

Section-13

General Instructions

1. Give numbering to headings
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings.
3. Do not use table for comparison and contrast questions.
4. Draw figures/diagram/flowchart where needed.
5. Start new question from fresh page.
6. Write unit of the answer in ability section.
7. Explain mathematical steps and the reasoning for better score.
8. Change colour scheme for references to give them more visibility.
9. Manage time well.
10. Wide page borders are discouraged. Should be reasonable.
11. Avoid writing wrong references.
12. Give more weightage to expressedly asked part/s of the question.

QNO # 08 (C)

Share of Tahir for 12 months #
 $12 \times 15000 = 180,000$

Share of Umar for 7 months #
 $7 \times 30000 = 210,000$

Share of Usman for 4 months
 $4 \times 45000 = 180,000$

So ratio of their shares
Tahir : Umar : Usman
 $180,000 : 210,000 : 180,000$

6 : 7 : 6

Total ratio
 $6 + 7 + 6 = 19$

Share of Tahir:

$$406,000 \times \frac{6}{19} = 128,210.52$$

Share of Umar: =

$$406,000 \times \frac{7}{19} = 149,578.94$$

Share of Usman:

$$406,000 \times \frac{6}{19} = \text{Rs } 128,210.52$$

QNO # 8 (d)

Solution:

$$\text{Property left} = 640,000$$

$$\text{Debt} = 40,000$$

$$\text{Spent of his burial} = 5,000$$

So,

$$\text{Property remain} = 640,000 - (40,000 + 5,000) \\ = 595,000$$

Share of his widow =

$$595,000 \times \frac{1}{8} = 74,375$$

$$\text{Property remain} = 595,000 - 74,375 \\ = 520,625$$

So,

Divide remaining property among sons and a daughter =

$$520,625 \times \frac{1}{5} = 104,125$$

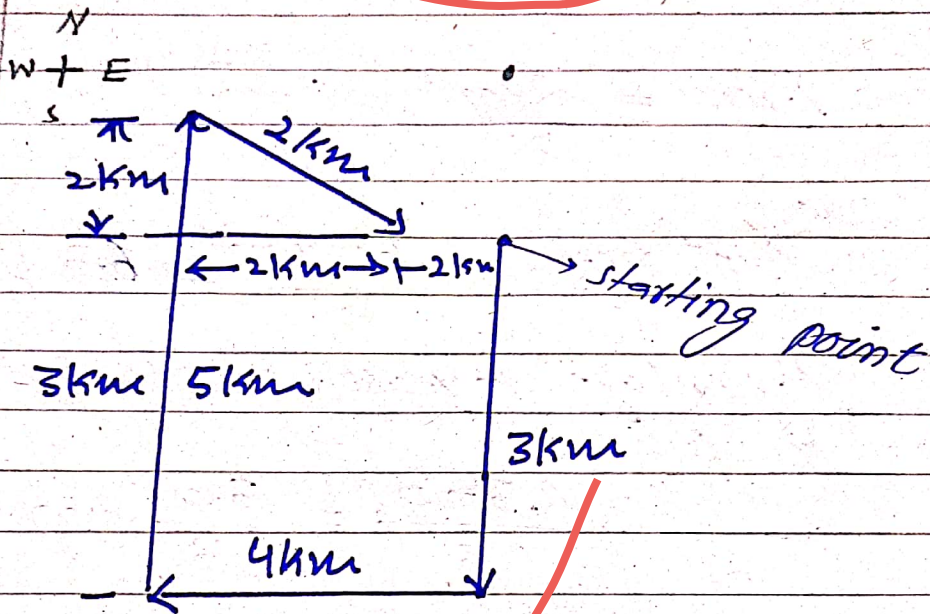
$$\text{Share of daughter} = 104,125$$

$$\text{Share of each son} = 104,125 \times 2$$

$$\text{Rs} = 208,250$$

QNO # 08 (b)

Solution:



Automobile is 5 km from its starting point

QNO # 8(a)

Solution:

liters of paint requires to paint
an area of $= 50.4 \text{ m}^2$

$$\text{Liter} = \frac{24 \text{ m}^2}{3} = 8 \text{ m}^2$$

So, Paint needs $= \frac{50.4 \text{ m}^2}{8} = 6.3 \text{ liters}$

Percentage increase in the quantity
of paint:

$$\frac{6.3 - 3}{3} = \frac{3.3}{3} \times 100$$

110%

So,

110% increase in quantity
of paint to paint an area of
 50.4 m^2 .

QNO # 06 (a)

Solution:

Suppose age of father : x years
Age of son now = : 30 years

Five years ago:

Age of father = $x - 5$

Age of son = $30 - 5$

Father age thrice the age of son

$$(x - 5) = 3(30 - 5)$$

$$x - 5 = 3(25)$$

$$x = 75 + 5$$

$$x = 80 \text{ years}$$

Current age of father is 80 years.

QNO # 06 (b)

Solution:

Suppose income of man is =
 x

10% of his is 1500

So,

$$\frac{10}{100} \times x = 1500,$$

$$x = 1500 \times 10$$

$$x = 15000$$

So,

his income is 15000 rupees.

