SADIQ PUBLIC SCHOOL

Do the right, fear no man

Class: S3   Homework Worksheet

Saturday, 10th February 2024

Subject: Physics

Test Unit no. 11

Q.No.1 Choose the correct option.   (1×4=4)

  i.   The loudness of sound is mostly related to:
   (a) Frequency   (b) Wavelength   (c) Period   (d) Amplitude
 ii.   The S.I unit of intensity level of sound is:
   (a) Wm^{-2} (b) Wm^{-1} (c) Wm (d) Wm^2
iii.   The intensity level of train siren is:
   (a) 100 dB   (b) 150 dB   (c) 130 dB   (d) 120 dB
 iv.   The pitch of sound mostly depends upon:
   (a) Amplitude   (b) Wavelength   (c) Period   (d) Frequency
  v.   Speed of sound in air at 25^0C is:
   (a) $331 \ ms^{-1}$ (b) $346 \ ms^{-1}$ (c) $281 ms^{-1}$ (d) $386 ms^{-1}$
 vi.   For normal person, audible frequency range for sound waves lies between:
   (a) 10 Hz-10 kHz   (b) 20 Hz-20 kHz   (c) 25 Hz-25 kHz   (d) 30 Hz-30 kHz

Q.No.2 Answer any Eight (8) short questions.   (2×=16)

  i.   A doctor counts 72 heartbeats in one minute, calculate frequency and time period of the heartbeat.
 ii.   Why the sound of women is shrill as compared to men?
iii.   Write down any two uses of ultrasound.
 iv.   What is meant by quality of sound?
  v.   Define Intensity of sound. Write its S.I unit.
 vi.   Calculate frequency of sound wave if speed is $340 \ ms^{-1}$ and wavelength 0.5 m
vii.   Write down two advantages of SONAR.
viii.   What is meant by loudness. On what factors it depends.
 ix.   What is meant by Echo.

Subject: Chemistry

General Properties of Bases
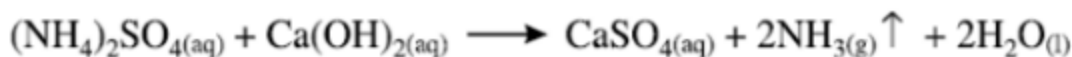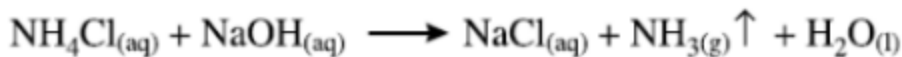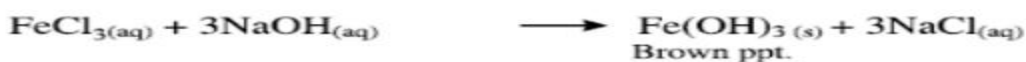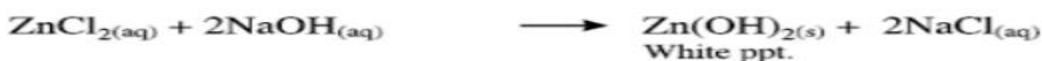
Chemical Properties

Reaction with Acids

$$2KOH_{(aq)} + H_2SO_{4(aq)} \longrightarrow K_2SO_{4(aq)} + 2H_2O_{(l)}$$

(ii) Reaction with Ammonium Salts

Alkalis react with ammonium salts to liberate ammonia gas:

$$NH_4Cl_{(aq)} + NaOH_{(aq)} \longrightarrow NaCl_{(aq)} + NH_{3(g)}\uparrow + H_2O_{(l)}$$

$$(NH_4)_2SO_{4(aq)} + Ca(OH)_{2(aq)} \longrightarrow CaSO_{4(aq)} + 2NH_{3(g)}\uparrow + 2H_2O_{(l)}$$

(iii) Precipitation of Hydroxides

Alkalis precipitate insoluble hydroxides when added to solutions of salts of heavy metals such as copper, iron, zinc, lead and calcium.
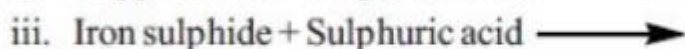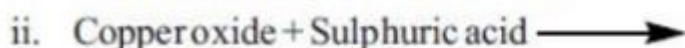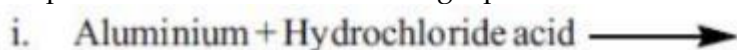
$$CuSO_{4(aq)} + 2NaOH_{(aq)} \longrightarrow Cu(OH)_{2(s)} + Na_2SO_{4(aq)}$$
Blue ppt.

$$ZnCl_{2(aq)} + 2NaOH_{(aq)} \longrightarrow Zn(OH)_{2(s)} + 2NaCl_{(aq)}$$
White ppt.

