DREAMLAND SCHOOL Date:- 02/05/2020

CLASS- VIII (Session- 2020-21)

PHYSICAL EDUCATION

HOME WORK-2

How exercise can help to make us fit:

Exercise is defined as any movement that makes your muscles work and requires your body to burn calories.

There are many types of physical activity, including swimming, running, jogging, walking and dancing, to name a few.

Being active has been shown to have many health benefits, both physically and mentally. It may even help you live longer

Here are the top 5 ways regular exercise benefits your body and brain.

Exercising regularly can improve your mood and reduce feelings of anxiety and depression.

1. **It Can Make You Feel Happier**
   Exercising regularly can improve your mood and reduce feelings of anxiety and depression.

2. **It Can Help With Weight Loss**

   Exercise is crucial to supporting a fast metabolism and burning more calories per day. It also helps you maintain your muscle mass and weight loss.

3. **It Is Good for Your Muscles and Bones**

   Physical activity helps you build muscles and strong bones. It may also help prevent osteoporosis.

4. **It Can Increase Your Energy Levels**

Engaging in regular physical activity can increase your energy levels. This is true even in people with persistent fatigue and those suffering from serious illnesses.

5. <u>It Can Reduce Your Risk of Chronic Disease</u>

Daily physical activity is essential to maintaining a healthy weight and reducing the risk of chronic disease.

Click on the below link for exercise video:-

https://youtu.be/sTxC3J3gQEU

HOME ASSIGNMENT (9)
CLASS 8-MATHEMATICS

DATE: 02/05/2020

Solutions of CHAPTER-4 (CUBES AND CUBE ROOTS)

EX.-4.2 (H.W. of 29/04/2020 & 30/04/2020)

1) i)

(*i*) $\sqrt[3]{12167}$

23	12167
23	529
23	23
	1

$= \sqrt[3]{23 \times 23 \times 23}$

$= (23^3)^{\frac{1}{3}} = 23^{\frac{1}{3} \times 3}$

$= 23^1 = 23$

vii)

(vii) $\sqrt[3]{262144}$

2	262144
2	131072
2	65536
2	32768
2	16384
2	8192
2	4096
2	2048
2	1024
2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

$$= \sqrt[3]{2\times2\times2\times2\times2\times2\times2\times2\times2\times2\times2\times2\times2\times2\times2\times2\times2\times2}$$

$$= 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$$

2) ii)

(ii) 59319

Grouping in 3's, from right to left. 59,319

In first group, 319 unit digit is 9

∴ Unit digit of its cube root will be 9

and group 2nd, 59

$3^3 = 27$, $4^3 = 64$

$27 < 59 < 64$

∴ Ten's digit will be 3

∴ Cube root = 39

iv)

(iv) 148877

Grouping in 3's, from right to left 148,877

In the first group 877, unit digit is 7

∴ The unit digit of cube root will be 3

and in group 2nd 148

$5^3 = 125$, $6^3 = 216$

$125 < 148 < 216$

∴ Ten's digit of cube root will be 5

∴ Cube root = 53

3) i)

(*i*) $\sqrt[3]{-250047} = -\sqrt[3]{250047}$

3	250047
3	83349
3	27783
3	9261
3	3087
3	1029
7	343
7	49
7	7
	1

$= \sqrt[3]{3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 7 \times 7 \times 7}$

$= 3 \times 3 \times 7 = 63$

$= -\sqrt[3]{250047} = -63$

ii)

(ii) $\sqrt[3]{\frac{-64}{1331}} = -\sqrt[3]{\frac{64}{1331}}$

$\because$

2	64
2	32
2	16
2	8
2	4
2	2
	1

11	1331
11	121
11	11
	1

$$= \sqrt[3]{\frac{2\times2\times2\times2\times2\times2}{11\times11\times11}}$$

$$= \frac{\sqrt[3]{2\times2\times2\times2\times2\times2}}{\sqrt[3]{11\times11\times11}}$$

$$= \frac{2\times2}{11} = \frac{4}{11}$$

$$\therefore \sqrt[3]{\frac{-64}{1331}} = \frac{-4}{11}$$

4) i)

$$\sqrt[3]{512\times729} = \sqrt[3]{512} \times \sqrt[3]{729}$$

3	729
3	243
3	81
3	27
3	9
3	3
	1

2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

$$= \sqrt[3]{2\times2\times2\times2\times2\times2\times2\times2\times2} \times \sqrt[3]{3\times3\times3\times3\times3\times3}$$

$$= (2\times2\times2)\times(3\times3) = 72$$

ii)

(*ii*) $\sqrt[3]{(-1331)\times(3375)}$

$$= \sqrt[3]{-1331} \times \sqrt[3]{3375}$$

$$= -\sqrt[3]{1331} \times \sqrt[3]{3375}$$

3	3375
3	1125
3	375
5	125
5	25
5	5
	1

$$= -\sqrt[3]{11\times11\times11} \times \sqrt[3]{3\times3\times3\times5\times5\times5}$$

$$= -11 \times 3 \times 5 = -11 \times 15 = -165$$

5) i)

$$\sqrt[3]{0.003375} = \sqrt[3]{\frac{3375}{1000000}}$$

$$= \frac{\sqrt[3]{3375}}{\sqrt[3]{1000000}}$$

10	1000000
10	100000
10	10000
10	1000
10	100
10	10
	1

3	3375
3	1125
3	375
5	125
5	25
5	5
	1

$$= \frac{\sqrt[3]{3\times3\times3\times5\times5\times5}}{\sqrt[3]{10\times10\times10\times10\times10\times10}}$$

$$= \frac{3\times5}{10\times10} = \frac{15}{100} = 0.15$$

ii)

$$(ii)\ \sqrt[3]{19.683} = \sqrt[3]{\frac{19683}{1000}}$$

$$= \frac{\sqrt[3]{19683}}{\sqrt[3]{1000}}$$

3	19683
3	6561
3	2187
3	729
3	243
3	81
3	27
3	9
3	3
	1

$$= \frac{\sqrt[3]{3\times3\times3\times3\times3\times3\times3\times3\times3}}{\sqrt[3]{10\times10\times10}}$$

$$= \frac{3\times3\times3}{10} = \frac{27}{10} = 2.7$$

6)

$$\sqrt[3]{27} + \sqrt[3]{0.008} + \sqrt[3]{0.064}$$

$$= \sqrt[3]{3\times3\times3} + \sqrt[3]{0.2\times0.2\times0.2}$$

$$+ \sqrt[3]{0.4\times0.4\times0.4}$$

$$= 3 + 0.2 + 0.4 = 3.6$$

7)

6561

Factorising, we get

3	6561
3	2187
3	729
3	243
3	81
3	27
3	9
3	3
	1

$6561 = 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$

Grouping of the equal factors in 3's,

we see that 3×3 is left ungrouped in 3's.

