

SECTION II

3

Question No. 6

(a)

Persons A and B share pizza in the Ratio =

$$5:3$$

Slices in pizza = 8

Slices each person receive = ?

Total ratio of both persons = $5+3 = 8$

To find slices of each, use formula

$$\text{share}_A = \frac{\text{Ratio of A}}{\text{Total Ratio}} \times \text{Total slices.}$$

$$\text{share}_A = \frac{5}{8} \times 8 = 5$$

$$\text{share}_B = \frac{3}{8} \times 8 = 3.$$

So,

Person A receives 5 slices and

Person B receives 3 slices.

(b)

Total votes = T Losing candidate = 30% of $T = 0.3T$ So winning candidate gets = 70% of $T = 0.7T$

As losing candidate defeated by 15000 votes

$$0.7T - 0.3T = 15000$$

$$0.4T = 15000$$

$$T = \frac{15000}{0.4}$$

$$T = 37500$$

Votes of winning candidate are:

$$= 0.7T$$

$$0.7 \times 37500$$

$$26250$$

So, winning candidate acquire 26250 votes

(c) 40L of Milk + water mixture contain 25% water

10L of water added

%age of Milk in new mixture = ?

~~Milk~~^{water} in old mixture = 25% of 40L

$$= \frac{25}{100} \times 40 = 10L$$

In new mixture, 10L of water is added to

40L of water, as ~~a~~ already it

contains 10L water, so new mixture

will be: 20L water + 30L Milk

old mixture = 30L Milk + 10L water

New mixture = 30L Milk + 20L water

$$\% \text{ age of Milk in new mixture} = \frac{30}{50} \times 100$$

$$= 60\%$$

So, % age of milk will be 60%.

(d)

Let
work be = 1

Ali takes = 15 days

Aslam takes = 10 days

Najam takes = 20 days

days for altogether = ?

First, finding rate of each person

$$\text{Rate} = \frac{\text{work}}{\text{time}}$$

$$\text{Ali} = \frac{1}{15}$$

$$\text{Aslam} = \frac{1}{10}$$

$$\text{Najam} = \frac{1}{20}$$

$$\text{Total Rate} = \frac{1}{15} + \frac{1}{10} + \frac{1}{20} = \frac{4+3+2}{60}$$

$$= \frac{9}{60}$$

$$\text{Rate} = \frac{13}{60}$$

$$\text{Work} = 1$$

$$\text{Time} = ?$$

$$\text{Time} = \frac{\text{Work}}{\text{Rate}} = \frac{1}{13/60}$$

$$\text{Time} = 4.62 \text{ days}$$

So, all together they will take 4.62 days

Question No. 7

(a) Missing terms

11, 13, 17, _____, 23

The above sequence shows ~~diff~~ addition of 2 and 4 in alternate numbers :

$$11 + 2 = 13$$

$$13 + 4 = 17$$

$$17 + 2 = 19$$

$$19 + 4 = 23$$

Hence, sequence will be:

11, 13, 17, 19, 23

10, 28, 91, 370,

In the given sequence, the subsequent numbers are multiplied by in ascending number sequence and then added by descending number sequence as shown below:

$$10 \times 2 = 20 + 8 = 28$$

$$28 \times 3 = 84 + 7 = 91$$

$$91 \times 4 = 364 + 6 = 370$$

$$370 \times 5 = 1850 + 5 = 1855$$

ascending
numbers

descending
numbers

So, sequence is 10, 28, 91, 370, 1855

(b)

$$\text{Total shirts} = 35$$

$$\text{C.P.} = \text{Rs } 280 \text{ each}$$

$$\text{Total C.P.} = 280 \times 35 = 9800.$$

$$\text{S.P.} = \text{Rs. } 308$$

$$\text{Total S.P.} = 308 \times 35 = 10780$$

$$\text{Profit} = \text{S.P.} - \text{C.P.} = 10780 - 9800 = 980$$

$$\text{Profit \%} = \frac{\text{Profit} \times 100}{\text{C.P.}}$$

$$= \frac{980 \times 100}{9800}$$

$$\text{Profit percent} = 10\%$$

So, profit percentage of merchant will be 10%.