$$FeCl_{3(aq)} + 3NaOH_{(aq)} \longrightarrow Fe(OH)_{3(s)} + 3NaCl_{(aq)}$$
Brown ppt.

$$Pb(NO_3)_{2(aq)} + 2NaOH_{(aq)} \longrightarrow Pb(OH)_{2(s)} + 2NaNO_{3(aq)}$$
White ppt.

$$CaCl_{2(aq)} + 2NaOH_{(aq)} \longrightarrow Ca(OH)_{2(s)} + 2NaCl_{(aq)}$$
White ppt.

$$FeSO_{4(aq)} + 2NaOH_{(aq)} \longrightarrow Fe(OH)_{2(s)} + Na_2SO_{4(aq)}$$

Uses of Bases

1. Sodium hydroxide is used for manufacturing of soap.
2. Calcium hydroxide is used for manufacturing of bleaching powder, softening of hard water and neutralizing acidic soil and lakes due to acid rain.
3. Potassium hydroxide is used in alkaline batteries.
4. Magnesium hydroxide is used as a base to neutralize acidity in the stomach. It is also used for the treatment of bee's stings.
5. Aluminium hydroxide is used as foaming agent in fire extinguishers.
6. Ammonium hydroxide is used to remove grease stains from clothes.

Home Work

Note: Write all the work on the notebook.

Complete and balance the following equations:

i. Aluminium + Hydrochloride acid $\longrightarrow$
ii. Copper oxide + Sulphuric acid $\longrightarrow$
iii. Iron sulphide + Sulphuric acid $\longrightarrow$
iv. Ammonium chloride + Sodium hydroxide $\longrightarrow$
v. Ferric chloride + Sodium hydroxide $\longrightarrow$

pH value normally varies from 0 to 14. Therefore:

$$pH \;+\; pOH \;=\; 14$$

So, the sum of the pH and pOH of the solution is always 14 at 25 °C. Such as;

A solution of a compound of pH 7 or pOH 7 is considered a neutral solution. Solutions of pH less than 7 are acidic and more than 7 are basic.
Home Work
Note: Write all the work on the notebook.
Define pH. What is the pH of pure water?

Subject: Biology

Lesson

Chapter no: 17 Biotechnology

This lesson is about the Genetic Engineering .

A: Inquiry:

"Everyone knows" that Genetic engineering developed in the mid-1970s when it became possible to cut DNA and to transfer particular pieces of DNA from one type of organism into another. As a result, the characteristics of the host organism could be changed. Do you know about the Objectives and basic steps of Genetic Engineering?

B: Information

Genetic Engineering

Genetic engineering or recombinant DNA technology involves the artificial synthesis, modification, removal, addition and repair of the genetic material (DNA). Genetic engineering developed in the mid-1970s when it became possible to cut DNA and to transfer particular pieces of DNA from one type of organism into another.

Objectives of Genetic Engineering

The important objectives of genetic engineering are as follows.

· Isolation of a particular gene or part of a gene for various purposes such as gene therapy

· Production of particular RNA and protein molecules

· Improvement in the production of enzymes, drugs and commercially important organic chemicals

· Production of varieties of plants having particular desirable characteristics

· Treatment of genetic defects in higher organisms

Basic Steps in Genetic Engineering

All the above mentioned objectives can be obtained by some basic methodologies, such as:

1. Isolation of the gene of interest

In the first step, the genetic engineer identifies the gene of interest in a donor organism. Special enzymes, called restriction endonucleases, are used to cut the identified gene from the total DNA of donor organism.

2. Insertion of the gene into a vector

A vector is selected for the transfer of the isolated gene of interest to the host cell. The vector may be a plasmid (the extra-chromosomal DNA present in many bacteria) or a bacteriophage. The

gene of interest is attached with the vector DNA by using endonuclease (breaking enzymes) and ligase (joining enzymes). The vector DNA and the attached gene of interest are collectively called **recombinant DNA.**

3. Transfer of recombinant DNA into host organism

Recombinant DNA is transferred to the target host. In this way, host organism is transformed into a genetically modified organism (GMO).

4. Growth of the GMO

The GMO are provided suitable culture medium for growth to give as much copies of the gene of interest as needed.

5. Expression of the gene

The GMO contains the gene of interest and manufactures the desired product, which is isolated from culture medium.

Achievements of Genetic Engineering

Various achievements of genetic engineering are as follows.

· Human **insulin** gene was transferred into bacteria. The genetically modified bacteria became able to synthesize insulin. Diabetics are now receiving this insulin.

