

②

Fatima Irshad.

Q. (2019) Give a brief account of optic fibres. What is their importance in present day telecom. system?

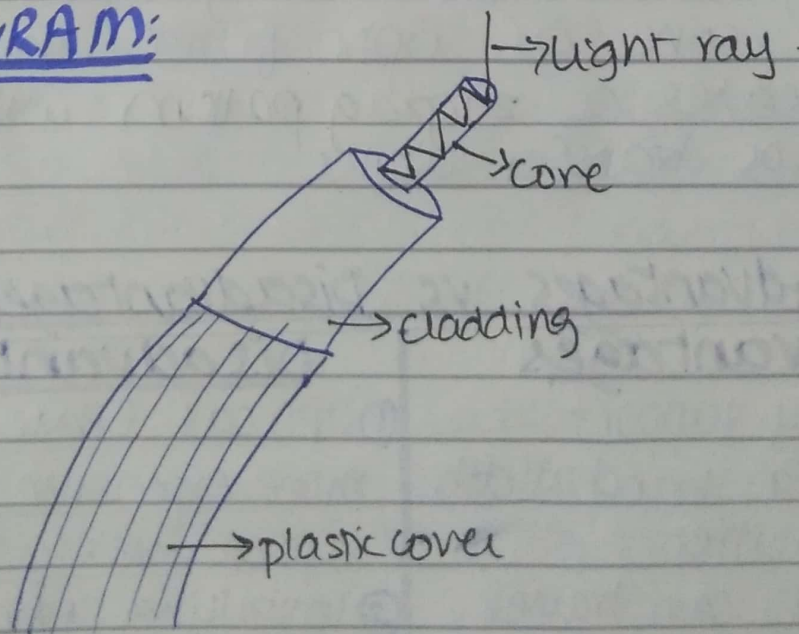
## Q. FIBRE OPTICS

### → DEFINITION:

Fibre optics can be defined as,

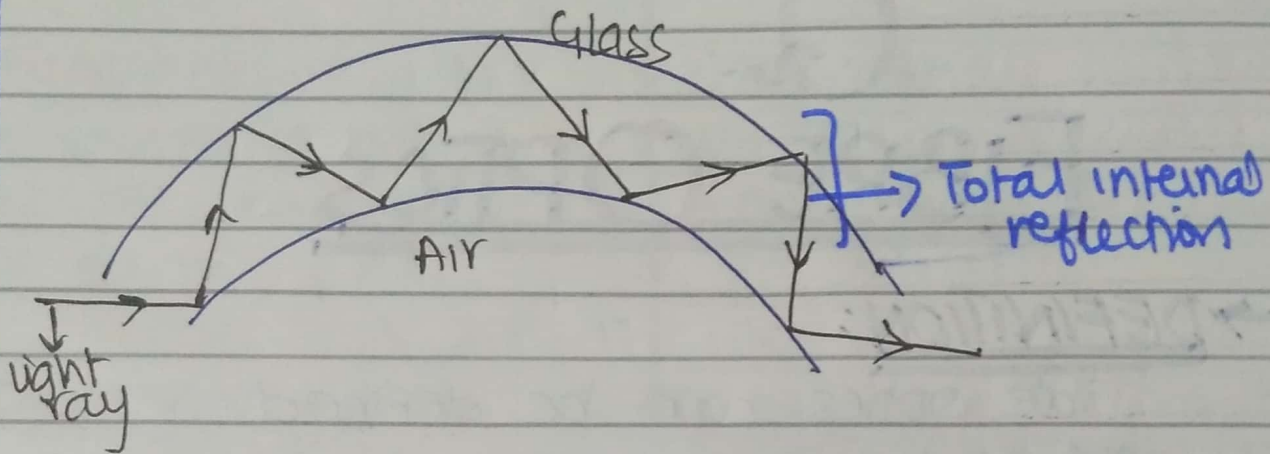
“A flexible glass or plastic fibre that can transmit light from one end to another.”

### → DIAGRAM:



## → MECHANISM OF ACTION:

The optic fibre work on the principle of 'Total internal Reflection'.



The cladding and core are made up of different refractive index that results in the bending of light at certain angles within the core of optic fibre. This creates a zigzag pattern within and helps transfer light.

## → Advantages vs Disadvantages:

### Advantages

- ① They support higher bandwidth capacities.
- ② Light can travel at much distance without any boost

### Disadvantages

- ① Optical fibre is more expensive than copper wire.
- ② Installing the cable is labour intensive and technique sensitive

signal.

③ It is less susceptible to interference.

④ It can be submerged in water so cover larger area.

⑤ It does not require to be replaced or maintained frequently.

⑥ They are stronger, thinner and lighter than copper wires.

③ They require more protection than copper wires.

④ They are often more fragile than copper wires.

## → IMPORTANCE IN PRESENT DAY TELECOM. SYSTEM

Optic fibres hold great importance in today's world. The modernization of the telecom system has made its use even more desirable and eminent. Its use in various field clearly indicates the importance. Following are such examples that reflect the importance of fibre optics.