(c)

actual age = 10 years

chronological age = 12 year

IQ = ?

Using IQ formula:

$$\text{IQ} = \frac{\text{Mental age}}{\text{chronological age}} \times 100$$

$$\text{IQ} = \frac{10}{12} \times 100$$

$$\boxed{\text{IQ} = 83.3}$$

0

(d)

average height = 150cm

Total Boys = 30

Wrong Value = 135

Right value = 165

correct mean = ?

Using formula of avg

$$\text{avg} = \frac{N}{30}$$

$$N = 150 \times 30$$

$$N = 4500$$

Subtracting wrong value and then
adding right value to find
correct number

$$4500 - 135 = 4365$$

$$4365 + 165 = 4530$$

using correct number 4530, we find
correct mean

$$\text{mean} = \frac{4530}{30}$$

correct mean = 151cm

PART-II

SECTION-I

Q2.

Black Holes

Defination:

A Black hole is an extremely dense point with infinite mass through which nothing can escape including light.

How Black Hole is formed

Black hole forms through following stages in a dense stars

- (i) Balance of force/pressure and gravity of star; Black hole is formed from dense stars after fusion reaction for millions of years. Initially, gravity of star is balanced by fusion reaction. Fusion of hydrogen and helium produce explosive forces, which are balanced by gravity of the star

- (ii) The Death of star: Reduction of

gravity: After burning for millions of years, fuel of star ends. Then gravity reduces and ^{*}(explosive forces)^{*} dominates gravity of star

(iii) Domination of gravity

As gravity dominates so, mass of star also ~~de~~ increases because higher gravity of particles of star attract more mass from space. In this way mass of star and eventually gravity of star becomes extremely high and strong.

(iv) Black hole formed from dead

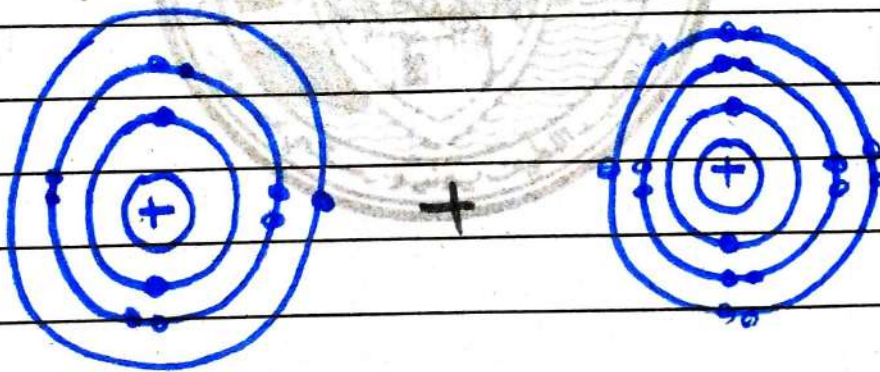
star : Eventually, gravity rises so ^{high} that ~~to~~ even light can't escape, it is called black hole.

(b) Octet Rule

Atoms acquire stability through duplet and octet configuration. Octet rule means 8 valence electrons in valence shell of an atom. These 8 or 2 valence electrons gives stability to the atom as present in ideal gases

Octet Rule manifested in Table salt

The formula of table salt is NaCl



Na atom



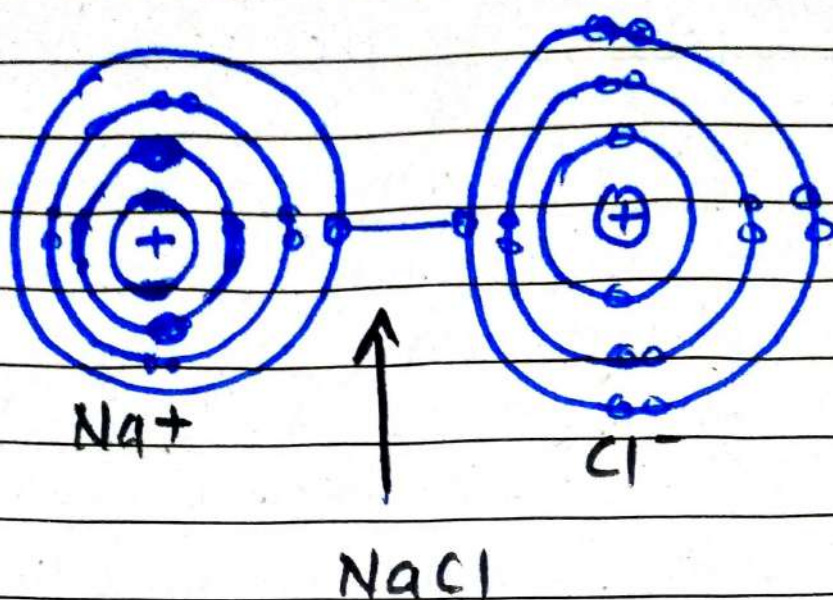
Sodium will lose outer most electron to get 8 valence electrons in 2nd shell