In order to complete it in triplet, we should multiply it by 3.

Hence, required smallest number = 3

and cube root of the product $= 3 \times 3 \times 3 = 27$

8)

8748

Factorising, we get

3	8748
3	2916
3	972
3	324
3	108
3	36
3	12
2	4
2	2
	1

$8748 = 2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$

Grouping of the equal factor in 3's

we get that $2 \times 2 \times 3$ is left without grouping.

So, dividing 8748 by 12, we get 729

whose cube root is $3 \times 3 = 9$

9)

The volume of a cubical box 21952 m^2

It's edge = $\sqrt[3]{21952}$ m

2	21952
2	10976
2	5488
2	2744
2	1372
2	686
7	343
7	49
7	7
	1

$= \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 7 \times 7}$m

$= 2 \times 2 \times 7 = 28$ m

10)

Three numbers are in the ratio 3:4:5

and their product = 480

Let numbers be 3x, Ax, 5x, then

$3x \times 4x \times 5x = 480 \Rightarrow 60 \times 3 = 480$

$\Rightarrow x^3 = \frac{480}{60} = 8 = (2)^3$

$\therefore x = 2$

$\therefore$ Number are 2×3, 2×4, 2×5

= 6, 8 and 10

11)

Two numbers are in the ratio = 4 : 5

Difference between their cubes = 61

Let the numbers be 4x, 5x

$\therefore (5x)^3 - (4x)^3 = 61$

$125x^3 - 64x^3 = 61 \Rightarrow 61x^3 = 61$

$\Rightarrow x^3 = 1 = (1)^3$

$\therefore x = 1$

$\therefore$ Numbers are $4x = 4 \times 1 = 4$ and $5 \times 1 = 5$

Hence numbers are = 4, 5

12)

Difference in two cubes = 387

Cube root of the greater number = 8

$\therefore$ Greater number = $(8)^3 = 8 \times 8 \times 8 = 512$

Hence, second number = 512 − 387 = 125

and cube root of 125 = $\sqrt[3]{125}$

$= \sqrt[3]{5 \times 5 \times 5} = 5$

HOTS

1)

Total cost of painting the surface of a cubical box = ₹1440

and rate = ₹15 per sq. m

Total surface = $\frac{1440}{15} = 96\ m^2$

$\therefore$ Side = $\sqrt{\frac{96}{6}} = \sqrt{16} = 4m$

Now volume = $(\text{Side})^3 = (4)^3 = 64\ m^{32}$

CHAPTER-5 (PLAYING WITH NUMBERS)

Division rules in Mathematics help one to check whether a number is divisible by another number without actual division. If a number is completely divisible by another number it means that in such a case quotient will be a whole number and the division will leave zero as remainder.

Since every number is not completely divisible by every other number such numbers leave remainder other than zero. These rules are certain one which helps us to determine the actual divisor of a number just by considering the digits of the number. Let us look into these rules for different whole numbers one by one.

Divisibility Rules 1 to 13

The division rules from 1 to 13 in Maths are explained here in detail with many examples. Go through the below article to learn the shortcut methods to divide the numbers easily.

Divisibility by 1

Every number is divisible by 1. Divisibility rule for 1 doesn't have any particular condition. Any number divided by 1 will give the number itself, irrespective of how large the number is. For example, 3 is divisible by 1 and 3000 is also divisible by 1 completely.

Divisibility by 2

Any even number or number whose last digit is an even number i.e. 2,4,6,8 including 0 is always completely divisible by 2.

Example: 508 is an even number and divisible by 2 but 509 is not an even number, hence not divisible by 2. Procedure to check whether 508 is divisible by 2 or not is as follows:

- Consider the number 508
- Just take the last digit 8 and divide it by 2
- If the last digit 8 is divisible by 2 then the number 508 is also divisible by 2.

Divisibility Rules for 3

Divisibility rule for 3 states that a number is completely divisible by 3 if the sum of its digits is divisible by 3 i.e., it is a multiple of 3.

Consider a number, 308. To check whether 308 is divisible by 3 or not, take sum of the digits (i.e. 3+0+8= 11). Now check whether the sum is divisible by 3 or not. If the sum is a multiple of 3 then the original number is also divisible by 3. Here, since 11 is not divisible by 3, 308 is also not divisible by 3.

Similarly, 516 is divisible by 3 completely as the sum of its digits i.e. 5+1+6=12, is a multiple of 3.

Divisibility by 4

If the last two digits of a number are divisible by 4, then that number is a multiple of 4 and is divisible by 4 completely.

Example: Take the number 2308. Consider the last two digits i.e. 08. As 08 is divisible by 4, the original number 2308 is also divisible by 4.

Divisibility by 5

Numbers with last digit 0 or 5 are always divisible by 5.
Example: 10, 10000, 10000005, 595, 396524850 etc.

Divisibility by 6

Numbers which are divisible by both 2 and 3 are divisible by 6. That is, if last digit of the given number is even and the sum of its digits is a multiple of 3, then the given number is also a multiple of 6.

Example: 630, the number is divisible by 2 as the last digit is 0.
The sum of digits is 6+3+0 = 9, which is also divisible by 3.
Hence 630 is divisible by 6.

Divisibility Rules for 7

The rule for divisibility by 7 is given below:

Remove the last digit of the given number and double it; then subtract the double from the remaining number. If the result is 'zero' or a recognizable 2-digit multiple of 7, then the number is divisible by 7.

Example: Is 1673 divisible by 7?

- From the rule stated remove 3 from the number and double it, which becomes 6.
- Remaining number becomes 167, so 167-6 = 161.
- Repeating the process one more times, we have 1 x 2 = 2.
- Remaining number 16 – 2 = 14.
- As 14 is divisible by 7, hence the number 1673 is divisible by 7.
-

Divisibility by 8

If the last three digits of a number are divisible by 8, then the number is completely divisible by 8.

Example: Take number 24344. Consider the last three digits i.e. 344. As 344 is divisible by 8, the original number 24344 is also divisible by 8.

