:

प्रत्येक व्यक्ति में ऐसी शक्ति विद्यमान होती है कि वह समाज में क्रांति उत्पन्न कर सकता है। समाज के प्रति उसके कुछ कर्तव्य बनते हैं। समाज में जो अनैतिक घट रहा है, उसका विरोध करना उसका कर्तव्य बनता है। वह आवाज़ उठा सकता है परन्तु उठाता नहीं है क्योंकि वह डरता है। हाथ फैलाने वाला व्यक्ति ऐसा ही व्यक्ति है। वह कुछ गलत नहीं करता है

PHYSICAL EDUCATION

Chapter IV

Physical education and sports for CWSN

Multiple Choice Questions

Q1. The full form of ADHD is

- (a) Attitude deficit hyperactivity disorder
- (b) Arrogant deficit higher disorder
- (c) Attention deficit hyperactivity disorder
- (d) Attention deficit hyperactivity disorder

Q2. What is the basic characteristic of OCD patients?

- (a) Repetitive activities
- (b) Fun loving
- (c) Eating lots of food
- (d) Passive nature

Q3. Which is not the type of disorder?

- (a) ADHD
- (b) OPD
- (c) ASD
- (d) OCD

Q4. Which is not considered as one of the disability types

- (a) Physical disability
- (b) Intellectual disability
- (c) Cognitive disability
- (d) Hygienic disability

Q5. Which of the following is not included in causes of ADHD?

- (a) Genetic factor
- (b) Low birth weight
- (c) Brain injuries
- (d) Colour of skin

Short Answer Type Questions

Q1. Elaborate the meaning of disability.

Q2. Briefly discuss the concept of disorder.

Q3. Explain any three causes of disability.

Q4. Explain about SPD.

Q5. What do you mean by oppositional defiant disorder?

Long Answer Type Questions

- Q1. What is OCD? Elaborate the causes of OCD.
- Q2. Discuss the advantages of physical activities for children with special needs in detail.
- Q3. What do you mean by disability etiquettes? Mention any five general disability etiquettes.
- Q4. What is autism spectrum disorder? Discuss its causes in detail.

FINANCIAL MARKET MANAGEMENT

ASSIGNMENT4. ORDER AND TRADE MANAGEMENT

Multiple choice questions

- Q.1 The trading member can enter orders in the _____ market.
- a) Normal
 - b) Odd lot
 - c) Retail debt
 - d) Auction
 - i. Only (i), (iv)
 - ii. Only (i), (ii), (iv)
 - iii. Only (i) & (iv)
 - iv. All of the above
- Q.2 Which of the following statements are false?
- a) When any order enters the trading system, it is an active order.
 - b) If it doesn't find a match I, the order becomes passive order and goes and sits in the order book.
 - c) An active order tries to find a match on the order side of the books.
 - d) If an active order finds a match a trade is generated.
 - i. Only (i)
 - ii. Only (ii)
 - iii. Both (iii) & (iv)
 - iv. None of the above
- Q.3 Best price for a sell order is the _____ price & for a buy order. It is the _____ price.
- a) Market price
 - b) Trigger price
 - c) Limit price
 - d) Exchange price
- Q.4 Stop loss orders are released into the market when the last traded price for the security in the normal market reaches or surpasses the _____
- a) Market price
 - b) Trigger price
 - c) Limit price
 - d) Exchange price

Q.5 The odd lot book can be selected in order to trade in the odd lot market the book type selected will be _____.

- a) D
- b) QL
- c) QP
- d) EO

Q.6 Auction order book stores order entered by the trading members to participate in the exchange initiated auctions. Auction order can be _____ orders.

- a) Buyers, Sellers, Bidders
- b) Initiators,, Competitors, Solicitor
- c) Regular lot, RetDebt, Stop loss
- d) Proprietary, Client, Warehouse

Q.7 _____ means that if two orders are entered into the system, the orders having the best price get the higher priority.

- a) Price priority
- b) Order priority
- c) Time priority
- d) Participant priority

Q.8 The index market wide circuit breaker systems apply at 3 stages of the index movement either way for example at _____%

- a) 5, 10, 20
- b) 10, 20, 30
- c) 10, 15, 20
- d) 7,14,21

Q.9 In case of 20% movement of the index, trading shall be halted for the remainder of the _____

- a) Week
- b) Day
- c) Month
- d) Year

Q.10 In case of a 10% movement of index based indices there would be a one hour market halt if the movement takes place before _____

- a) 1 pm
- b) 2 pm
- c) 3 pm
- d) 12 pm

Very Short Answer Type Questions

Q.1 Name the different type of order books.

Q.2 What is odd book?

Q.3 Explain the functions of auction order book.

Q.4 Name the type of time conditions.

Q.5 What is order cancellation?

Short Answer Type Questions

Q.1 What is the different between active & passive order?

Q.2 Explain regular lot book.

Q.3 Write a few lines on stop loss book.

Q.4 What is RETDEBT order book?

Q.5 Explain the circuit breakers.