

Test - 03

Question no: 1

(a)

matches won = 60%

matches lost = 24

total no. of matches = ?

Soln.

Let total no. of matches be x
 If a team has won 60% of matches means 40% matches have been lost because no matches were drawn as given in the statement. Hence,
 %age of matches lost \times (x) = no. of matches lost

So,

$$\frac{40}{100} (x) = 24$$

$$4x = 24 \times 10$$

$$x = \frac{240}{4}$$

$$x = 60$$

Hence total no. of matches are 60.

In short, total matches = 60
matches won = 36

(b)

For this particular question we will draw the table according to the given values.

Persons	Sugar (kg)	Days
30	40	10
80	320	x

Now if we compare days and person. If 30 persons are consuming sugar in 10 days that means 80 persons will consume in less days. So this will be in inverse proportion. Similarly if 40 kg sugar is consumed in 10 days and for 320 kg sugar more days will be

required for consumption of sugar. Hence it will be a direct proportion. Hence the table will look like this

Persons	Sugar (kg)	Days
30	40	10
80	320	x

Solving it according to the proportion

$$\frac{x}{10} = \frac{30}{80} \times \frac{320}{40}$$

$$\frac{x}{10} = \frac{30}{80} \times \frac{320}{40} \times 8$$

$$x = \frac{24 \times 10}{8}$$

$$x = \frac{240}{8}$$

$$x = 30 \text{ days}$$

So, in 30 days, 80 persons will use 320kg.

(c)

Total amount = 8370

Ratio between first and

third part = 3:5

second part = $\frac{1}{4}$ of third part

Soln:

a = Let the first part = $3x$ — (i)

1, third ~~part~~ = $5x$ — (ii)

second part = $\frac{1}{4} \times 5x$

b = $\frac{5x}{4}$ — (iii)

now total will be $a + b + c = 8370$

or $a + b + c = 8370$

$$\frac{3x}{1} + \frac{5x}{4} + 5x = 8370$$

$$\frac{12x + 5x + 20x}{4} = 8370$$

$$37x = 370 \times 4$$

$$x = \frac{370 \times 4}{37} = 40$$

Now put this $\frac{37}{x}$ in eq (i), (ii) and (iii)

$a = 3 \times 40 = 1208$

$b = \frac{5 \times 40}{4} = 508$, $c = 2008$

(d)

Given:

Arithmetic mean of list of 6 numbers = 20

Removed one no., the average of 5 number becomes = 15

Required number = ?

Soln:

We know that

$$\text{Average} = \frac{\text{Sum of all no.s}}{\text{total no.s}}$$

According to the given condition

$$20 = \frac{x_1 + x_2 + x_3 + x_4 + x_5 + x_6}{6}$$

$$120 = x_1 + x_2 + x_3 + x_4 + x_5 + x_6 \quad \text{--- (i)}$$

And also
Average of 5 no.s is

$$15 = \frac{x_1 + x_2 + x_3 + x_4 + x_5}{5}$$

$$75 = x_1 + x_2 + x_3 + x_4 + x_5 \quad \text{--- (ii)}$$

Putting eq (ii) into (i)

$$120 = x_1 + x_2 + x_3 + x_4 + x_5 + x_6$$

$$120 = 75 + x_6$$

$$120 - 75 = x_6$$

$$45 = x_6$$

Hence the required no is 45

Question 02

a.

i - Computer buses

Computer buses are basically used for transfer of data between different components of computer. It consists of several parallel lines. The CPU connects with other components of computer for processing data through buses.

ii - CPU as brain of computer

The Central processing unit (CPU) works like a brain in the computer system just as an human brain.

CPU is used for performing certain operations like basic arithmetic function, logical functions and processing of input function and turning it into as output function.