Divisibility by 9

The rule for divisibility by 9 is similar to divisibility rule for 3. That is, if the sum of digits of the number is divisible by 9, then the number itself is divisible by 9.

Example: Consider 78534, as the sum of its digits (7+8+5+3+4) is 27, which is divisible by 9, hence 78534 is divisible by 9.

Divisibility by 10

Divisibility rule for 10 states that any number whose last digit is 0, is divisible by 10.

Example: 10, 20,30,1000,5000,60000 etc.

Divisibility Rules for 11

If the difference of the sum of alternative digits of a number is zero or divisible by 11, then that number is divisible by 11 completely.

In order to check whether a number like 2145 is divisible by 11 following is the procedure.

- Group the alternative digits i.e. digits which are in odd places together and digits in even places together. Here 2, 4 and 1, 5 are two groups.
- Take the sum of the digits of each group i.e. 2+4=6 and 1+5= 6
- Now find the difference of the sums; 6-6=0
- If the difference is zero or divisible by 11, then the original number is also divisible by 11. Here 0 is the difference.
- Therefore, 2145 is not divisible by 11.
-

Divisibility Rules for 12

If a number is divisible by both 3 and 4, then that number is perfectly divisible by 12.

Example: Consider 58164, as the sum of its digits (5+8+1+6+4) is 24, which is divisible by 3; and last two digits are 24, which is divisible by 4,hence 58164 is divisible by 12.

Divisibility Rules for 13

For any given number, to check if it is divisible by 13, we have to add four times of the last digit of the number to the remaining number and repeat the process until you get a two-digit number. Now check if that two-digit number is divisible by 13 or not. If it is divisible then the given number is divisible by 13.

For example: 2795 → 279 + (5 x 4) → 279 + (20) → 299 → 29 + (9 x 4) → 29 + 36 →65. Number 65 is divisible by 13, 13 x 5 = 65.

Therefore, 2795 is divisible by 13.

7TH HOME ASSIGNMENT – 2020-2021

CLASS –VIII SUBJECT – ENGLISH LANGUAGE

DATE – 02.05.20.

(SOLUTIONS TO THE EXERCISES OF CHAPTER- 4 DETERMINERS DATE- 29.04.20 .)

. **HOME ASSIGNMENT**

EXERCISE 1. Fill in the blanks using this, that, these and those . Follow the clues given in brackets :-

1. Just walk up **these** steps and enter the first room to your left . **(near the speaker)**

2. Can you move **these** files off there ?

3. That horse you see over there, runs very fast .

4. These mangoes lying here are very sweet .

5. Teachers and students suggest books for the library, and generally we're rather pleased to get **those** books .

6. That naughty Anand has gone and locked our cabin door .

7. Who had broken **this** chair ? **(near the speaker)**

8. Look at **those** penguins over there , they look like soldiers in white trousers ! The island is full of **these** strange birds .

9. Do you know **these** two men sitting next to you ?

10. I recall hiding in **that** scary attic in grandma's haveli .

EXERCISE 2. Fill in the blanks using my, our, your, his, her, its, their etc.

1. I remember **his** name now .

2. It took me a long time to park **my** car .

3. Ritu fell and hurt **her** little finger .

4. The hideous creature lifted **its** head .

5. I heard the wonderful news with **my** own ears .

6. Anuradha returned the ring to **its** owner .

7. As soon as I opened the cupboard, the bag fell on **my** head .

8. Hearing the shocking news, my brother's body went limp, **his** eyes shut and he began to roll off the chair .

9. The doctor said, 'There's no need to worry, **your** son will be fine very soon .'

10. I served **him** some more coffee but left **my** own cup untouched .

EXERCISE 3. Rewrite the sentences after correcting the errors :-

1. Please keep a egg in my plate .

Ans:- Please keep an egg in my plate .

2. An car going at the speed of 150 kilometres a hour whizzed past us .
Ans:- A car going at the speed of 150 kilometres an hour whizzed past us .
3. The girl who topped the school and was awarded an scholarship is the daughter of an poor cobbler .
Ans:- The girl who topped the school and was awarded a scholarship is the daughter of a poor cobbler .
4. These bananas cost rupees thirty an dozen .
Ans:- These bananas cost rupees thirty a dozen .
5. An Russian and an Indian were sitting together in the park . The Russian is an taxi driver married to a Austrian .The Indian is a shopkeeper and still an bachelor .
Ans:- A Russian and an Indian were sitting together in a park . The Russian is a taxi driver married to an Austrian . The Indian is a shopkeeper and still a bachelor .
6. We have an budding Wordsworth in this young poet . An Wordsworth means ' an poet whose poems have the merits or the qualities of Wordsworth's poems ' .
Ans:- We have a budding Wordsworth in this young poet . A Wordsworth means ' a poet whose poems have the merits or the qualities of Wordsworth's poems .
7. Add just little sugar to my cup of tea .
Ans:- Add just a little sugar to my cup of tea .
8. They were amazed by the richness of music and our culture .
Ans:- They were amazed by the richness of our music and our culture .
9. During a Kumbh Mela, millions of people take the holy dip in the Ganga .
Ans:- During the Kumbh Mela, millions of people take a holy dip in the Ganga .
10. I know an few of participents who have come to attend this seminar .
Ans:- I know a few of the participents who have come to attend this seminar .

CHAPTER – 4 DETERMINERS (CONTINUED)

QUANTIFIERS

Quantifiers are a type of **determiners** that tell the amount of an uncountable noun, or the number of a countable noun **. Some common quantifiers are some, any, much, many, a lot, a few, several and enough .**

Use of SOME :-

1. In affirmative statements when we do not know theexact numbers or amount of things
e.g. I had **some** rice in the afternoon .
2. In question when we are sure that the answer is yes .**e.g**. Haven't you kept **some** juice in the fridge ?
3. In questions that make a request or extend an invitation . **e.g.** Would you like **some** cake ?
4. With countable nouns . It is equivalent in meaning to **a few** or **a small number .**
e.g. There are **some** cups and plates on the table .

5. With uncountable nouns .It is equivalent in meaning to **a little** or **a small quantity .**
e.g. Is there **some** coffee in the pot ?
6. To express a **large number** or **amount** . **e.g.** I did not visit her again for **some** years .
7. To emphasise that we do not know the identity of a person or thing .or if we think their identity is not important **. e.g.** We plan to spend the night in **some** resthouse .