① Computer networking and broadcasting:  
The optic fibre is capable of transferring

data and also provide high bandwidth capacities. This improves the efficiency of the work.

### ② Internet and Cable Television:

The optic fibre is capable of transmitting to longer distances with great efficiency. This results in connecting larger areas with one another efficiently. Likewise, cable TV is widely used today that broadcasts various channels from all over the world. This is made possible by optic fibres.

### ③ can be used underwater:

As they can be used under water, the area coverage ~~for~~ of connectivity is increased manifold. This means that a larger area is connected.

### ④ Space and Military Use:

It is definitively important in today's world as the signal transmission and interception during military

operations are very crucial. In today's world, the defense of a nation is of utmost importance, and this way, the signals can be transmitted without interference.

### ⑤ Medical:

The modernization and updating is not limited to technological fields but also extend to ~~the~~ medicine. It provides precise illumination and aids in minimally invasive procedures. It is also ideal for tests such as MRI.

### → CONCLUSION:

In this way, one can see and appreciate the role of optic fiber and its importance in today's world, especially in telecommunication system.

Q. Differentiate between prokaryotic and Eukaryotic cells.

### PROKARYOTIC CELL

① Structure:

small and simple

② size:

0.1-0.5  $\mu\text{m}$

③ cells:

unicellular

④ organelles:

Membrane bounded organelles absent.

⑤ Nucleus:

Absent

⑥ DNA:

circular DNA freely floating in cytoplasm

⑦ chromosomes:

single, haploid (n)

### EUKARYOTIC CELL

① structure:

large and complex

② size:

10-100  $\mu\text{m}$

③ cells:

unicellular / multicellular

④ organelles:

membrane bounded organelles present.

⑤ Nucleus:

Present

⑥ DNA:

linear DNA enclosed in nucleus

⑦ chromosomes:

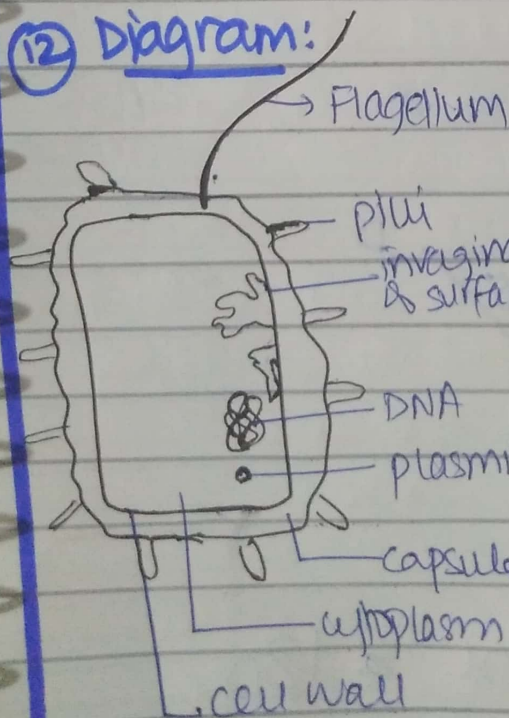
paired, diploid (2n)

⑧ Division by:  
Binary Fission

⑨ cell wall:  
complex cell wall  
made up of  
peptidoglycan

⑩ Reproduction:  
asexual

⑪ Example:  
Bacteria + Archea  
cells

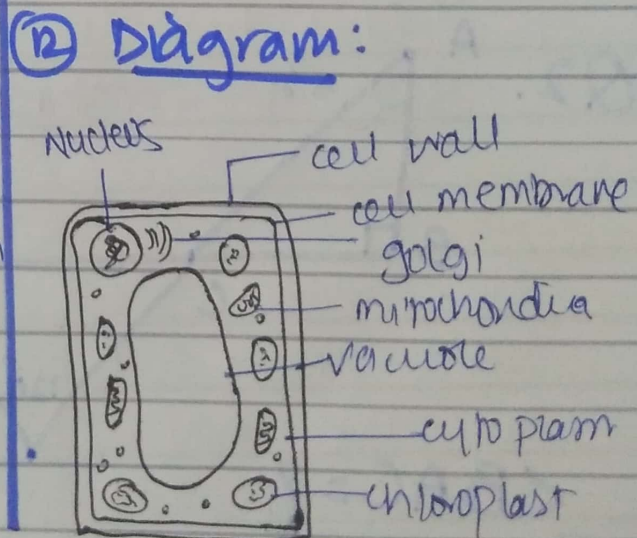


⑧ Division by:  
Mitosis

⑨ cell wall:  
~~complex~~ simple  
cell wall made  
up of cellulose  
(plant cell)

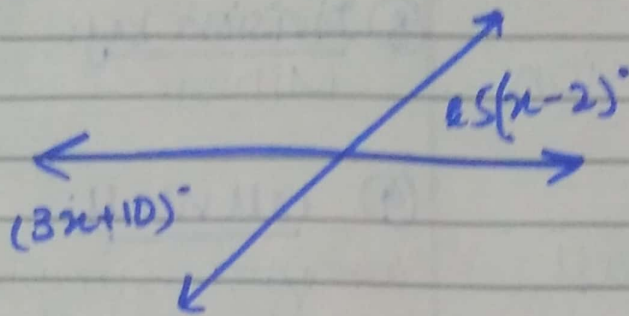
⑩ Reproduction:  
asexual / sexual

⑪ Example:  
Plant, Animal,  
Fungi etc.



