

(GSA)

→ Question # (02)

(a)

i) Artificial Intelligence :-

Human
mind like intelligence used by
computers to find solutions
and answers of complex
problems is called "AI."

a) Benefits :-

- Error free or negligible errors in answers or solutions provided.
- Accuracy and precision witnessed in the results.
- Used in medical field to treat diseases.
- Used in IT sector.
- Used in laser cutting machines to increase quality.

b) Challenges:-

- Lack of human interference
- Decline in job availability
- Can cause issues and faults in complex situations
- Deepfake using AI is a moral challenge
- Can exacerbate poverty

b) Challenges:-

- Reduced role of doctor and nurses
- Can cause death or harm in complex situations
- Can reduce job opportunities in health sector
- One wrong diagnosis can lead to complications

c) AI: Patient Care and medical diagnosis :-

- Accuracy in diagnosis of Disease.
- Right treatment of the Disease.
- Increase efficiency of medical sector
- Reduction of burden of patient on health care sector.

(6)

i) Bigbang Theory:-

1) Mass concentrated
~ Singularity:- Before Big bang the mass of the universe was concentrated in a singularity.

2) Big bang 13.8 billion years ago:- caused huge explosion.

3) Formation of planets

As a result, stars, planets, asteroids, meteoroids etc were formed. These bodies formed galaxies. For example, earth is located in 'Milkyway' galaxy.

ii) Significance & Evidence:-

i) Constant expansion of the universe:-

Most significant evidence, that support this theory, is that the universe is expanding constantly.

The volume of the universe is expanding every second.

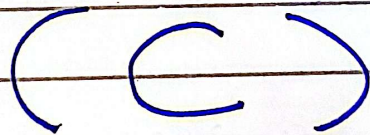
2) Presence of Black holes:-

in the universe

also supports the concept of Bigbang. These bodies have high gravitational field. Even light cannot escape through it.

3) Abundance of light elements:-

like 'H' and 'He' produced in early stage of Bigbang. This stage was known as nucleosynthesis. This provides basis for the Bigbang theory.



a) Causes of Global Warming:-

i) Global Warming: "The increase of average temperature of the earth's atmosphere"

ii) Causes :-

-) Use of fossil fuels for energy generation:-

→ In Pakistan 60% energy is produced from thermal means.

-) Use of petrol and diesel in I.C engines:-

→ GHG are produced as a result. These damage the atmosphere by forming thick layer. As a result, heat is trapped. This is called green house effect.

- Agriculture practices:-

→ Production of methane gas in agriculture sector and use of fertilizers cause global warming.

iii) Effects :-

- Climate Change:-

→ Average global temperature has risen 1.18°C pre industrial levels.

• Floods:- In 2022 floods affected 33 million people in Pakistan.

• Economic losses:- Due to flood, the losses were estimated at \$30 billion in 2022 in Pakistan.

• Deaths:- Last year 1500 hajis died due to global warming in Mecca.

• Poverty:- Before flood, the poverty rate was 29% in Pakistan. Now it is 42%.

• Crop loss and Malnutrition:-
→ \$12 billion losses in agriculture sector in 2022.

floods.

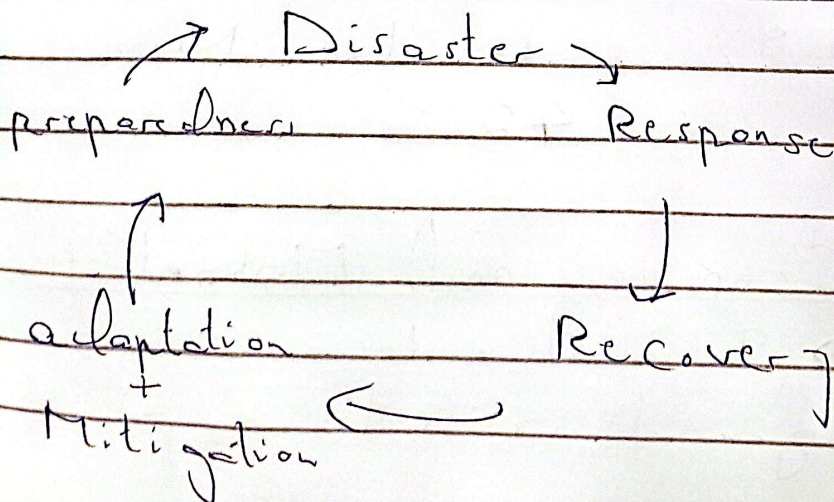
→ According to UN
10 million children are stunted
in Pakistan.

iii) Way forward :-

-) Use of electric cars.
-) Construction of dams.
-) Multilateral platforms to bring the global North accountable.
-) Use of renewable energy.