Use of ANY

1. In negative sentences . e.g. He didn't give me **any** reply .
2. In interrogative sentences , when we expect **the answer to be no** . **e.g.** Do you have **any** icecream left ?
3. After **hardly, scarcely** and **barely . e.g.** There is barely **any** money left in the bank .
4. After **If** when there is some doubt .**e.g.** If you have **any** difficulty, you may come to me for help .

Use of ALL - When we wish to refer to three or more persons or things of a particular kind . it is used before **plural nouns** and **uncountable nouns** .
e.g. All work and no play makes Jack a dull boy .

Use of BOTH - To say something about two persons or things of the same kind . Both is sometimes used to emphasise that two people or things are involved, rather than just one . **e.g.** Little Jubo held his glass with **both** hands .

Use of MANY, MUCH - Much is used before **uncountable nouns** to denote **quantity . e.g**. I don't have **much** work today .
MANY is used before **countable nouns** to denote **number .e.g.** I have got **many** books .

Use of few , a few , the few

1. Few means **not many** or **hardly any** . **e.g. A few** people can keep a secret .
2. A few means **a small number** or **some** . **e.g.** We'll be away for **a few** days .
3. The few means **not many** but **all of them** . **e.g.** I will invite **the few** friends I have .

Use of little, a little, the little

1. Little means **not much** or **hardly any .e.g.** There is **little** hope of her success **.**
2. A little means **some, a small quantity (it has a positive meaning) .e.g. A little** patience is required to tackle her .
3. The little means **not much** but **all of that much .e.g.** I have used up **the little** milk that was in the fridge .

Use of fewer and less - Less is used to refer to **an amount of something that is smaller than another amount . It is usually used before uncountable nouns .**
e.g. I found **less** time for my hobbies after I started my own business .
Fewer is used to refer to **a group of things that is smaller than another group . It is usually used before plural nouns . e.g**. Unfortunately, there are **fewer** birds in this area .

HOME ASSIGNMENT

Fill in the blanksb using some, much, many, any, little, few, less, a few, a little ,both,

fewer, all, the few, the little

1. ‘ Do you have _____ strawberries ? Yes I have _____.

2. I still have _____ money left in the bank to be able to clear the bills .

3. Do you have _____ fruits ? Would you give me _____for my child ?

4. There is _____sugar in my tea than in yours .

5. There isn’t _____ paper for me to write on . Don’t forget to get _____ when you go to the market in the evening .

6. You have very _____ chance of being elected President of the organisation .

7. I wonder how _____ money she has spent on doing up the interior of the house .

8. There wasn’t _____ women and children in the bus .

9. Only _____ days are left for my friend’s wedding .

10. This tree has _____ cherries than that one .

11. _____ players attended his farewell party .

12. Lalit spread _____ marmalade on the toast .

13. I have got _____enemy .

14. _____people believe in ghosts these days .

15. _____knowledge is a dangerous thing .

16. There were excellent performances from _____ dancers .

17. She has _____ appreciation of classical music .

18. It took him _____ years to find out the truth .

19. We were _____ twenty miles by sea from the nearest town .

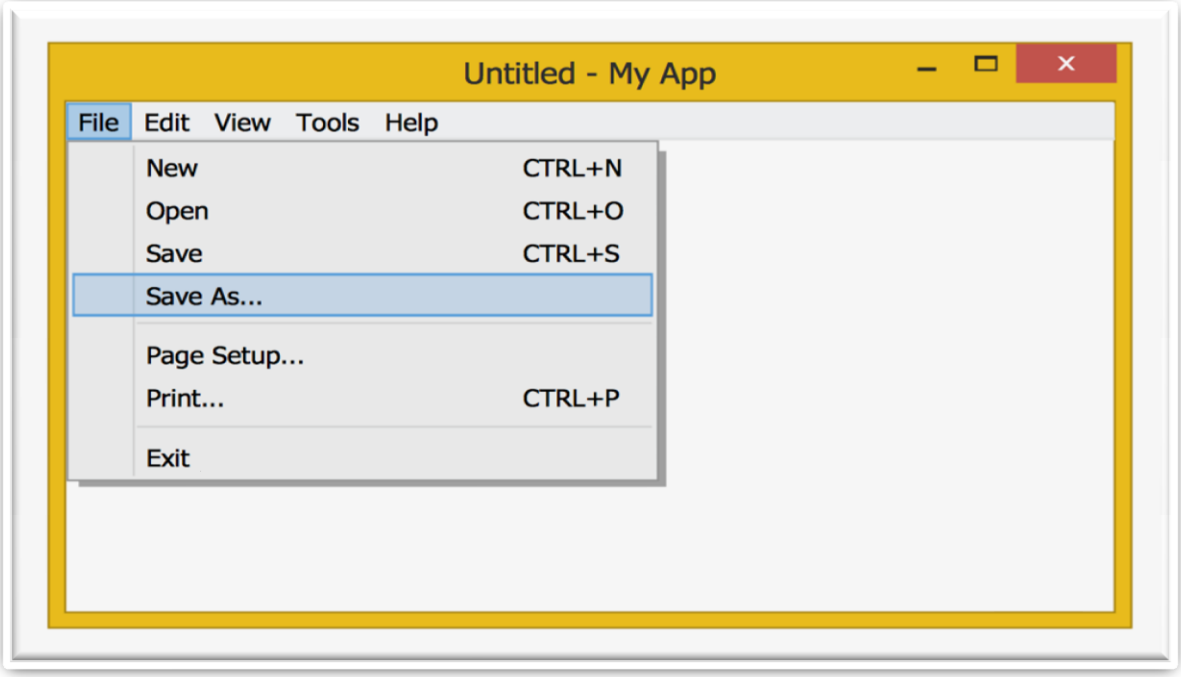
20. You can take a break _____time you like .

Date: 02.05.2020

COMPUTER (HOME ASSIGNMENT – 4)
CLASS – 8
CHAPTER: 1 (OPERATING SYSTEM & GUI)
STUDY MATERIAL NO. – 1.4

Graphical User Interface (GUI)

GUI is an interface between a user and a computer system that involves the use of a mouse-controlled screen cursor to select options from menus, make choices with buttons, start programs by clicking icons, etc. As you read this, you are looking at the GUI or graphical user interface of your computer.
GUI objects include icons, cursors, and buttons. These graphical elements are sometimes enhanced with sounds, or visual effects like transparency and drop shadows. It is considered to be more user-friendly than a text-based command-line interface, such as MS-DOS. Microsoft Windows, Apple System 7, Mac OS, Chrome OS are examples of a GUI operating system



Graphical User Interface Examples — File Menu

Advantages of Graphical user Interface (GUI):

➡It requires just a click on the simple picture or image in order to use its functionalities, as it makes use of the WYSIWYG (What you see is what you get) method of representation of valid objects (like files, folders etc).

