

Section B

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Q 6

(9)

Given data

Ages of son and father five years ago

Suppose son's age = x father's age = $3x$

The current age of son = 30

find current age of father = ?

Solution:

We can write as

$$\text{father's age} = 3(x - 5) \quad (\text{five years ago})$$

 x is taken as son's age = 30

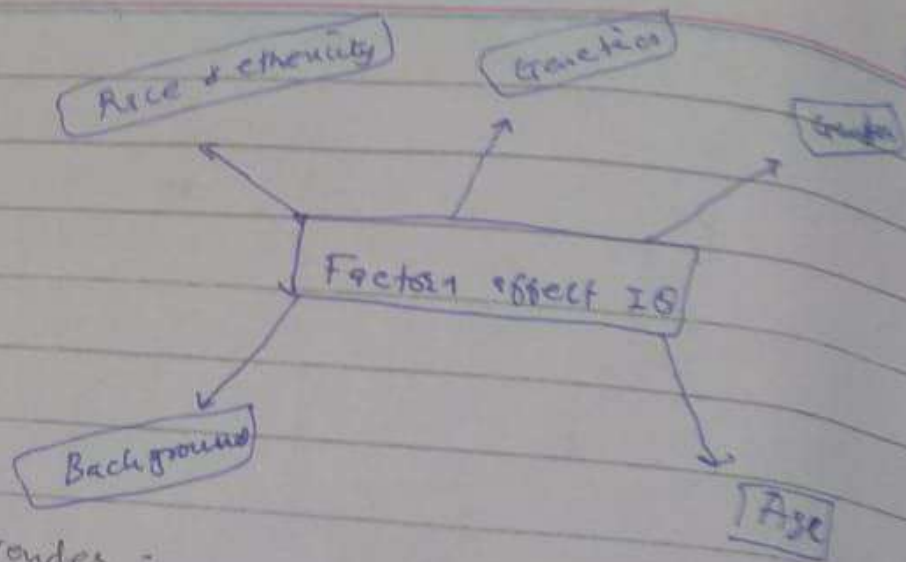
$$\text{father's age} = 3(30 - 5)$$

$$= 3(25)$$

$$\text{father's age} = 75$$

75 is age of father five years ago -

Now by adding 5 into 75, we will get the current age of father which is 80 yearsTherefore, the present age of father is 80 years old



① Gender :

Gender affects IQ, whether a person is male or female, it influences mind.

② Genetics

Genes play significant role in determining the IQ of a person.

③ Age

Age of a person is also a key ingredient of IQ. With the passage of time IQ of a person decreases.

④ Race and ethnicity

Race and ethnicity can have a profound effect on the IQ of a person.

In short, IQ of a person is determined by several factors. These factors can either increase or decrease IQ level of a person.

(c)

3

(i) Find the missing terms.

① 2, 6, 18, 54

So

2, 6, 18, 54

In the series the next number is 3 (three) times of the previous number

2, $\frac{6}{2 \times 3}$, $\frac{18}{(6 \times 3)}$, $\frac{54}{(18 \times 3)}$, $\frac{?}{54 \times 3}$

2, 6, 18, 54, 162

Missing term is 162

(ii)

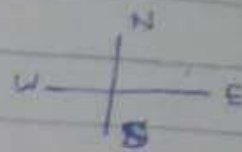
find missing

3125, 256, 144, 4, 12

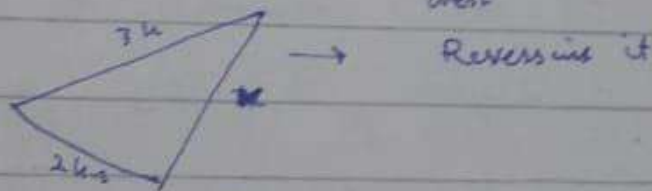
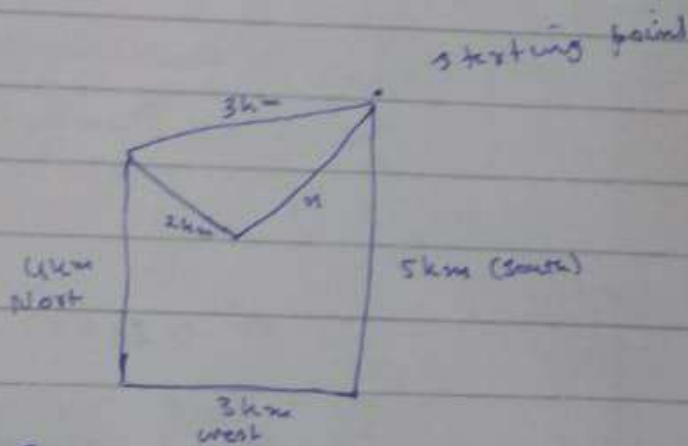
↓ missing number

