

## Section - I

Q2

(a) Black Holes:

(i) Formation of Black Holes:

Neutrons are composed of mainly electrons and protons. They are very dense. If its mass is made further dense, its gravity will become so strong that it shrinks further to become a black hole. Black holes are more heavier and massive than stars.

(ii) Gravitational Pull:

Black hole has much strong gravitational pull so that it allows nothing to escape.

(iii) Density of Matter:

The density of black hole cannot be measured because it has infinite density.



#### (iv) Visibility:

Black holes are invisible because no light can escape or pass through it so it is difficult to see it with naked eye.

#### (v) Octet Rule:

The desire of an atom to complete its second valence shell in order to secure stability. This process is known as Octet Rule.

#### (vi) How to achieve stability:

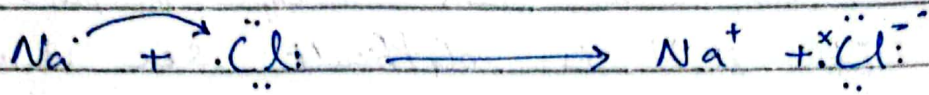
In order to obtain stable status like inert or noble gases atoms release or gain electrons to maintain 8 electrons in its 2nd valence shell.

#### (vii) NaCl bonding:

The chlorine atoms hold seven electrons in its valence shell and they can obtain stability by octet rule when gain one



electron from other atom. So they combine with sodium (Na) to attract one required electron.



(C)

### (i) Uses of Microwaves in daily life:

Microwaves are useful due to their utility in our daily life.

- ① Microwaves ovens, used to heat food.
- ② Microwaves are used in RADAR to locate an obstacle.
- ③ Medical equipments use microwaves due to their heating ability.

### (ii) Uses of Radio waves:

Radio waves are used in various products.

- ① Cellular Networks
- ② Satellite Communications
- ③ TV broadcast.



### (ii) Uses of X-rays:

There are numerous uses of X-rays in daily life.

- ① Used in Airport Security.
- ② To ~~test~~ detect Broken bones.
- ③ Used for Ultra-sound.

(d)

### (i) Main points of Agenda of Conference about AI:

The conference hosted by UK in Nov. 2023 regarding the threats of AI have following points.

### (ii) AI Safety Programme:

The purpose of this conference is to ensure safety against the potential threats of AI.

### (iii) Transparency & Best practice Sharing:

Top countries presented their suggestions to make use of AI transparent.



and benefited from each others' experiences.

### (iv) Capabilities & Risk Management:

In order to get benefited from future technology it is important to analyse and ensure preemptive measures before.

The conference was also organised to analyse the capabilities and risk management posed by AI

### Q no. 3

(a)

(i) Comparison b/w COP-27 & COP-28

in bring Climate fund:

Unlike COP-27, COP-28 helped to bring pledges from Eight (8) donor countries. It was made under the fund of Adaptation fund at COP-28 in order to mitigate the causes that made developing countries suffered from the climate change adverse effects.



## (ii) Beginning of the End:

COP-28 signals to the beginning of the End of the Fossil fuel Era mainly due to its harmful emission poses threat to climate and habitade of the Earth. So COP-28 is seen as more successful in formulating common goal for future discourse.

## (iii) Climate fund to developing Countries:

The path way for climate fund for the developing Countries took further forward step in materializing the vision to fight against global warming. The developing countries are prone to suffer more due to lack of resources to fight and prevent climate change and global warming effects.



B

(c)

### (i) Causes of Water Pollution:

There are various causes that are contaminating the quality of water leading to water pollution.

### (ii) Sewage Contributing to Water

#### Pollution:

Disposing of sewage in to water bodies causing damage to the water quality creating water pollution.

### (iii) Industrial wastes: Water Pollutant:

The waste produced by industrial activity is also dumped in to water bodies near by without proper disposing due to economic cost is polluting water.



#### (iv) Maritime traffic : water pollutant:

Maritime traffic also used water bodies to through their waste and spillage of oil also land in water bodies, causing water pollution.

#### (v) Agricultural wastes : Water pollutant:

Agriculture is one of the primary sources of water pollution as fertilizers, pesticides and animals wastes also reach to water body when it rains.

(b)

#### (i) Input devices: of Computer:

Input devices are used to send command to the CPU in order to perform a specific function through them. There are numerous devices like

- ① Key board
- ② Mouse
- ③ Joystick
- ④ Light pen
- ⑤ Micro phone etc



## (ii) Output devices of Computer:

Those devices which are used to obtain the desired results are called output devices.