(d)

Disaster Management Plan :-



i) Response:-

This is the first step of DMP.

The authorities respond immediately to avoid potential harm to life.

ii) Recovery:-

This is the second step in DMP.

The concerned people recover human and their assets from the disaster site.

iii) Mitigation and adaptation:-

This is the third step in DMP.

The relevant staff is assigned the task to secure the vulnerable area. This is done to avoid any disaster in the future.

iv) Preparedness

The fourth and the last step is preparedness. The disaster site is equipped with trained staff and equipment so that they can use these means in future to avert harm.

c) Successful Disaster Management Strategies

- 1) Use of fire alarms.
- 2) Use of sand in buckets for fire hazards.
- 3) Use of fire extinguishers.
- 4) Automatic call forwarding - dialing to 911.
- 5) Use of fire exits.

Question # (04)

(a)

i) Tropical Cyclones:-

"These are a type of weather disturbance. They form on warm ocean waters. They are characterized by heavy precipitation and strong winds."

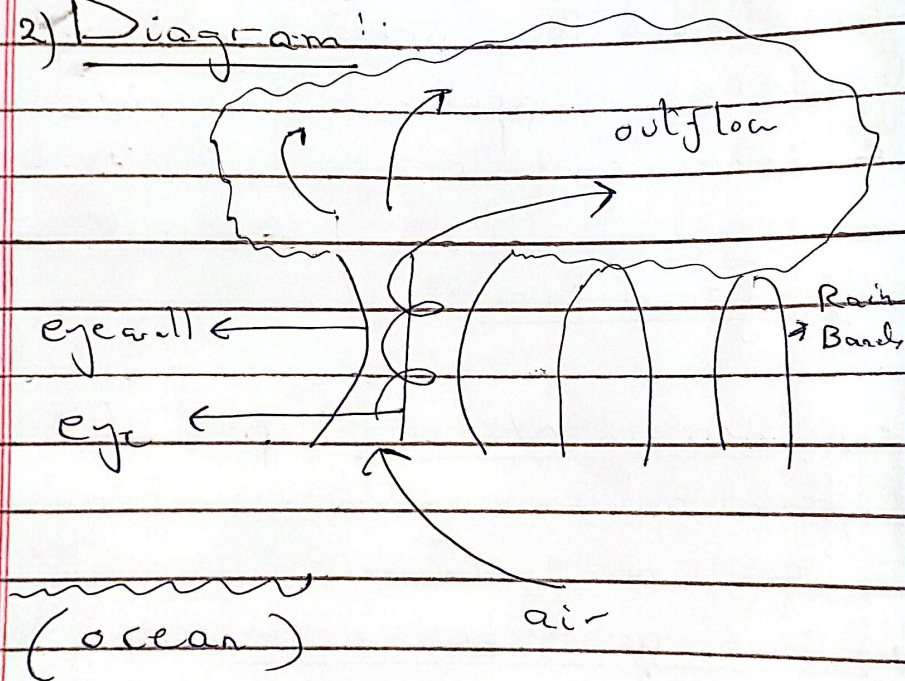
i) formation:-

-) Warm Waters:- provide favourable conditions for cyclones.
-) Sun heats the ocean:- by providing thermal energy.
-) heat transfer:- between the layer above the ocean water.
-) Rise of moist air:- due to less density.

• Disturbance between cold and warm air :- causes rotatory motion.

• Formation of tropical cyclone :- when moist air condenses.

2) Diagram :-



3) Characteristics :-

- heavy rainfall
- Increased humidity
- fast moving air
- Rotatory motion

4) factors:

- Temperature of ocean
- Ocean proximity
- humidity
- Day or night time
- Pressure

5) Effect on Coastal area:

- Infrastructure damage
- Threat to life
- Economic Loss
- Floods
- Poverty
- Relocation

(6)

i) Remote Sensing

"Observation
of climate, weather or
land through satellite
without physical contact"

ii) How it is used in monitoring environment:-

- Monitoring clouds movement to predict the levels of precipitation.
- Monitoring the level of GHG in the atmosphere.
- Monitoring potential climate change threats by glacier melting analysis.
- Monitoring sea level rise.