(9) Given data

- Crow - travels 5 km south
- + 3 km west
- 4 km North
- 2 km South-east



Applying information to diagram



Applying Pythagoras theorem.

$$(\text{Hyp})^2 = (\text{Perp})^2 + \text{Base}^2$$

$$n^2 = (2)^2 + (3)^2$$

$$n^2 = 4 + 9$$

$$n^2 = 13$$

taking square root

$$\sqrt{n^2} = \sqrt{13}$$

$$n = \sqrt{13}$$

∴ the crow is $\sqrt{13}$ away from starting point

6 Given Data

Pizza, divided into 8 slices.

3 slices resin in it
find probability of picking resin slice?

• Solution:

Formula of Probability

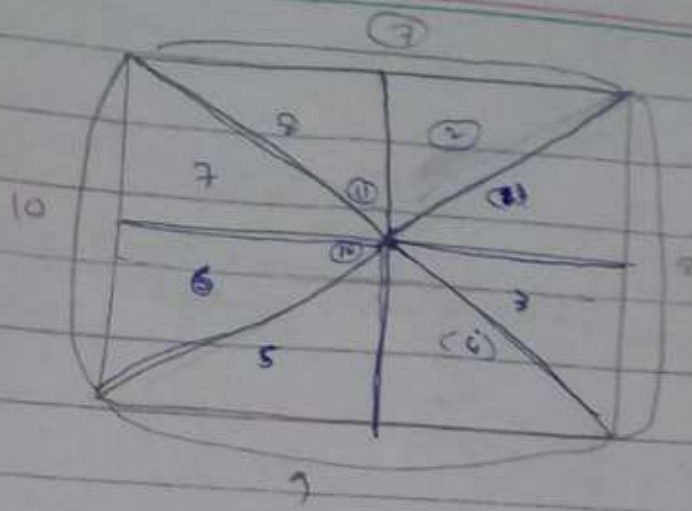
$$P_n = \frac{\text{observed outcome of possible}}{\text{total Number of observation}}$$

$$P_n = \frac{3}{8}$$

$$\text{or } 0.475$$

So, the probability of picking a resin slice is $\frac{3}{8}$ or $\boxed{0.475}$

(c)



In this diagram, there are

14 triangles

(d) Factors affect IQ:

Definition of IQ.

Intelligence Quotient refers to the measurement of a person's intelligence. IQ refers to measuring specific measure of person through special test (Oxford dictionary)

Factors affecting IQ:

There are several factors that affect IQ of a person. Some of them are given

Advantages of optical fibers

- ① It does not need extra force to transfer signal to a greater distance.
- ② It is stronger, thinner and durable than the copper wire.
- ③ It wastes very little or no amount of energy during transmission.
- ④ It can be used in any device and can work with a great efficiency.
- ⑤ It does not get damage with use or during transmission.

Section I

Q 5

(Q)

Introduction:

RAM and ROM are the storage memory in a computer. These two are different from each in several ways. Some of them are given below.

	RAM	ROM
(i) Definition	Random Access memory means computer can access randomly any file.	Read Only Memory computer can access it with specific commands.
(ii) Nature	Volatile memory means require constant supply of power.	Non-volatile memory means does not require constant supply of power.
(iii) Cost	RAM is a costly memory.	ROM is cheaper than RAM.
(iv) Storage capacity:	RAM can store huge amount of data.	ROM is relatively less storage capacity.
(v) Types of RAM & ROM:	Examples ① Dynamic RAM ② Static RAM	① EPROM ② EEPROM