➡It is very easy to use by novice as it is user friendly and speed up the user's work.
➡Simple icon in GUI interface uses multiple instructions in the back end. Hence it is easy for the programmer to code in GUI languages (such as VC++, VB, C#, .Net etc.) compare to other non GUI based programming languages.
➡It looks very attractive and multi-colored.
➡It is much better than the CUI (Character User Interface) which requires the user to memorize a lot of commands, syntaxes.
➡User can switch quickly between tasks on the GUI interface.
➡Full screen interaction is also possible with quick and wholesome access to anywhere on the screen.

Disadvantages of Graphical user Interface (GUI):
➡It uses more computer memory as the aim is to make it for user friendly and not resource optimized. As a result it can be slow on older machines.
➡GUI becomes more complex if user needs to communicate with the computer directly.
➡Certain tasks may take long due to many menus to select the desired choice.
➡Hidden commands need to be searched using Help file.
➡GUI based applications require more RAM in order to run.
➡It uses more processing power compare to other interface types.

Difference between CUI and GUI:-

GUI	CUI
An interface that is commonly used to get connected to the computer.	Another interface that needs command prompts to connect to computer.
Much easier for navigation and use.	Hard to use and navigate.
It is the modern type of connection with graphics and images where the mouse can be used.	It is the older type of connection need to type the commands on the keyboard.
It is used by the newest computer models.	It is used by older computer models.
You can see graphics and other images when you need to give a special command on the computer.	You only see the command prompt and you have to memorize the commands all the time.

CLASS – VIII
STUDY MATERIAL & HOME ASSIGNMENT [IV]
SUBJECT-BIOLOGY
CHAPTER-2 (REPRODUCTION IN PLANTS) DT–02/05/2020

EXPLANATION OF THE REST PART OF CHAPTER 2

- **VEGETATIVE PROPAGATION –**

This form of asexual reproduction occurs in plants only. In vegetative propagation, parts of old plant like stems, roots and leaves are used to grow a new plant. The buds which are present in dormant state in old plant are provided with suitable conditions like moisture and warmth so that they grow and develop to form a new plant..

- **TYPES OF VEGETATIVE PROPAGATION –**

Different types of vegetative propagation include:

i. Natural vegetative Propagation
ii. Artificial Vegetative Propagation

- **NATURAL VEGETATIVE PROPAGATION -**

This occurs when plants grow and develop naturally without any human interference. Natural vegetative propagation can be enabled by the development of adventitious roots. Thus, new plants may emerge from the roots, stem and leaves of the parent plant. The vegetative plant structures arising from the stem are known as rhizomes, bulbs, runners, tubers, etc. The plants propagated vegetatively are given below:

- ***Roots***

New plants emerge out of swollen, modified roots known as tubers. The roots of some plants develop adventitious buds on them e.g., Shisham, Guava, poplars, etc. Some tuberous adventitious roots besides possessing adventitious buds also contain sufficient quantities of, food, e.g., Dahlia and Sweet potato.

Fig. 1.14. A-B Vegitable reproduction by roots
A. Adventitouse buds growing into new shoots in tuberous root of sweet potato;
B. Old root tuber of Dahlia growing into new plant.

- ***Stem***

Rhizome is horizontal underground plant stem capable of producing the shoot and root systems of a new plant. Rhizomes are used to store starches and proteins and enable plants to survive an annual unfavourable season underground. E.G – Ginger

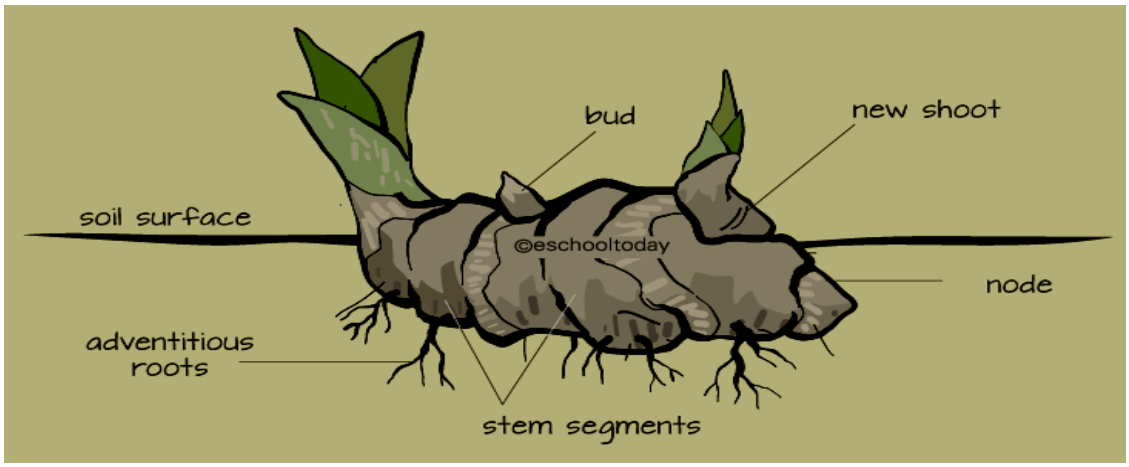


FIG : RHIZOME

Bulbs have an underground stem to which the fleshy leaves are attached. These leaves are capable of storing food. The centre of the bulb contains an apical bud that produces leaves and flowers. The bulbs produce smaller buds called lateral buds which is present between layers of parent bulb. Shoots are developed from the lateral buds. As the mature plant gets to the end of its life, lateral buds develop into a smaller bulb that attaches to the base of parent bulb. The new bulb can be separated and planted. E.G. – onion.