Q. No # 06 (C)

Solution:

Formula of Arithmetic mean:

$$AM = \frac{\text{Sum of all numbers}}{\text{Total numbers}}$$

So,
 $20 = \text{Unknown}$

Thus, Sum = average \times number of times
 $= 20 \times 6$
 $= 120$

One number is removed
Average became $= 15$

So, Sum = $15 \times 5 = 75$

Difference = $120 - 75 = 45$

The number removed is $= 45$.

QNO # 06 (d)

ii- 17, 19, 23, —, 31, 37

Solution:

17, 19, 23, ~~29~~, 31, 37

2 4 6 2 6

As prime number series

(i) 8, 4, 32, 7, 5,

Solution:

8, 4, 32, 7, 5, 35

8×4 7×5

$$8 \times 4 = 32$$

$$7 \times 5 = 35$$

Thus, answer is 35

Section - A

QNO # 04(a)

Artificial Intelligence: Revolutionised the world:

Artificial Intelligence (AI) is a modern technology which has made the machines more intelligent, efficient and human friendly. AI is a neuron based technology which is helpful in all walk of life. It has added efficiency in already advanced technology. AI has revolutionised the world in following ways:

Revolution of Artificial Intelligence:

AI performs the same jobs as human beings. AI is replacing humans in every field and enhances the efficiency of work. The following functions of AI has contributed in revolutionising the world:

i- Health Sector:

AI enhanced efficiency of health sector by performing various functions in all medical sciences.

AI performs its duties more efficiently than a human doctor. It performs duties like surgeries, health care of patients, consulting a patients etc.

ii- Space Missions:

AI has also capacity of performing duties in space mission as many countries are trying and doing space mission. They find the role of AI in space. Thus, AI has revolutionised the world by doing functions in space.

iii- Security Functions:

AI has also played its role in performing duties in securities. For example, AI based security checks have been installed at various places.

iv- Maintain Law and Order:

AI is quite helpful in maintaining law and order situations.

v- Industry:

Automation of industry is a fine example of role of AI in revolutionising of the world. After installing AI based technology in industry, the performance of industry has boost-up. The productivity has been double. The efficiency has increased manifold.

vi- Agriculture:

AI has also revolutionised the agriculture sector as the productivity of this sector has risen where AI based system is used.

All in all, AI ~~has~~ is not restricted to limited fields or department. But it is increasing day by day. Its revolutionary functions will be enhanced in future ahead.

QNO # 04 (6)

Measures to deal with the scarcity of water:

Water is sine qua non for life. Unfortunately, situation of water availability is not good for many countries of the world, including Pakistan. Pakistan has become a water scarce country since 2020 as water availability of per capita is less than 900 MAF, according to WAPDA. Therefore, pragmatic measures must be taken to deal with the issues of water scarcity.

Measures to deal with Issues of water scarcity:

There is disc need of taking both preventive and corrective measures which include:

- i- Conservative Use of Fresh Water:
People should use the water as little as possible. They

must adopt preventive measures to use water. Thus, they should adopt water conservative measures to save a single drop of water.

ii- Improve Canal System:

According to a study, 35MAF of water is wasted in canals in Pakistan during flooding the fields. Improving canal system can help in saving water and resolving problem of water scarcity at some extent.

iii- Adopt new methods of watering fields

Flooding method is mostly used in our country which is out-dated method which must be changed by adopting new methods.

iv- Modernising agriculture sector:

Agriculture sector should be modernised so that new methods of watering the crops adopted. For example sprinkler system.

v- Prevent seepage of water from water pipes :

Water can be saved by improving the seepage of water as water is mostly leaking from the pipes which must be prevented.

vi- Construct water-saving reservoirs :

There is dire need to construct the water reservoirs so that water should be stored in ^{extra} reservoir during rainy season.

vii- Recycling use of water :

Water must be recycled and re-used. For example waste water of commercial ^{is} used in agricultural purpose.

QNO # 04 (c)

Vaccine :

Vaccine is a substance which is used to stimulate the immunity of human being against a pathogen or a particular disease.

It is mostly formed from an inactivated or weakened form of the causative agent.

Different Types of Vaccines :

Vaccines have two main types: inactivated and attenuated or active.

Inactivated Form of Vaccine :

They are mostly formed from a protein or small pieces that are taken from a virus or bacteria.

The examples of inactivated vaccine are :

- i- Hepatitis A vaccine.
- ii- Polio vaccine.
- iii- Flu vaccine.
- iv- Rabies, etc.

Attenuated Type Vaccine:

They ~~are~~ consist of live and whole viral or bacterial cells that are treated in such way that they have reduced virulence within the host but retain their ability to provoke an immune response.

Types of Attenuated Vaccine included:

- i- Measles, Mumps, Rubella (MMR)
- ii- Rubella, combined vaccine
- iii- Yellow Fever vaccine
- iv- Chickenpox vaccine
- v- Smallpox vaccine

Other types?