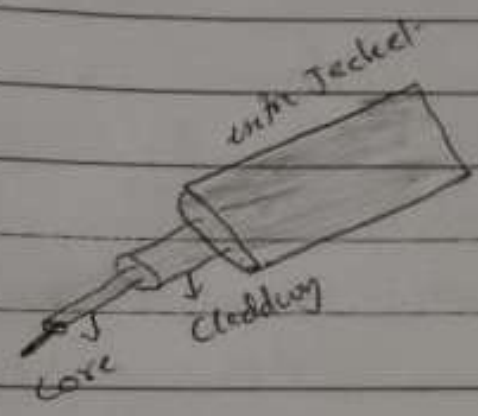
(c)

Optical fiber:

Definition:

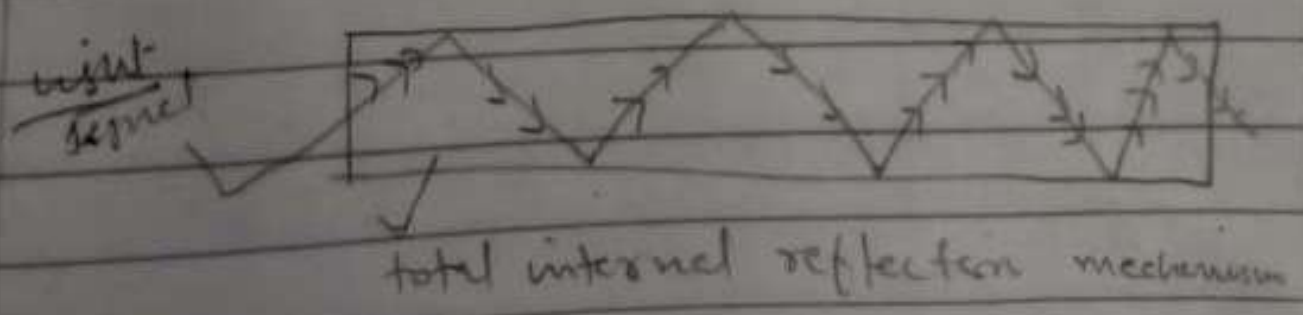
Optical fiber refers to the science of transmitting data in the form of light through transparent optical wire. It consists of four parts: the core, cladding, jacket and mantle.

Graph



How optical fiber work:

Optical fiber applies the principle of total internal reflection. In this process, light is passed from one end of the tunnel to the next without needing any energy or force.



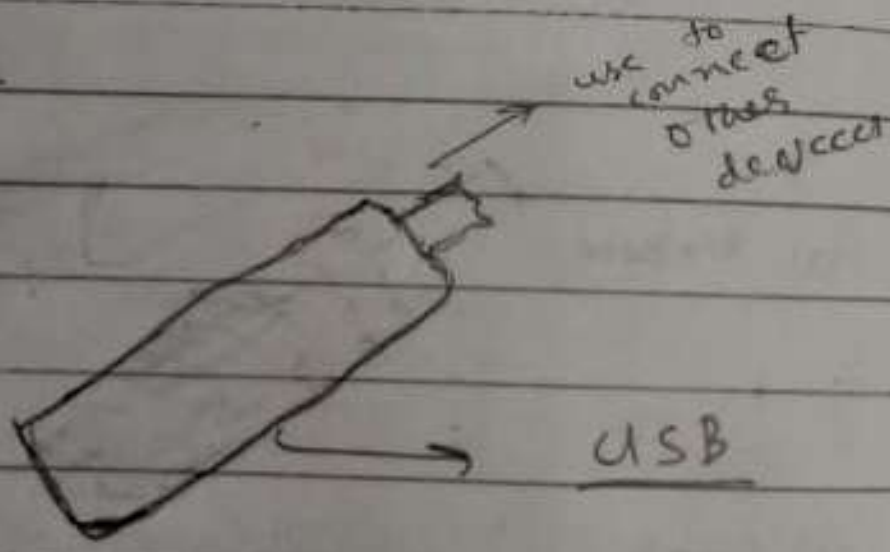
Nibble

It is small storage memory which can store data only in bites, not more than that.

USB:

USB stands for universal serial bus. It is used to connect and transfer data from one device to another. It works as storage as well as transmission device.

Graph



driverless cars. These cars or other means of transports can reduce road accidents. Tired Mark Hertz, writes "Driverless car or bus can reduced road accidents to a great extent. Thus, AI has revolutionized the world."

③ Revolutionized learning process.

With introduction of ^{cont} GPT and Google's Bard, learning mechanism has changed to a great extent. Now, anyone can get information in no time.