Cl atom



Chlorine atom gains electron from Sodium and complete its 8 electron from $7e^-$





Here electron is transferred from Sodium to chlorine.

Sodium loses to form Na^+ with 8 e in valence shell, similarly chlorine accepts electron from sodium and form Cl^- and completes its valence shell (octet configuration)

Resultantly, NaCl (Table salt) forms.

(c)

Uses of Microwave in daily life

- (1) Used in microwave oven in heating, food, cooking and baking
- (2) Used in wireless communication
- (3) Used in wifi, bluetooth communication
- (4) Used in weather forecasting
- (5) Used in Traffic management, speed and direction of vehicle detection
- (6) used in high-bandwidth communication, such as Radar, Satellite and sonar

Uses of Radio waves in daily life

- (1) Used in Radio, Television and wireless communication
- (2) Used in satellites and Radars
- (3) Used by NASA from Mars to enable communication with earth
- (4) Used in cell-phone connection by micro-chips
- (5) used in wifi and bluetooth connectivity

Uses of x-rays in daily life

- (1) ^{medical} Used in imaging of body to detect stones, fracture, bone deformations, bone displacement and foreign body in body of human being.
- (2) Used in Non-destructive test (NDT)
- (3) Used to destroy tumor and cancer cell in cancer treatment
- (4) Used to detect abnormality in chest such as buffalo heart, lung collapse, pneumonia, consolidation, T-B (tuberculosis) and pneumothorax

Q3:

(b) Input devices of computer

Input devices are those that give command, direction, or data into the computer, such as:

Keyboard: Types numbers, letters and signs

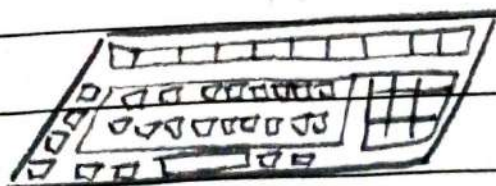
Mouse:

Pointer that directs functions on screens

Web cam: Captures photos and videos into computer

Microphone: Send voice, audio into computer

Screen: Touchscreen sends signals through touch, eye detector and face detector



Keyboard



Mouse



microphone



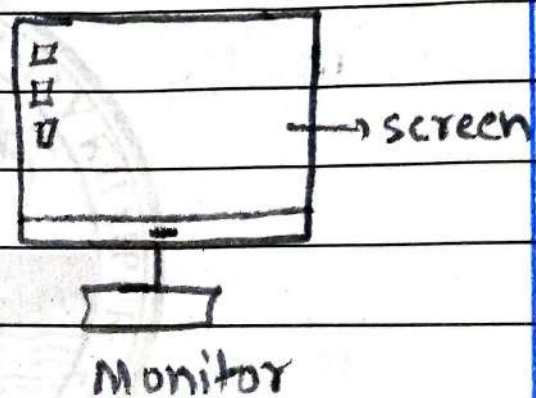
webcam

Output devices of computer

Output devices send data from computer to user through different devices such as:

(a) Monitor : Shows data on screen through visuals

(b) Speakers :
Speakers release voice from computer to user.



(c) Printer :

Prints documents, images and notes.

(4) Scanner :

It scans images and documents.

(c)

Human Eye

Human eye is a delicate and complex ^{organ} ~~part~~ consisting of many parts.

