

General Instructions

SECTION - II

1. Give numbering to headings
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings. (a)
3. Do not use table for comparison and contrast questions.

Problem:
4. Draw figures/diagram/flowchart where needed.

Data
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.

Let the original price of shirt is x

The clerk wanted to decrease it by 20%.

but, accidentally, increase price by

20% and raise the value of shirt

to Rs 80, too high.

Percentage Increase Formula.

$$\text{Percentage Increase} = \frac{\text{Increase Value} - \text{Original Value}}{\text{Original Value}} \times 100$$

Let put the value in formula in order to find original value.

$$\text{Percentage Increase} = 20\%$$

$$\text{Increase value} = 80.$$

$$\text{Original value} = x$$

$$20\% = \frac{80 - x}{x} \times 100$$

$$\frac{20}{100} = \frac{80 - x}{x} \times 100$$

$$\frac{20x}{100} = 8000 - 100x$$

$$\frac{20x + 10000x}{100} = 8000$$

$$10020x = 800000$$

$$x = \frac{800000}{10020}$$

$$x = 79.84$$

The original value of share
is 79.84.

Ans.

85

QUESTION NO: 7 (b)

Problem

Data

In a certain language
BROTHER = @ D G S N @ A

To Find

SISTER = ?

Solution

B R O T H E R

@ D G S N @ A

S I S T E R

Reason?

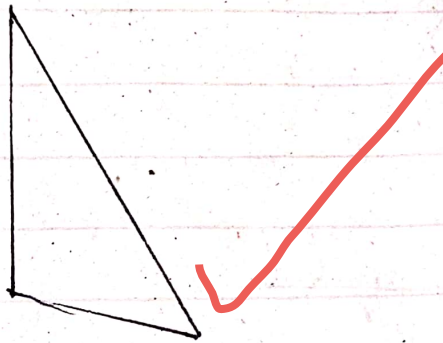
@ D S R H R

Ans.

QUESTION NO: 7 (c)

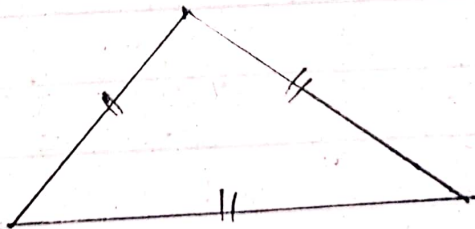
i) Scalene Triangle

Scalene Triangle is a type of triangle where all sides and all angles are unequal.



ii) Equilateral Triangle

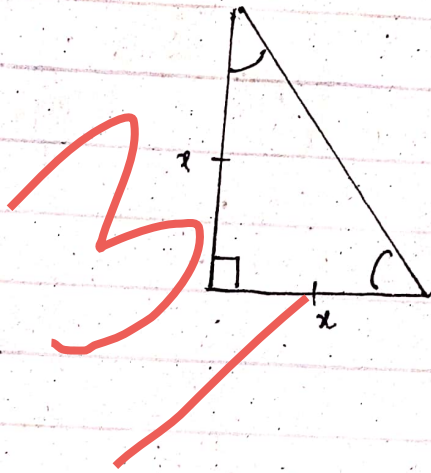
Equilateral Triangle is a type of triangle where all sides and all angles are equal.



Angles?

ii) Isosceles Right Triangle

Isosceles Right Triangle is a type of triangle with one angle is right angle and the other two angles are congruent as the angles are opposite to equal sides.



Ans.

QUESTION NO 7 (D)

Problem

Data

Pizza is divided into 8 slices
3 slices contain raisin in it
Shiza picks a slice

To find.

what probability that she will pick
a slice with raisin?

Solution

Total slice = 8

Raisin slice = 3

So,

Formula of Probability = $\frac{\text{Occurring}}{\text{Total}}$

$$= \frac{3}{8}$$

So, there are 3 chances that Shiza will
pick Raisin slice.