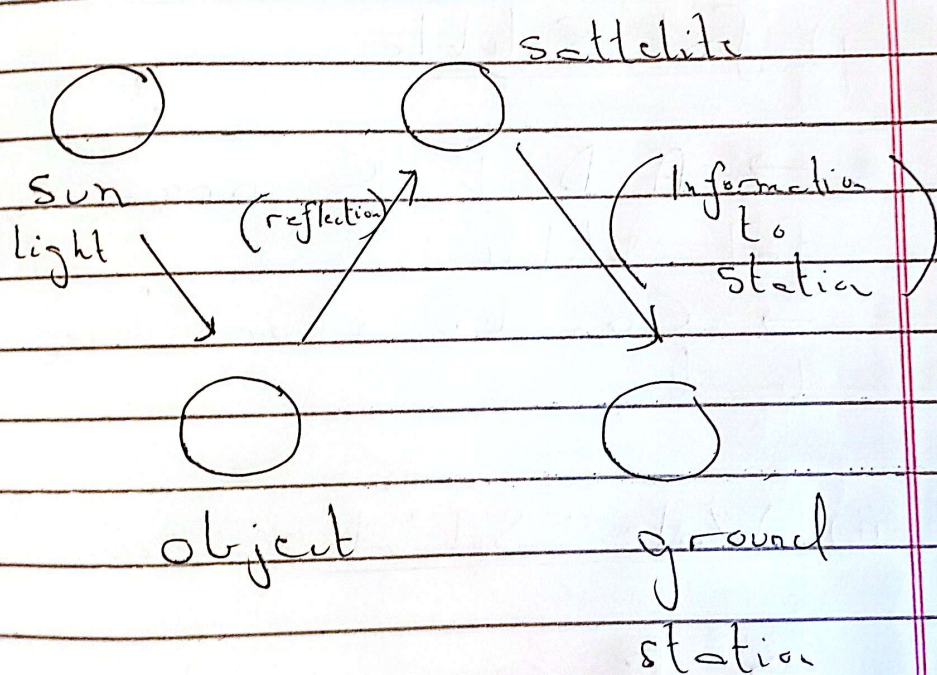
iii) Advantages:-

- Cheap to use
- Provide spatial information.
- Easy to operate
- Used in environment and land use management.

(iv) disadvantage:-

- not 100% accurate
- not clear when there are clouds.
- In-depth and close monitoring not possible

Diagram:-



(C)

i) Vitamins:- Organic components ~~are~~ required in less amount for the human body.

Types:-

i) Fat Soluble:-

→ A, D, E, K are fat soluble.

→ Can be stored in body.

ii) Water Soluble:-

→ B, C are water soluble.

→ Cannot be stored.

iii) Contribution to health:-

Vitamins contribute to human health by providing essential nutrients that are required for a balanced diet.

2) Use in hair, Skin, eyes:-

- Vitamin A used in maintaining skin and hair
- Vitamin C is used to maintain healthy immune system
- Vitamin D used in Bones
- Vitamin A used to improve vision

3) Deficiencies:-

Vitamin A → Vision Problem

" B → Anemia

" C → gum issues

" D → damage to bones

(2)

a) Polio :-

Is a disease that affect children the most. It leads to paralysis. There is no cure for it."

b) How it spreads :-

i) Contact with infected faeces : results in the spread of Polio virus.

ii) Respiratory droplets :-

This is less common but can lead to infection.

iii) Generational transmission :-

Transmitted from one generation to another

c) Global efforts :-

i) Vaccination drives all

around the world

ii) Polio testing units to detect the patients who are infected.

iii) Improving healthcare facilities and making it cheap so that the poor can also exploit these facilities.

d) Challenges

a) Lack of education

b) Lack of parental ^{conscience} ~~conscience~~

c) Terrorism against the polio staff

e) Importance of Vaccine:-

a) Prevent polio

b) healthy life style

c) Next generation saved

d) Ease in doing job

e) " " studying and contributing towards the society.