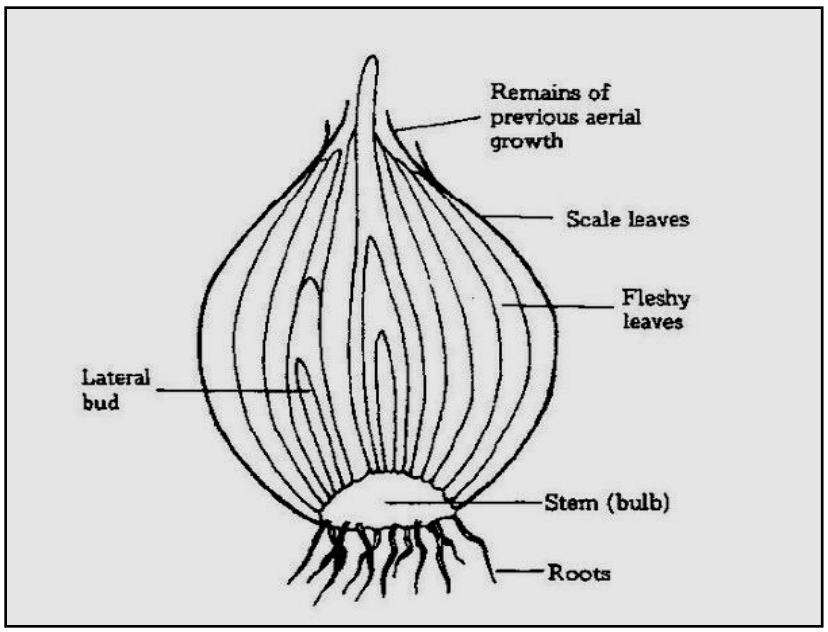


FIG : ONION BULB

Tubers develop from either the stem or the root. Stem tubers swell from storing nutrients and get too large and produce a new plant. Stem tubers have eyes or nodes on them that can produce new

shoot.The eyes often begin to sprout to new shoot when left for sometime. Each shoot that appear on the tuber can be cut and planted to produce a new plant. Examples of stem tubers are potatoes.

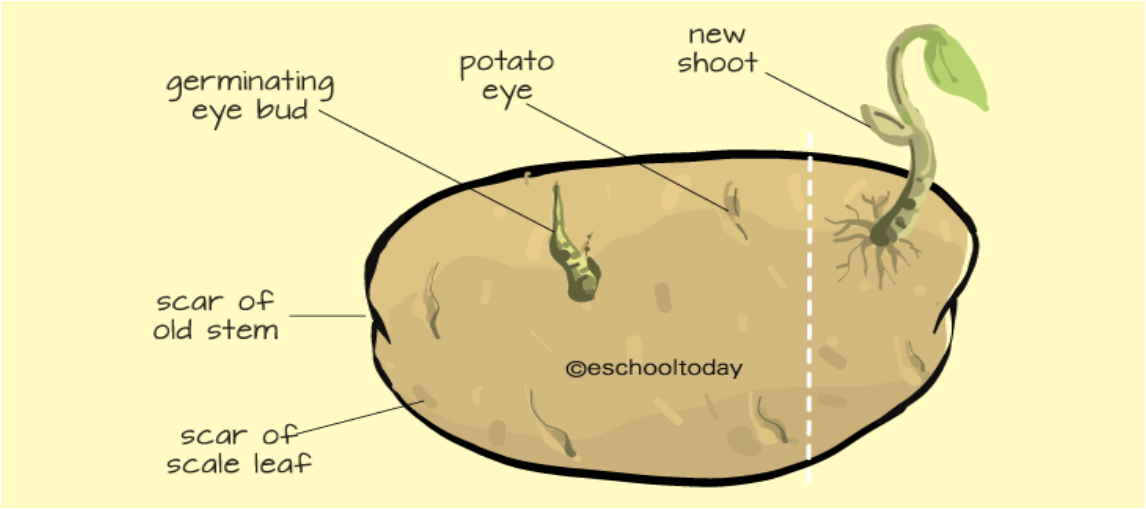
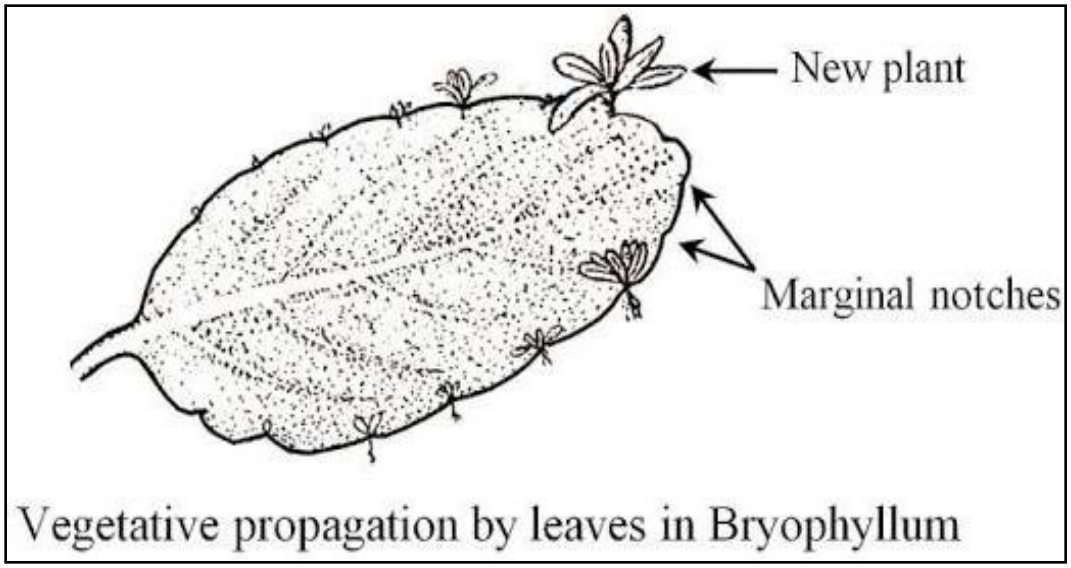


FIG : POTATO TUBER

- ***Leaves***

Leaves of a few plants get detached from the parent plant and develop into a new plant. They exhibit growth of small plants, called plantlets, on the edge of their leaves. Example: Bryophyllum.



➢ ARTIFICIAL VEGETATIVE PROPAGATION -

This is a type of vegetative reproduction carried out by humans on the fields and laboratories. the most common types of vegetative reproduction occurring artificially include:

- ***Cutting***

In this, a part of a plant, specifically a stem or leaf is cut and planted in the soil. These cuttings are sometimes treated with hormones to induce root development. The new plant is formed from the adventitious roots developing from the cutting. Plants such as roses and sugarcane can be cut at the points of nodes and internodes. These points are then placed in moist soils. After some time, adventitious roots develop at the points and new plants begin to grow.There are many types of cutting techniques, grouped into three categories: Stem, leaf and root cutting. Stem cuttings include hardwood, semi-hardwood, and softwood cutting. Leaf-cutting include leaf blade cutting, leaf vein cutting, leaf bud cutting and leaf edge cutting. The third category is root cutting.