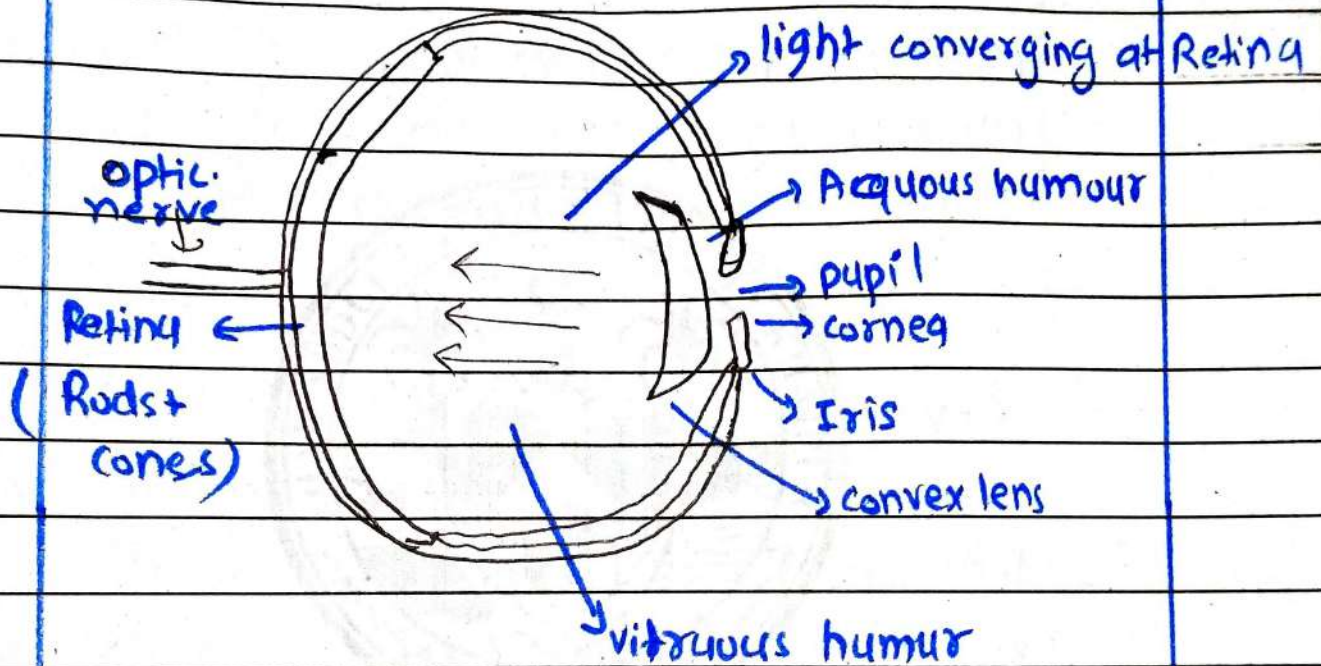


Diagram of eye

Cornea :

Cornea is a transparent, part of eye at front side. It refracts light waves towards retina and protect internal eye from dust, germs, and extreme environment.

Pupil;

Pupil is smaller opening in front of eye that allows light signals inside. It converges and diverges according to intensity of light. Surrounding the pupil, are muscles called Iris that accommodate pupil. At higher intensity, (converges) pupil converges and low intensity light and dim light it diverges to enhance visibility.

Convex lens

It is a flexible, circular type lens, convex in shape; present at front side behind cornea. Convex lens converges light signals towards retina.

Retina;

Retina is highly sensitive layer present ^{at} behind surface of eyeball. It consists of photosensitive cells called rods and cones. Retina receives light signals and converts them into electrical signals and send towards brain via optic nerve.

(d)

Causes of Water Pollution

Water pollution is the addition of physical or chemical pollutants into waters that reduce its quality.

- (1) Industrial chemicals dumped into rivers, oceans, and lakes
- (2) Percolation of liquid pollutants through soil into underground water
- (3) Addition of solid wastes into water, such as plastics, domestic wastes, and glass.
- (4) Mixing of wasteful water with clean water, causes water pollution
- (5) Chemical factories like pesticides, fertilizers, pharmaceuticals, cosmetic, and cement industries dump waste into water openly

(6)