Q (7)
(a)

Given:-

$$5\% A + 4\% B = \frac{2}{3} (6\% A + 8\% B)$$

To find:-

A : B

Solution:-

$$\frac{5}{20} A + \frac{4}{25} B = \frac{2}{3} \left(\frac{6}{100} A + \frac{8}{100} B \right)$$

$\frac{1}{4}$ $\frac{1}{25}$ $\frac{3}{100}$ $\frac{2}{125}$

$$\frac{1}{20} A + \frac{1}{25} B = \frac{2}{3} \left(\frac{3}{50} A + \frac{2}{25} B \right)$$

~~$\frac{20}{20} A + \frac{25}{25} B$~~

$$\frac{A}{20} + \frac{B}{25} = \frac{36}{150} \quad \frac{A}{75} + \frac{4B}{75}$$

$$\frac{A}{20} - \frac{3A}{25} = \frac{4B}{75} - \frac{B}{25}$$

$$\frac{5A - 4A}{100} = \frac{4B - 3B}{75}$$

$$\frac{A}{100} = \frac{B}{75}$$

$$\frac{A}{B} = \frac{1}{\frac{75}{100}} \times \frac{100}{1} = \frac{4}{3}$$

$$A : B = 4 : 3$$

(6)

Given:

$$\text{digit} = I + \log$$

$$\text{digit} = 10 + 1010 + 2$$

$$\text{digit} = 1110 + 2$$

To find: number = ?

Sol:-

$$(11x+2)(x+x+2) = 144$$

$$(11x+2)(2x+2) = 114$$

$$22x^2 + 22x + 4x + 4 = 114$$

$$22x^2 + 26x + 4 = 114$$

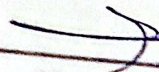
$$22x^2 + 26x - 110 = 0$$

$$11x^2 + 13x - 55 = 0$$

$$= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{(-13) \pm \sqrt{(-13)^2 - 4(11)(-55)}}{2(11)}$$

$\therefore$



(c)

Given:-

$$A : B : C : D = 5 : 2 : 4 : 3$$

To find: B's Share = ?

Solution:-

$$A's \text{ Share} = \frac{5x}{(5+2+4+3)}$$

$$= \frac{5x}{14}$$

Given,

$$\frac{4x}{14} = 1000 + \frac{3x}{14}$$

$$\frac{4x - 3x}{14} = 1000$$

$$\frac{x}{14} = 1000$$

$$x = 14,000$$

$$B's = \frac{2x}{14} = \frac{2 \times 14,000}{14} = 2000$$

(2)

Given:-

Father's age = 38 years

To find:-

Son's age 5 years back?

Solution:-

Father was as old as
his son at the time he
was born.

So,

$$\text{Son's age} = \frac{\text{father age}}{2}$$

$$= \frac{38}{2}$$

$$= 19 \text{ years}$$

$$5 \text{ years back} = 19 - 5 = 14 \text{ years}$$

Question #06

(6)

Given:

$$X + Y = 550$$

$$X = 120\% Y$$

(To find)

$$Y = ?$$

(Sol)

$$X = 1.2Y$$

$$1.2Y + Y = 550$$

$$\begin{array}{r} 2.2Y = 550 \\ \hline 2.2 \end{array}$$

$$Y = 250$$

(2)

(Given)

Tickets (1 - 20)

(To find)

Probability = ?

(Sol)

Multiples of 5 in tickets
= 4

Multiples of 3 in ticket
= 6

Total = 10

Probability = $\frac{\text{Desired outcome}}{\text{Total}}$

$$= \frac{10}{20} = \frac{1}{2} = 50\%$$

(C)

(Given)

Perimeter : Breadth
5 : 1

$$\text{Area} = 216$$

(To find)

length = ?

(S-1)

$$xy = 216 \quad \text{--- (1)}$$

$$\frac{x+y}{y} = \frac{5}{1} \quad \text{--- (2)}$$

$$x+y = 5y$$

$$x - 4y = 0$$

$$x = 4y \quad (\text{put in (1)})$$

$$4y^2 = 216$$

$$y^2 = \frac{216}{4}$$

$$y = \sqrt{\frac{216}{4}}$$

$$\text{length} = x = 216 \div \sqrt{\frac{216}{4}}$$