Maths.

Q1.



$x = ?$

Solution:

$(3x+10)^\circ = 25(x-2)^\circ$  (vertical Angles)

$3x + 10 = 5x - 10$

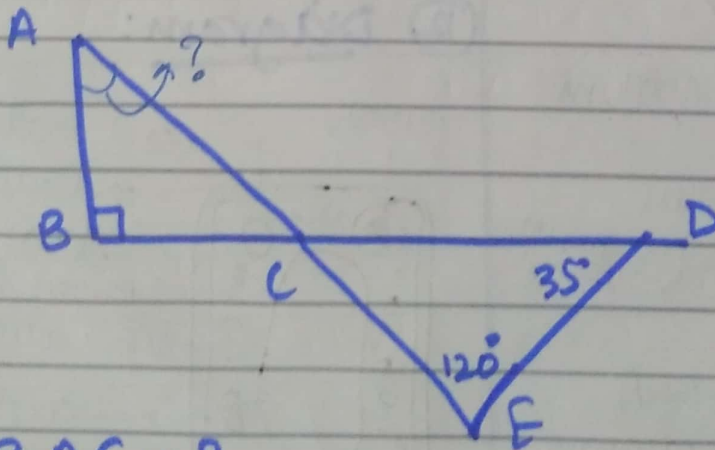
$3x - 5x = -10 - 10$

$-2x = -20$

$x = \frac{-20}{-2}$

$x = 10^\circ$

Q2.



$\angle BAC = ?$

For  $\angle BAC$ ,

$\angle ECD = 120 + 35 + x = 180$

$x = 180 - 155 = 25$



$$\angle ECD = 25^\circ$$

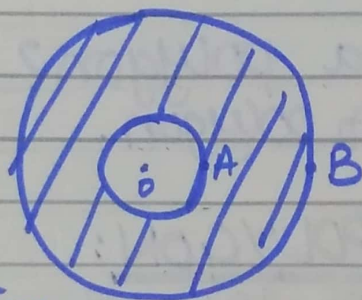
$$\angle ECD = \angle BCA \quad (\text{Vertical Angles})$$

$$\text{So, } \angle BAC = 90 + 25 + x = 180$$

$$x = 180 - 115$$
$$x = 65^\circ$$

$$\boxed{\angle BAC = 65^\circ}$$

Q3.



$$OA = 5\text{m}$$

$$OB = 11\text{m}$$

Area of shaded region = ?

Solution:

For smaller circle =

$$A = \pi r^2$$

$$A = \pi 5^2$$

$$A = \pi \times 25$$

$$A = 78.5\text{m}^2$$

For bigger circle =

$$A = \pi r^2$$

$$A = \pi 11^2$$

$$A = \pi \times 121$$

$$A = 379.94 \text{ m}^2$$

area of  
For shaded region =  
to bigger circle - smaller circle  
=  $379.94 - 78.5$   
=  $301.44 \text{ m}^2 \approx 301 \text{ m}^2$

Area of shaded region =  $301 \text{ m}^2$

(2019) Q. what is a polygon? Describe different types of polygon.

Ans.

### → DEFINITION OF POLYGON:

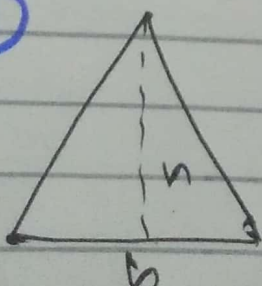
A polygon can be defined as,  
Any two dimensional shape that has three or more sides?

### → DIFFERENT TYPES OF POLYGONS:

The polygons are of many different types. They are named according to the number of the sides.

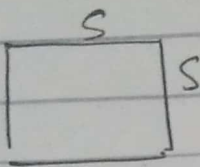
A few different types are:

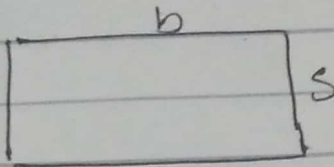
①

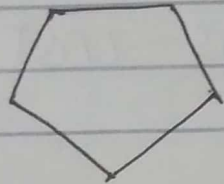


~~Triangle~~

Triangle = 3 sides

(2)  square = 4 equal sides

(3)  rectangle = 4 sides

(4)  pentagon = 5 sides

(5) n-gon = n number of sides.

Q(2019) The cost of hiring a car for 2 days in 2018 was Rs 264, which was 20% more than in 2013. What was the cost of hiring car in 2013?

Solution:

cost in 2018 = Rs 264

% age increase = 20%

cost in 2013 = ?

→ using ratio method

cost : % age

x : 100

264 : 120

Solving ratios = 5  
 $x = \frac{264 \times 100}{612}$

$x = 44 \times 5$

$x = \text{Rs } 260$

In 2013, hiring 2 cars cost

Rs 260.