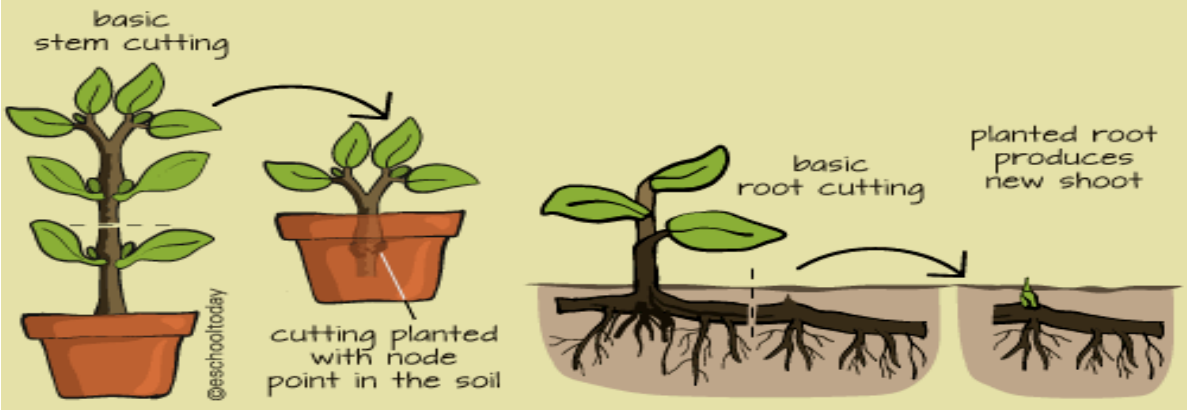


FIG : CUTTING

- ***Grafting***

In this, the cutting from some other plant is attached to the stem of plant rooted in the ground. The tissues of the graft become integrated with the tissues of the rooted plant and develop as a single plant over time. This process involves joining the shoot system of a plant (known as scion) to the root system of another plant (known as the stock). The two are joined where the sizes (diameter) of the scion and stock are very close. They are both cut diagonally and placed facing each other. They are then taped and left to heal with time

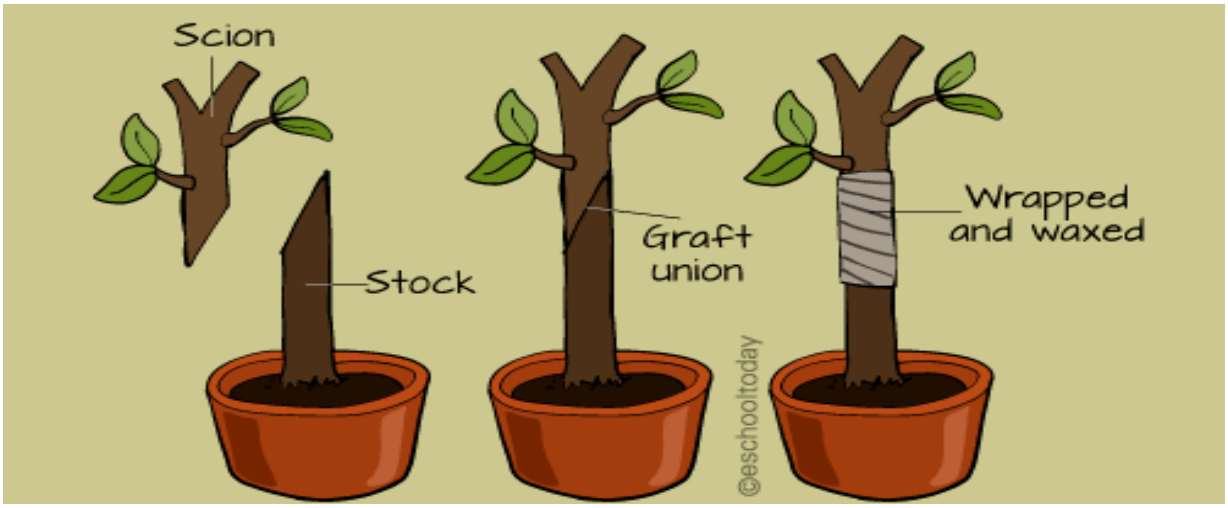


FIG : GRAFTING

- ***Layering***

In this, the stem of the plant is bent to the ground and covered with soil. Adventitious roots emerge from the plant parts covered with the soil. This attached stem with developing roots is known as a layer. In some plants like raspberries, the stem can be bent and buried in the soils around the plant. After some time, adventitious roots develop off the stem. This part of the stem is known as the layer. The stem can then develop into a new plant.