Am

QUESTION NO: 8 (a)

Problem

Data:-

Man walks 5 km South

Then,

Turns right 3 km

Then,

Turns left 4 km

Then,

Turns back 10 km straight

Find

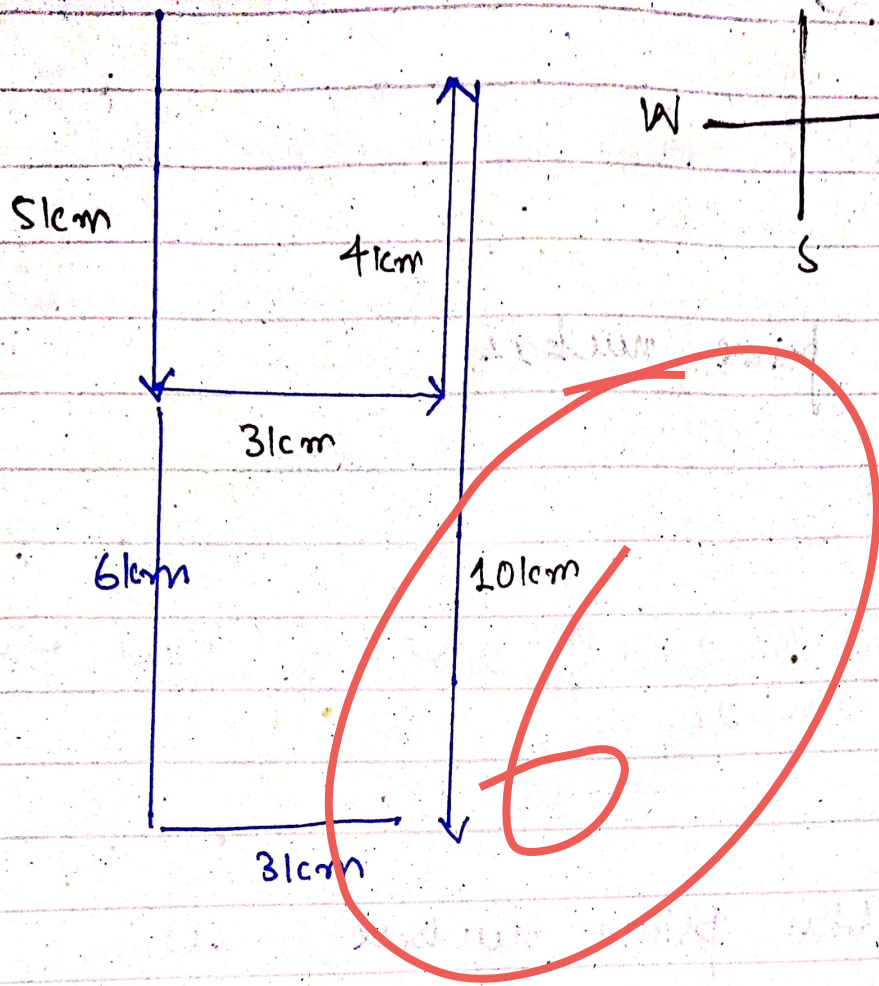
a) Direct from starting point

b) Distance from starting point.

Solution.

Let's draw the direction

of man for clear understanding



a) He is in the same direction (south) as he was at starting point

b) Distance?

$$51\text{cm} + 61\text{cm} + 31\text{cm} = 141\text{cm}$$

He is 141cm from starting point

Ans.

QUESTION NO: (b)

Problem

Data

1st five prime numbers

To find

Arithmetic mean of cube of first five prime numbers?

Solution

First five prime numbers are

2, 3, 5, 7, 11, ~~13~~

The formula of arithmetic

mean

$$\text{Arithmetic Mean} = \frac{\text{Sum}}{\text{Total}}$$

Let put the value in formula

$$\text{Arithmetic Mean} = \frac{(2)^3 + (3)^3 + (5)^3 + (11)^3 + (13)^3}{5}$$

$$= \frac{8 + 27 + 125 + 1331 + 2197}{5}$$

$$= \frac{3688}{5}$$

$$\text{Arithmetic Mean} \approx 737$$

Arithmetic Mean of the five ^{cube of} prime numbers is 737

Ans.

QUESTION NO: 8 (C)

Problem

Data

50 men construct road in 40 days
road length 20 km

To Find:

70 men will construct same road in
what days?

Solution

Men	Days
50	40
70	x

Indirect Relation

Thus, Equations will form

like this

$$\frac{x}{40} = \frac{50}{70}$$

$$x = \frac{50}{70} \times 40$$

$$x = \frac{20}{7} \quad 200/7$$

$$x \approx 28 \quad 28.5$$

Then, 70 men will do the same road in approx 28 days.