· In 1977 an E. coli bacterium was created that was capable of synthesizing the **human growth hormone.**

· The hormone **thymosin** which may prove effective against brain and lung cancer has been produced by genetically modified microorganisms.

• **Beta-endorphin**, a pain killer produced by the brain, has also been produced by genetic engineering techniques.

· Genetic engineers produced a safe **vaccine** against the foot and mouth disease (a viral disease in cattle, goats and deer). Similarly many vaccines have been produced against human diseases such as hepatitis B.

Interferons are anti-viral proteins produced by cells infected with viruses. In 1980, interferon was produced in the genetically modified microorganisms, for the first time.

· The enzyme **urokinase,** which is used to dissolve blood clots, has been produced by genetically modified microorganisms.

· Now it has become possible to modify the genes in the human egg cell. This can lead to the elimination of inherited diseases like **haemophilia.**

· Genetic engineering techniques can also be used to cure **blood diseases** like thalassemia and sickle-cell anaemia, which result from defects in single genes.

· Normal genes could be transferred into the bone marrow.

· Genetic engineers have developed plants that can **fix nitrogen** directly from the atmosphere. Such plants need less fertilizers.
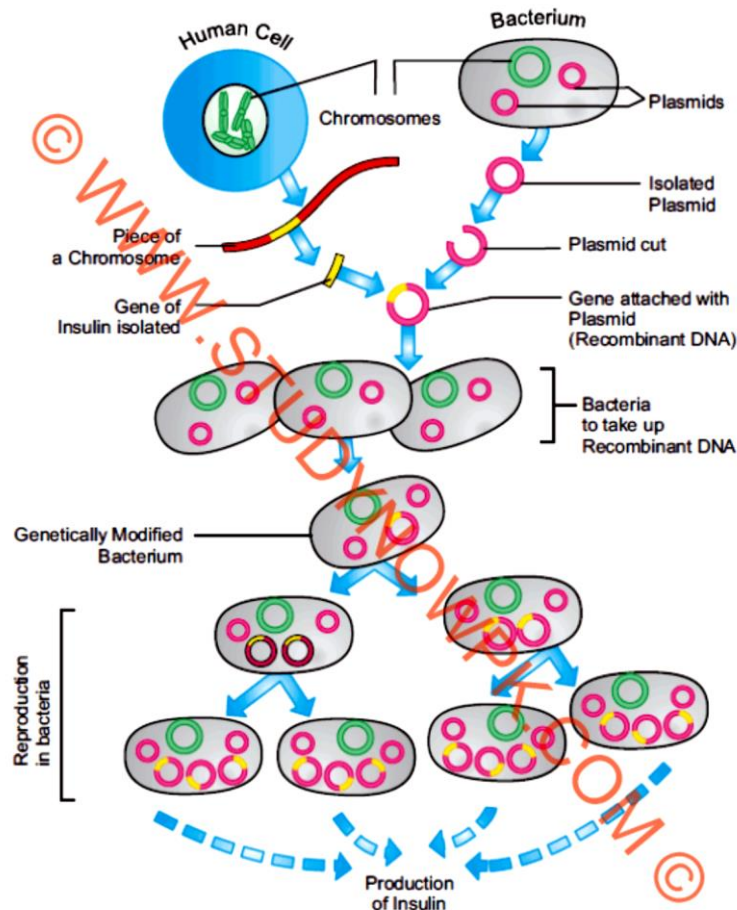
Figure 17.7: Production of insulin through genetic engineering
See animation at

Single-Cell Protein

In genetic engineering, we have studied about the transformation of microorganisms by the introduction of genes of beneficial proteins e.g. insulin. Single-Cell Protein (SCP) refers to the protein content extracted from pure or mixed cultures of algae, yeasts, fungi or bacteria. For the production of single-cell proteins, the microorganisms are grown in fermenters. These microorganisms utilize a variety of substrate like agricultural wastes, industrial wastes, natural gas like methane etc. Microorganisms grow very vigorously and produce a high yield of protein. The protein content produced by microorganisms is also known as novel protein or minifood.

C: Synthesis/absorbing the information:

1. Write your own summary-notes in your notes book based on the information you read.

D: Practising activity:

1. Please read what your text book says about the Genetic engineering.
2. Write a detailed note on the SCP.

E: Assessment for learning

Note: Choose the best option and write in an email along with its question no. as answer for your fill in the blanks questions. [10×1=10]

1. The enzyme ---------------------- is used to dissolve blood clots.
2. -------------------------are anti-viral proteins produced by cells infected with viruses.

3. ------------------ pain killer produced by the brain, has also been produced by genetic engineering techniques.