These devices also help to send the response of the computer.

Following are the output devices

- ① Monitors.
- ② Printers and its types
- ③ Speakers
- ④ Projectors
- ⑤ Head phones etc.

(C)

## (i) Functions of Cornea:

It is transparent, interior part of eye.

The main purpose/function of cornea is to refract the light along with the lens.

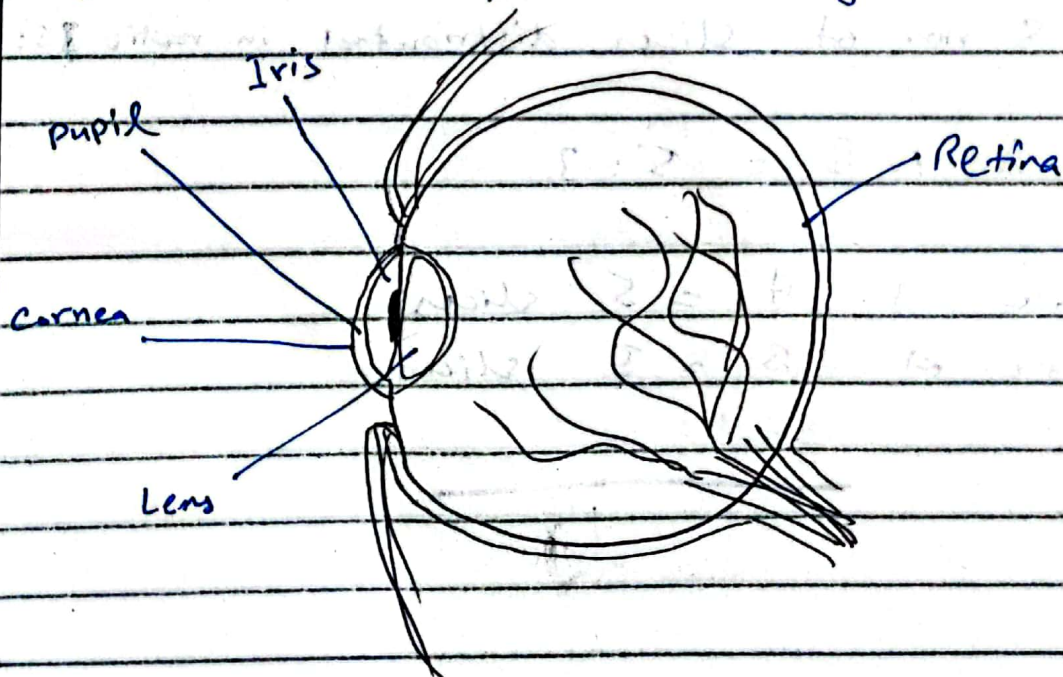


### ii) Function of Pupil:

It is the smallest aperture located in the centre of Iris. It allows light through lens and directs it to the retina located at the back of the eye.

### iii) Function of Retina:

It is the inner most layer of the eye. Its function is to act as a film of a camera. It captures the light that enters your eye and helps in forming images.





## Section - II

Qno. 6

(a)

Sol.

Data:

A & B share a Pizza in ratio 5:3.  
No. of slices in Pizza = 8

To find:

No. of slices for each person.

Sol.

~~As no. of slices = 8~~

8 no. of slices distributed in ratio 5:3

$$A : B = 5 : 3$$

Share of A = 5 slices.

Share of B = 3 slices.

---

(b)

Sol.

Data:

% of losing candidate = 30%

No. of votes losing candidate = 15000 votes.



To find:

$x =$  No. of votes of winning candidates?

Sol

% of votes of winning candidate = 70%  
(100% - 30% = 70%)

~~No. of votes of winning candidates:~~

Now let the total no. of votes =  $y$  votes

Difference b/w votes of winning & losing candidates = 70% - 30%

Margin of winning = 40%

So,

$$y \times 40\% = 15000$$

$$y = \frac{15000}{40\%}$$

$$y = \frac{15000 \times 100}{40} = 37500$$

Total no. of polled votes = 37500 votes.

Now

$$x = 70\% \times 37500$$

$$= \frac{70}{100} \times 37500$$

$$x = 26250 \text{ votes}$$

Winning Candidate got 26,250 votes

x ————— x



(C)

Sol.

Given Data:

Total mixture of water & milk = 40 liters  
% of mixture of water = 25%  
Addition of water = 10 liters

To find:

% of milk in final mixture = ?

Sol.