iii. Components of CPU

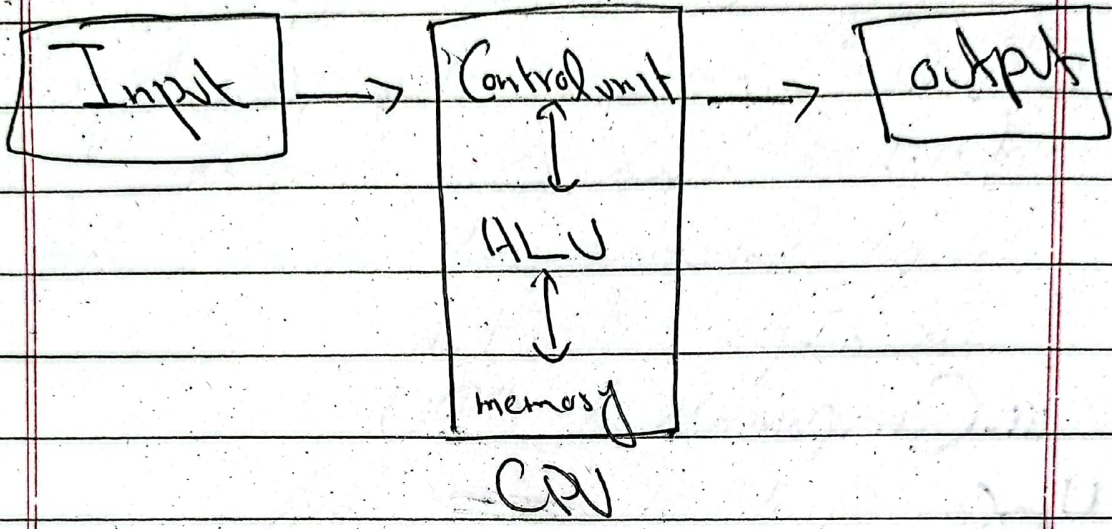
i. ALU → (a) Arithmetic ~~unit~~ unit:
Performs some arithmetic operations like addition, subtraction, division, multiplication.

(b) Logic unit
Certain logic operation such as comparing two data sets and deciding about its logic units. There are

=, >, <, ≠, =>, <=

(ii) Control unit:
It is basically the main component of CPU. It processes and controls

all signals. It decodes the input signals and convert these signals into useful information as output.



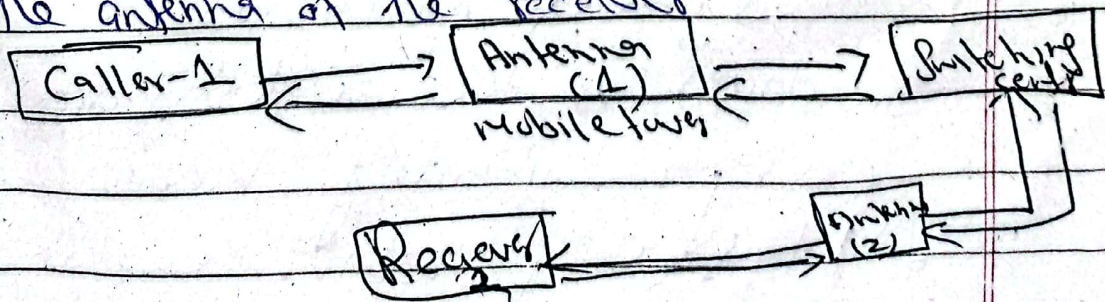
(C) Mobile Phone:

A mobile phone is basically a two way system of receiving and transmitting signals or data from one place to another. Modern mobile phones uses cellular network and variety of other services like text messaging, email, internet, wireless communication such as bluetooth.

ii Working of Mobile:

A mobile phone basically uses radio frequency to establish a connection between the antenna of that network and process it further to the switching centre.

When a call is made through a mobile phone, it emits ^{radio} electromagnetic waves simply known as radio frequency. Then this frequency will be received by the nearest antenna of the mobile tower. This cell phone tower then transmits the signal to the switching centre. In this the call is connected and a network is established through the antenna of the receiver.



(d)

Artificial Intelligence

AI or Artificial Intelligence is rapidly changing the world. It is basically a branch of Computer Science concerned with building smart machines capable of performing various tasks that typically require human intelligence. Moreover in AI technology computer program can automatically learn and adapt to new tasks without the help of humans.

ii AI outsmarting humans

Yes, it is possible and nowadays AI is outsmarting humans in almost every field of technology. Its rapid development has created machines or devices that are easily outsmarting humans. It has outplayed humans in

these tasks;

-i Digitalization and Automation
 AI has automated humans through digitalization and automation. AI can do automated tasks in just few minutes as compared to humans. Most of the tasks are performed digitally - when there need to have collection of data and interpretation of data and processing of data - these all are now handled by AI technologies.

-ii AI in Industries
 AI in industries is also taking the place of humans. AI can perform tasks easily and rapidly as compared to humans. Like

- (a) in manufacturing
- (b) in cutting and making
- (c) in packaging and marketing designing

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c. AI in Engineering

Similarly AI in engineering is also automating humans. AI can use innovative and new technologies in Engineering like

- (a) Simulation of data
- (b) Machine learning
- (c) Decision making
- (d) Robust and more innovation solutions

d. AI in Medical field

AI now-a-days are taking the place of surgeons. Surgeries are being conducted through robots in quick and efficient manner. Moreover vaccines can be generated through AI technology. Moreover, It has certainly made the medical field error free.

(e) AI in Judicial courts

AI has also started to replace humans in Judicial courts.

(f) Autonomous cars and weapons.