QUESTION NO: 8 (D)

Problem

Data

Total property of 2011 = Rs. 1750,000

Total Debt = Rs. 150,000

2 Son, = 2

Daughter = 1.

Find.

Distribute remaining property among them (2 son, 1 Daughter)

Solution

Total property = 1750,000

Debt = 150,000

Remaining property = 1750,000 - 150,000

Remaining property = 1600,000

2 son : 1 Daughter

$$2 + 1 = 3$$

So,

$$\frac{1600000}{3}$$

$$= 533,333.333$$

a) part of son

$$2 \times 533,333.333$$

$$= \text{Rs } 1066,666.666$$

b) part of daughter

$$= 1 \times 533,333.333$$

$$= \text{Rs } 533,333.333$$

Ans.

SECTION - I

QUESTION NO: 3 (a)

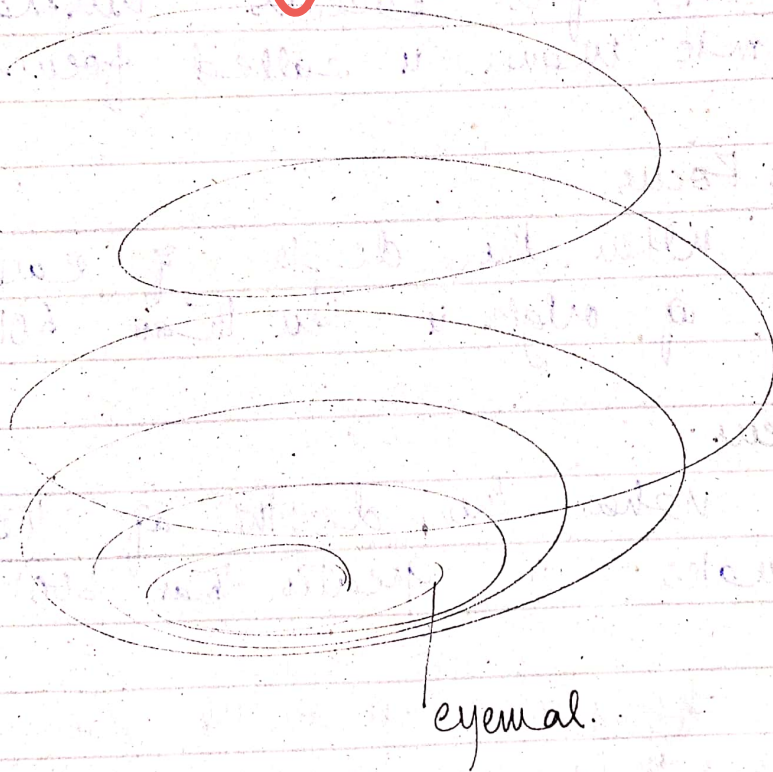
Cause of cyclone

Cyclones are centred on areas of low atmospheric pressure, usually over warm ocean water near the equator. The warm moist air over the ocean rises from the surface in the upward direction, resulting in the formation of the low pressure zone over the surface. ~~The~~ Air from the surroundings region, with higher pressure, pushes into the low pressure area. The cool air becomes warm and moist and rises again. Thus, cyclone continues.

Major cause of cyclone

- Global warming
- Rise of earth's temperature
- Equator closest to sun.

Further, at the centre of the cyclone, basically it is from 12-30 km from centre of cyclone. This region is called eyewall. Here winds are strongest, rainfall is heaviest, and deep convective clouds rise from earth's surface to a height of 15,000 metres.



QUESTION NO: 3 (b)

Shallow Focus & Deep Focus

Based on the depth of the focus earth quakes, there are the types.

Focus:

The location on a fault where slip of rocks first occurs during the seismic waves is called focus.

Shallow Focus

When the depth of earthquake of origin is less than 60km

Deep Focus.

When the depth of the earthquake is greater than 300km.

→ both help to detect the strength of earthquake

Cause of Earthquake.

The surface of Earth is in continuous slow motion. This is plate tectonics. These plates can rub against each other, slide beneath or sometimes spread apart from each other.

The place where motion is not smooth, plates stick and when pressure increase breaks apart, thus waves are seismic waves which cause earthquake.