Amount of water in 40 liters mixture

$$40 \times 25\%$$

$$40 \times \frac{25}{100} = 10 \text{ liters of water.}$$

Amount of milk in 40 liter of mixture

$$40 - 10 = 30 \text{ liters of milk.}$$

Addition of 10 liters of water further

$$40 + 10 = 50 \text{ liter (water + milk)}$$

Amount of milk in liter in mixture = 30 liter

so so

$$\frac{30}{50} \times 100 =$$

$\therefore = 60\%$  of milk after addition  
of 10 liters of water.

---



(d)

Sol.

Data:

Work done by Aslam = 10 days  
" " " Ali = 15 days  
" " " Najam = 20 days

To find:

Work done by all of them together  
in no. of days = ?

Sol.

Taking L.C.M

$$2 \times 2 \times 3 \times 5$$

$$= 60$$

2	10, 15, 20
2	5, 15, 10
3	5, 5, 5
5	5, 5, 5
	1, 1, 1

Taking H.C.F

= 5 days required  
all of them  
together to do the  
work.

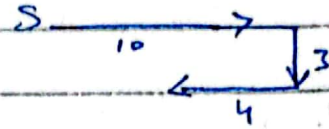
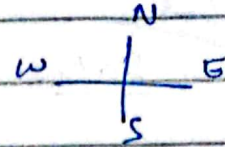
5	10, 15, 20
	2, 3, 4



Qno 8

(a)

Q1.



Data:

Distance travelled by Sara = (10, 3, 4) m

To find:

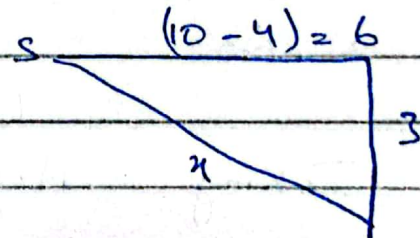
$x$  = Distance from initial point = ?

Sol.

Horizontal distance traveled = 10, -4.

Vertical distance travelled = 3, -3

Pythagoras theorem



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

$$(x)^2 = (3)^2 + (6)^2$$

$$= 9 + 16$$

$$x^2 = 25$$

$$x = \pm 25$$

As distance is always positive  
so we take only +25.



(b)

Sol

Data:

Side of octagon = 5 cm.

To find:

- ① Perimeter of octagon = ?
- ② Each angle of octagon = ?

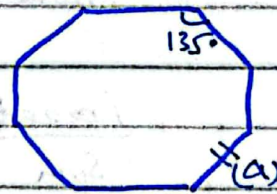
Sol

∴ A regular octagon has eight equal sides. So

$$P = 8(a)$$

$$= 8(5 \text{ cm})$$

$$P = 40 \text{ cm}$$



regular octagon

∴ A regular octagon due to its all equal sides will also have equal angles.

The sum of interior angles (all) = 1080  
Octagon has 8 sides, so

$$\frac{1080}{8} = 135^\circ$$

Each interior angle of octagon = 135°

---



(c)

Sol

Data:

~~No of balls in Green~~

No of green balls in a box = 6

" yellow " " " = 10

To find:

probability of yellow ball = ?

Sol:

$$\therefore \frac{\text{No. of events}}{\text{Sum of events}}$$

Probability of yellow ball

Sum of all probabilities

$$\frac{10}{16} = \frac{5}{8}$$

There are  $\frac{5}{8}$  chances / Probabilities of yellow ball pick event.

(d)

Sol

Data:

Code

MADRAS  $\rightarrow$  N B E S B T

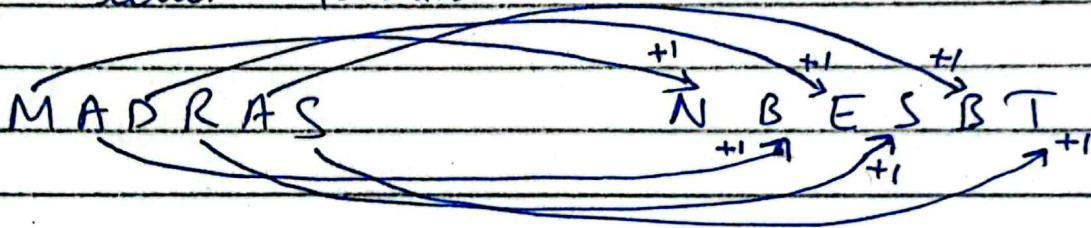


To find

code for BOMBAY. = ?

Sol.

As it is visible that in given data code is made by moving one letter forward



So the code of BOMBAY is

C P N C B Z

x ————— x