4. In 1977 an --------------- bacterium was created that was capable of synthesizing the human growth hormone

5. The vector DNA and the attached gene of interest are collectively called --------------------.

6. A-------------------- is selected for the transfer of the isolated gene of interest to the host cell.

7. Before genetic engineering, ------------------ sheep brains were required to produce 5 mg human growth hormone.

8. ------------------ is gaining popularity day by day because it requires limited land area for production

9. Recombinant DNA is transferred to the target host and it is transformed into a ---------------------.

10. The vector may be a ---------------- or a ----------------------------.

Subject: Mathematics

Q.NO.1. Choose the correct answer and encircle it.

i.   A set is well defined collection of
        a) functions   b)objects   c)books   d)places

ii.   Sets are denoted by
        a) Small letters   b)roman letters   c)capital letters   d)numerals

iii.   A set of real numbers is union of rational and
        a) Irrational numbers   b)natural numbers   c)whole numbers   d)odd numbers

iv.   Domain of relation is denoted by
        a) Rang R   b)$A\rightarrow B$ c)Dom R   d)$f:A\rightarrow B$

v.   If a function f is one-one and onto then it is called
        a) One-one function   b)into function   c)bijective function   d)surjective function

vi.   If $f:A\rightarrow B$ IS a function ,then A is called the
        a)subset of f   b)binary relation of f   c)range of f
        d)domain of f

Q.No:2: Write down short answers to the following questions:

i.   What is the difference between set of even integers and set of odd integers?

ii.   Verify commutative law of union.

iii.   If A ={2,3,4,5} and B={2,4,6.8} then find domain for R={(2,4),(3,6),(4,8)}?

iv.   If $X=\varphi$,Y= Z^+ , T=O^+ then find XUT.

v.   If A=N and B=W ,then find A-B.

vi.   Define compliments of a set.

vii. If L={a,b,c} , M={3,4},then find two binary relations of L×M and M×L.

viii. If set M has 5 elements , then find the number of binary relations in M.

Q.No:3: a)If U=N ,then verify De-Morgans laws by using A=φ and B=P.

b)find a and b if   (a-4 , b-2)=(2,1).

Subject: Computer

Lesson: Topic (Using a Functions in C) Chapter#5 Functions

Information:

To use a function in C, you need to follow these steps:

Function Declaration (Signature):

Declare the function at the beginning of your program or in a header file. The declaration provides information about the function's name, return type, and parameter types.

Function Definition:

Define the function later in the code, which includes the actual implementation of the function.

Function Call:

Call the function in your program to execute the code within the function. Pass any required arguments, if applicable.

Here's an example using the **add** function.

```c
#include <stdio.h>

// Function declaration (function signature)
int add(int x, int y);

int main() {
    // Function call
    int result = add(3, 5);

    // Output the result
    printf("Result: %d\n", result);

    return 0;
}

// Function definition
int add(int x, int y) {
    int sum = x + y;
    return sum;
}
```

- The add function is declared at the beginning of the program.
- The main function calls add(3, 5), passing 3 and 5 as arguments.

- The add function is defined later in the code, and its implementation adds the two numbers and returns the result 8.

1. Read your text book page#106 of your textbook.

   ✓ Functions.

   ✓ Using a function.

   ✓ Example code 5.3

2.   Practising:
   a. How functions can be used in C program?
   b. What is the role of function call in C?
   c. What does the body of the function contain?

Subject: English

Resource Book: Punjab Text Book (Grammar and Composition)

Marks for Completion and submission of the homework: **/50**

Time allotted: **45 minutes/1 day**

Objective:

The students will be able to revise and write down the sentences of 1-70 pairs of words and translation of 1-11 passages.

Topics	Task
The Rain Try Again Peace	Q. Write down (on loose sheet) the summaries of the given poems.

Subject: Islamiat / Tarjuma tul Quran

تفصیلی جواب تحریر کریں۔

سورۃ المومنون کے بنیادی مضامین پر جامع نوٹ تحریر کریں۔

Subject: Urdu

اشارات / اہم نکات	تفصیل	ہوم ورک	تاریخ اور دن
الف) رشید احمد صدیقی کے پہلے خط کے مخاطب کا نام کیا ہے؟ ب) "خطوط کا جواب عموماً ہم روز ہ دیتا ہوں" اس سے کیا مراد ہے؟ ج) مکتوب نگار نے خاندانوں کی مشترک خصوصیات کا سر چشمہ کس چیز کو قرار دیا ہے؟ د) ظہیر احمد صدیقی کے نام مکتوب میں کس شخصیت کی وفات پر اظہار تعزیت کیا گیا ہے؟	دیے گئے سوالات کے مختصر جوابات اپنی نوٹ بک پر تحریر کریں۔	مشقی سوالات	10 فروری بروز ہفتہ