④ Increased efficiency and productivity.

AI has increased efficiency and productivity of industries and other business. China and USA are using robots to work in restaurants and industries. This has increased efficiency and productivity to a great extent.

In short, AI is still in its nascent stage, but it has a potential to revolutionized the world beyond ~~any~~ recognition.

(A)

AI revolutionized the world. (11)

Definition:

AI stands for Artificial intelligence. It was founded by John McCarthy. John McCarthy defines AI "the science of making intelligent machines or computer programs". Moreover, AI has gained currency in current world and has revolutionized it.

How AI has revolutionized the world.

AI has revolutionized the world in several ways. Some of them are as follow-

① Revolutionized Health sector.

AI has brought meaningful changes in health sector like robot doctors and discover of vaccines. The author of Book "The Age of AI" writes that AI based computer has discovered new vaccines (Hesugain) with help of huge data. This could save millions of lives.

② Revolutionized Transportation sector.

AI has introduced

(b)

Solid waste management

Definition:

Solid waste management refers to the process of reducing the generation of waste across the country or nation. It involves different techniques some of them are given -

Different Methods of solid waste Management -

(1) Land fills:

One method to manage waste products is landfills in which a vacant ground is selected and all waste products are dumped in it. This under ground dumping is called Landfills -

(2) Burning of waste products.

In huge furnaces, all the waste is collected and heated at up maximum heat so as to turn it into ashes and in some cases to remove it in their air -

(3) Mechanism in 3Rs

① Recycle: Recycle means reusing of things or convert them into another form or shape to recycle it

② Reuse:

Reuse of newspapers or other items can reduce waste production

③ Reduce.

It means to avoid use waste products like disposable glass etc.

Vietnam in the case study:

Vietnam has reduced its waste production to 90% by using huge finances and 3Rs of solid waste management. Once referred to as dirty place and achieve success in reducing its waste production in great extent.

(d)

Satellite:

(15)

Definition:

Satellite refers to bodies that moves around the planets. There are two types of satellite: Natural and artificial. Example of Natural satellite is Moon and Artificial is Global position system and its 24 satellites.

Critical speed of a satellite:

This refers to speed at which satellite moves at its maximum limit. Satellite can not move above this speed. If it does, it could break away from gravitational pull of the Earth.

Difference between Geo-stationary and Polar satellites

Geo-stationary satellites are placed on the ground and are in still position and does not moves. However polar satellites are placed at higher altitude so that they could provide signals to far and wide places.

Q 2

(9) Key Features of COP 28:

COP 28 was held in UAE this year. It was global "stocktake" review, which took critical view of different issues. Some of the main features of it are given below.

Key Feature of COP 28:

- ① Phasing out of transition away from fossil fuels.
- ② Financial assistance in Loss and Damage.
- ③ Focus on adaptability and resilience.
- ④ Proper mechanism Methane and its reduction.
- ⑤ More focus on renewable energy resources.

① Loss and Damage in COP 28:

Loss and Damage was approved in COP 27 last year. It refers to assistance to countries which are the main victims of natural catastrophes. Pakistan played a significant role in the establishment.

On 'Loss and Damage' initiative. In
COP 28, countries have pledged to
help those countries through financial
assistance. Around \$540 million are
collected in COP 28 in Loss and
Damage initiative.

• Other financial issues

COP 07 and financial assistance:

In COP 09, all major
emitter agreed to provide \$100 bn
per year after 2020. But this
has not happened. This issue
was also raised in COP 28.

help Pakistan reduce energy crisis
to great extent.

③ Hydroel project

China through CPEC is
focusing on hydroel projects in our
countries. Dasu dam and other
dams are being built to provide
sufficient energy in Pakistan.

(c)

Balanced Diet

Definition:

Balanced diet refers to intake of nutrition food which includes all ingredients such as protein, carbohydrate, vitamin and fats. These biomolecules are essential for proper growth of a body.

Balanced diet in kcal

Group	Person's age	Kcalories required
Children	5 - 10 years	1200 kcal
	10 - 15	1500 to 1600
Male not working		3200 kcal
Men working		4000 kcal
Women not working		3300 to 3500
Women working		3000 kcal

Significance of balanced diet.

- ① It is essential for proper growth of a body.
- ② It reduces vulnerability to nutritional diseases.
- ③ It is essential for muscles and other parts of body.