General cause.

- Nuclear experiments
- Global warming
- Drifting process
- Urbanization.

Plate tectonics
Elastic Rebound theory
Volcanoes

→ The magnitude of earthquake in Morocco is 6.8.

QUESTION NO: 3 (C)

Dengue Fever

Dengue fever is a severe, five-day illness that affects infants, young children and adults but seldom causes death. It is suspected with a high fever 40°C / 104°F , with severe headache, and pain in body parts.

Cause of Dengue Fever

- The *Aedes Aegypti* mosquito is the primary vector of dengue. The virus is transmitted to human through bite of infected female mosquitoes.
- 4-10 days infected mosquito and 4-5 days infected person could transfer dengue fever to others.
- These mosquitoes mostly found in man made cover areas.

Prevention from dengue fever

- a) Environmental management and modification can help preventing mosquitoes from accessing egg-laying habitats
- b) Properly disposing solid waste and remove artificial man made habitats
- c) Covering, emptying, and cleaning of domestic water storage containers
- d) Applying insecticides as space spraying
- e) Active monitoring and surveillance.

QUESTION NO: 3 (b)

Do not use table for comparison.

Difference.

Covalent Bond

Ionic Bond

- | Sharing of electron | Complete transfer of electron |
|--|---|
| <ul style="list-style-type: none">• In covalent bonds atoms are electrostatically attracted toward each other.• Covalent bonds occur through the interaction of neutral atoms.• Covalent bonds are quite weak. | <ul style="list-style-type: none">• In ionic bond electron pairs are shared between atoms.• Ionic bonds occur through the interaction between cations and anions.• Ionic bonds are the strongest type of chemical bond. |

- Non-metallic elements tend to form covalent bonds

- Metallic Elements tend to form ionic bonds.

- Insoluble in water, but soluble in organic compounds like kerosene and benzene

- Soluble in water.

- Generally low melting point

- High melting point

- Do not conduct Electricity

- Conduct Electricity

QUESTION NO: 4 (a)

Causes of Land Pollution.

1. Urbanization

One of the major cause of land pollution is urbanization as more people cause more waste.

2. Industrialization

Industrialization is also the cause of land pollution as it contributed towards the waste material.

3. Illiteracy.

People have do not intentions to ~~cause~~ clean their areas. They collect their waste at the end of the street without caring that how much this waste affect on them.

d) Degradation and Erosion

Land that is converted to dry or barren land, did not made fertile again.

e) Chemical and Nuclear waste

Left over radioactive materials are contributors of Land pollution.

f) Herbicides, insecticides, and pesticides

Toxic fertilizers and pesticides result in the contamination and poisoning of soil.

QUESTION NO: 4 (b)

Main Goal of COP27.

Conference of Parties is 27 meeting regarding the goal to combat with global warming. It was held in Egypt November 2022 and 200 countries attended the meeting.

1. Loss and Damage Fund

One of the major goal of conference of parties 27 is to provide fund to those developing countries which faced consequences of global warming. The fund was provided by those developed countries who are most contributors of the carbon emissions.

2. Recommitment to the 1.5°C Degree limit

COP27 resulted in countries

delivering a package of decisions that re-affirmed to call green house gases and support finance and technology to developing countries.

3. Global Goal Adoption.

Cop27 improves resilience among the vulnerable. New pledges, totaling more than USD 230 million to most vulnerable countries by 2030.

4. Mitigation

Cop27 significantly advanced work on mitigation. It launched a program for mitigation purposes.

5. Loss Decision.

Loss Decision known as the Implementation plan, highlights that a global transition to a low carbon economy is expected to require investments of at least USD 4.6 trillion a year, which is not targeted yet, thus it is announced to focus on this agenda by engaging other institutions.

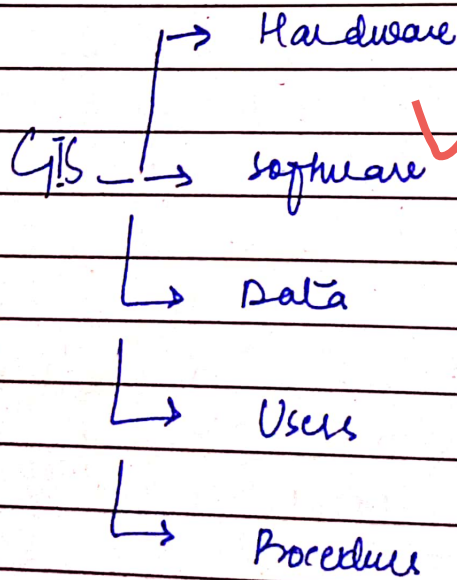
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QUESTION NO: 4 (C)

Role of GIS in Environmental Science.