QNO#03 (C)

Green House Effects:

The green house effect is a phenomenon which occurs when the UV rays of sun reach the surface of earth, they are absorbed by earth at some extent, while some rays reflected back into atmosphere.

When earth absorbs the energy of UV rays, it releases some of energy back into atmosphere. This earth energy is trapped by the green house gases like CO_2 , H_2O , CH_4 and others which are present in atmosphere of earth. They tend to warm the atmosphere of earth. This whole phenomenon is known as green house effect.

Benefits of Green House Effects:

One of the key and major benefit of green house effect is warming of atmosphere of earth's surface, otherwise earth surface is not livable. It is the

Key benefit of GHE as it warms the earth's surface upto 18°C. While, if GHE does not occur, the earth's surface is so cool that living is not possible on the surface of earth. Thus, it is major benefit of GHE.

Contribution of GHE in Global Warming:

Since the Industrial Revolution of 18th century the green house gases (GHGs) have tremendously increased which contributed in warming the surface of earth.

Although natural phenomenon of GHE is not generating the issue of global warming yet anthropogenic cause has created the issue of global warming.

Global warming is rise of temperature of earth in recent years. Earth's atmosphere temperature is unprecedentedly rising in recent years which is creating the issue

of global warming.
Thus, concentration of
GHGs has increased in earth's
atmosphere which has disturbed
the natural phenomenon of GHE
which is now leading towards
global warming.

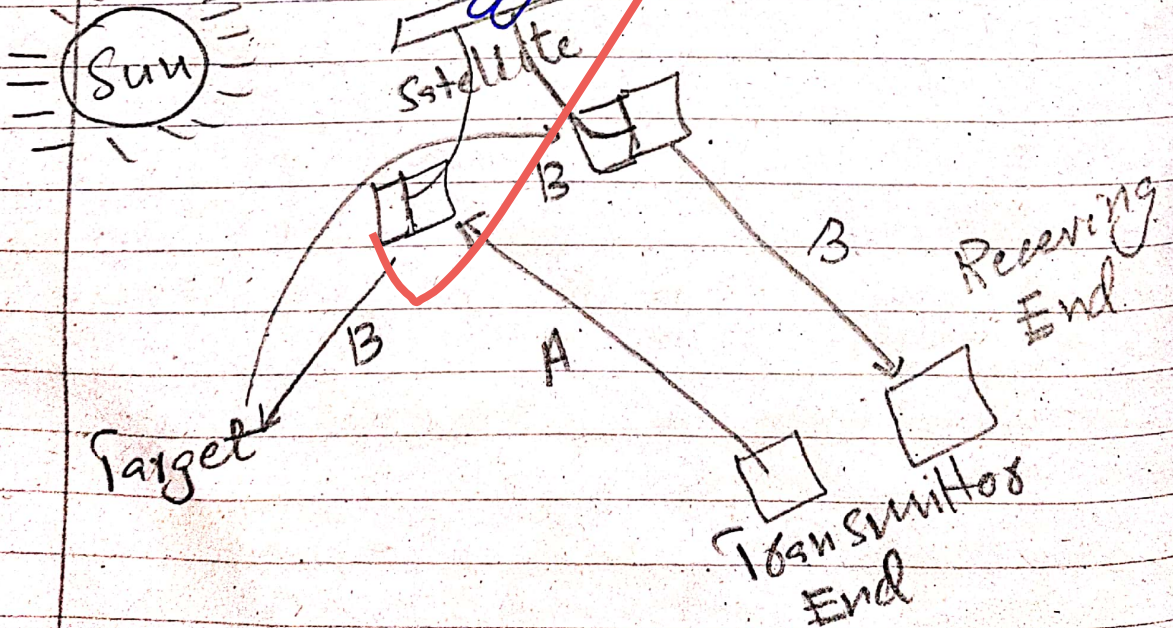
QNO # 03 (b)

Remote Sensing :

Remote sensing is process of measuring, detecting using and analysing the information which is obtained through the process of remote sensing from a distinct place on earth, ocean, mountains for multiple use.

Process of Remote Sensing :

The remote sensing system is consist of receiver, transmitter, satellite, energy source and others.



Explanation of Process:

The signal A is sent through transmitter to the satellite which further sent a signal B to target where information is collected.

The signal B is received at satellite with the information which is obtained from the target which is further sent to receiver where this information is analysed for said purposes.

Role of Remote Sensing in the Environment Science:

Remote sensing plays a key role in environment science. The following are the major contribution of remote sensing in it:

i- Weather:

Remote sensing is used to analyse the weather pattern of any area and forecast the weather of a particular area.

ii- Agriculture

RS is mostly used in agriculture field for analysing the situation of crops.

iii- Forestry:

It is used to detect the forest situation in a particular region.

iv- Surface Changes

Remote sensing is used to measure the surface changes that what is there in a particular region.

v- Biodiversity:

It is also used to analyse the biodiversity of a particular area and their situation of living.

vii- Land-use Mapping:

Remote sensing is used in mapping the land.