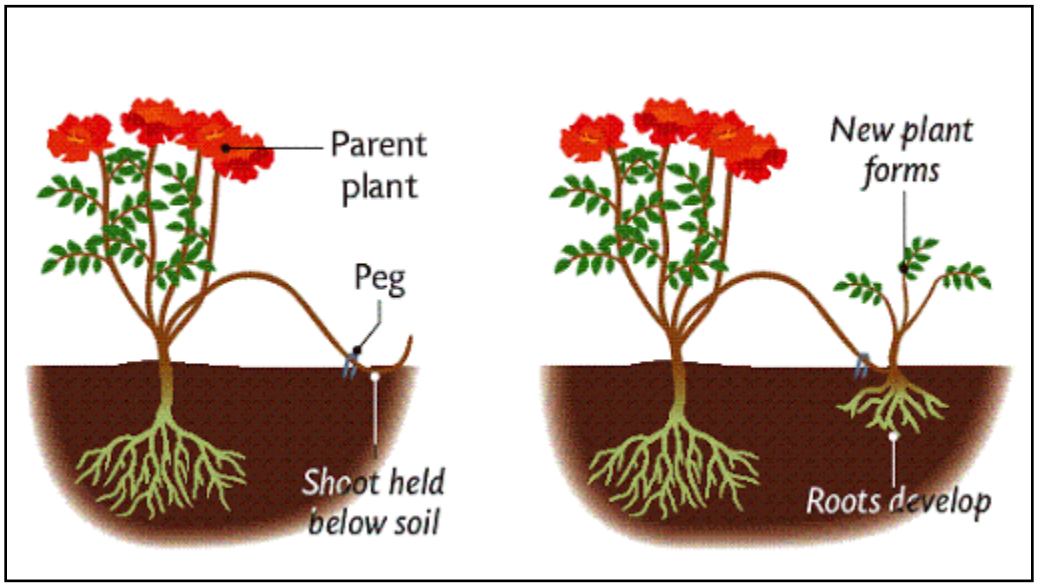


FIG : LAYERING

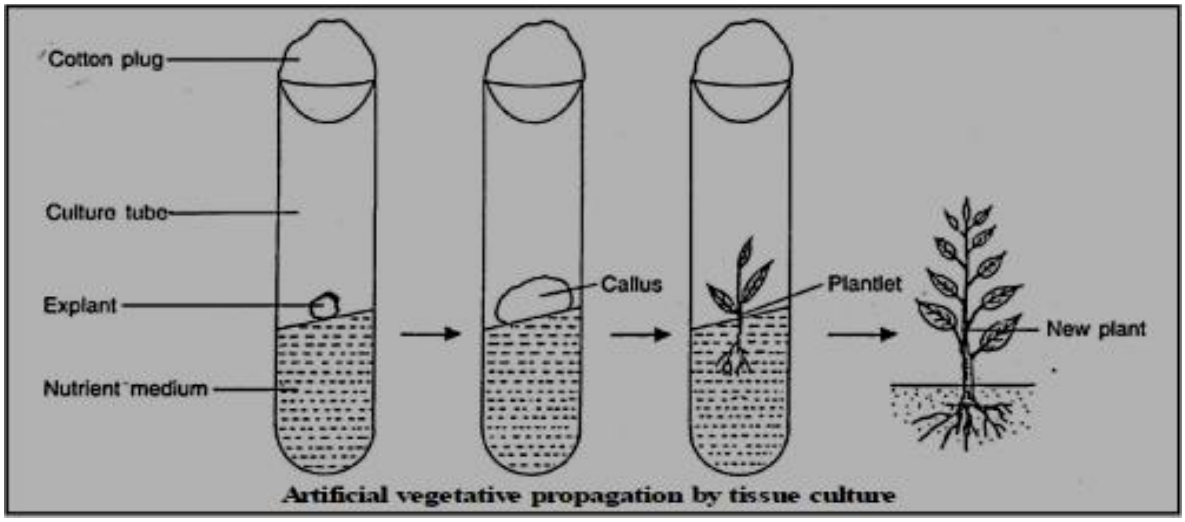
- ***Micropropagation or Tissue Culture***

In this, the plant cells from different parts of a plant are cultured in the laboratory to develop a new plant. This technique is helpful in increasing the number of rare and endangered plant species that are unable to grow under natural conditions. The production of new plants from a small piece of plant tissue or cells removed from the growing tips of a plant in a suitable growth medium is called tissue culture or culture solution. In this process the growth medium or culture solution is very important as, it is used for growing plant tissue because it contains various plant nutrients in the form of 'jelly' known as agar and plant hormones which are necessary for the growth of plant.

The process of tissue culture for producing new plants is as follows

1. A small piece of plant tissue is taken from the growing point of the plant or from the tip of the plant and placed on a sterile jelly which contains nutrients and plant hormones. The hormones make the cells in the plant tissue divide rapidly producing many cells which forms a shapeless lump of mass called 'callus'.
2. The callus is then transferred to another jelly containing suitable plant hormones which stimulate the callus to develop roots.
3. The callus with developed roots is then put on a yet another jelly containing different

hormones which stimulate the development of shoots.
4. The callus having roots and shoots separates into tiny plantlets. In this way, many tiny plantlets are produced from just a few original plant cells or tissue.
5. The plantlets thus produced are transplanted into pots or soil where they can grow to form mature plants.



Artificial vegetative propagation by tissue culture

Advantages of Tissue Culture

Following are the various advantages of tissue culture technique:

1. The plantlets are obtained in a very short time with a small amount of plant tissue.
2. The new plants produced are disease-free.
3. The plants can be grown throughout the year, irrespective of the season.
4. A large space is not required to grow plants by tissue culture technique.
5. The production of new varieties in the market place speeds up.
6. This technique is being used for the production of ornamental plants such as dahlia, chrysanthemum, orchids, etc.
7. In case of the seed potato industry, this technique helps in maintaining and establishing virus free stock.
8. Often produces healthier plants, leading to quicker growth compared to those plants produced by a conventional method.
9. Genetic uniformity can be maintained through this technique.
10. The small-sized propagules can be stored and transported easily.

Importance of Tissue Culture

1. Tissue culture is very important in biology due to its wide range of applications.
2. Both plant and animal tissues can be used for culturing. For eg., animal tissue culture helps in preserving an organ or tissue.
3. Plant tissue culture may be used for genetic modification of a plant or simply increase its yield. the cells of the plants can be genetically altered to produce plants with desirable characteristics.

4. This technique utilizes the plant's ability to rejuvenate the tissues rapidly. It produces exact copies of itself known as clones.
5. It is a technique of quickly producing plants without any tubers, seeds or bulbs.
6. It also helps in the conservation of plant biodiversity by the production of endangered plants.

➢ ADVANTAGES AND DISADVANTAGES OF VEGETATIVE PROPAGATION -

Advantages of vegetative propagation

- Quicker and more certain.
- Produces identical quality as the parent.
- Plants that do not have viable seed, can be reproduced.
- Flowers produced are of superior quality.
- Desirable character of fruit can be maintained.

Disadvantages of vegetative reproduction

- Does not produce new variety.
- New plants are less adaptable to environment.
- The diseases of parent plants are transferred to off springs.
- Leads to overcrowding around the parent plant.
- Very little possibility of dispersal.

HOMEWORK QUESTIONS :

1. Write down the role of the following.
   a) Tuber b) Culture solution c) Eye of potato d) callus e) fleshy leaves of onion

2. Answer the following questions.
   a) What are scion and stock?
   b) Which process they are related to?
   c) Show a diagram mentioning the above parts.

3. Write down the disadvantages of the following.
   a) Vegetative Propagation b) Tissue culture

4. Write a short note on importance of tissue culture
   .
5. Write one difference between Natural vegetative propagation and Artificial vegetative propagation.

6. Match the following.

COLUMN A	COLUMN B
Bryophyllum, Rhizome, Callus, Vegetative propagation by root, raspberries.	Dahlia, layering, Vegetative propagation by leaves, Tissue culture, Ginger

HOME ASSIGNMENT

CLASS – VIII

SUBJECT – ART EDUCATION

DATE - 02.05.2020

<u>Do the pencil sketch of this two pictures :-</u>