GIS: ~~Global~~ Information System
Global Information System is a ~~infrastructure~~ ^{system} which consists of 5 components; hardware, which consists of computer which it possess, software, on which it works, Data, which consist of information of earth, User, who use GIS, and ~~procedures~~ ^{procedures} who control it.



Role of ~~GIS~~ in Environmental

Geographical information system has multiple use in Environmental Science.

1. Monitoring and Environmental Risks

Global/Geographical Information System helps in monitoring the risks related to environment.

2. Modeling storm water runoff

Geographical positioning system helps in the modeling of storm water runoff.

3. Management of water sheds, flood plains, wetlands, forest, aquifers

4. Environmental Impact Analysis are also done by geographical information system.

5. Ground water modeling and contamination tracking are also done by geographical information system.

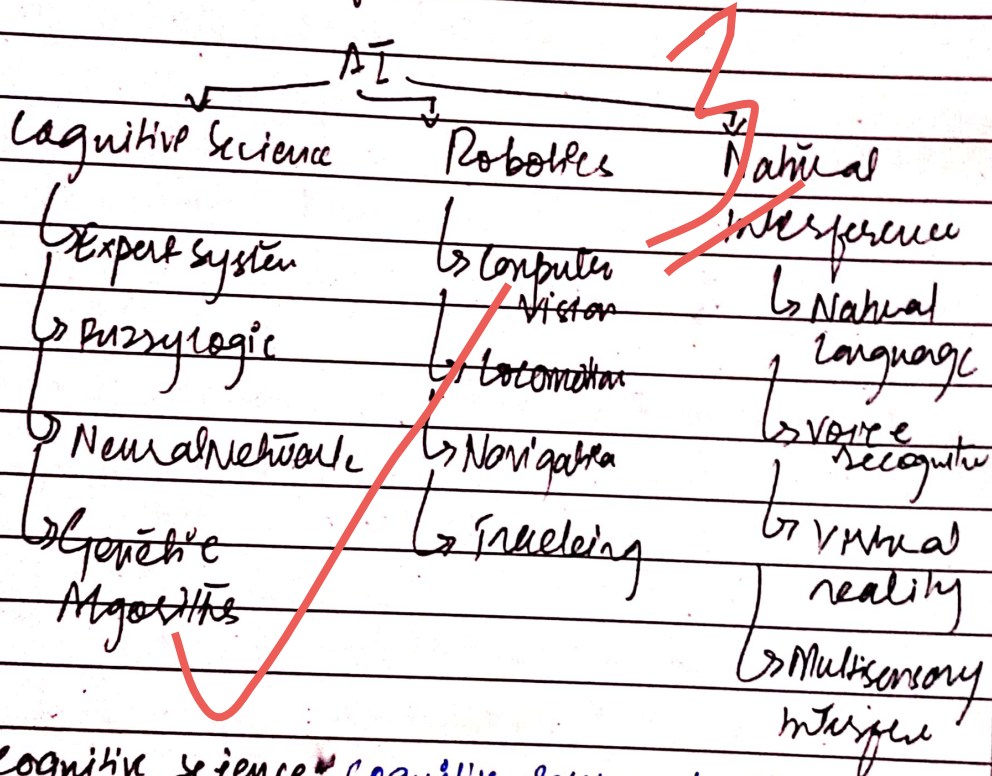
QUESTION NO. 1 (a)

Fundamentals of Artificial Intelligence.

Artificial Intelligence.

Branch of Engineering technology which helps to make machine perform as human thoughts.

Fundamentals of AI



1. Cognitive science: Cognitive system develops expert system that can perform fuzzy logic, genetic algorithms and neural networks.
2. Robotics: Machine having computer vision perform navigation and tracking tasks.
3. Natural Interference: Machine having ability of speaking natural language, recognize voice etc.