

25

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.

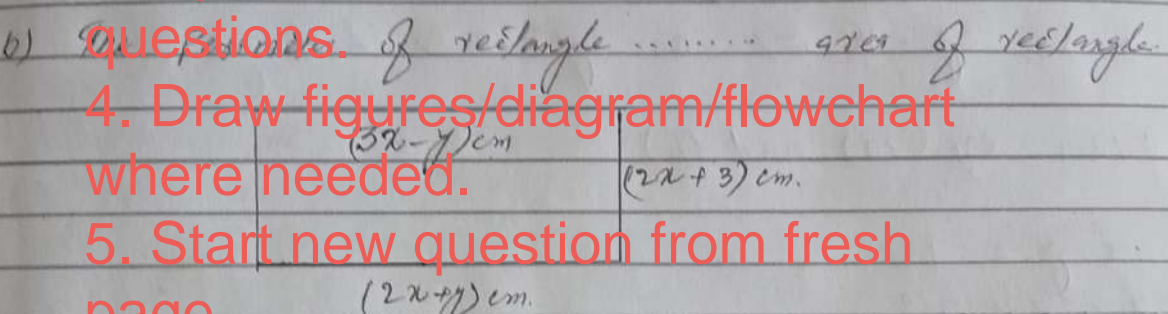
- 8. Change colour scheme for references to give them more visibility.
- 9. Manage time well.

- 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.

a) identify the series
 i) 10, 100, 200, 310
 ii) 3, 7, 28, 95
 5, 7, 23, 95, 479



Given:
 Perimeter = 114 cm.
 Area = ?

We know from the figure.

$$2(3x - 7) + 2(2x + 3) = 114$$

$$6x - 14 + 4x + 6 = 114$$

OR $10x - 8 = 108 \rightarrow (i)$

Area of rectangle =

$$(3x - 7)(2x + 3)$$

$$6x^2 + 9x - 14x - 21 = 6x^2 - 5x - 21 \rightarrow (ii)$$

c) Nisha is 15 yrs elder present age

Let the current age of Nisha = x

Let the current age of Romi = y

According to conditions.

$$x = y + 15 \rightarrow (i)$$

$$(x-5) = 3(y-15)$$

or

$$x-5 = 3y-45 \Rightarrow x-3y = -40 \rightarrow (ii)$$

From eq (i) and (ii)

$$\begin{array}{r} x - y = 15 \\ + x - 3y = -40 \\ \hline 2y = 25 \end{array}$$

$$y = 12.5$$

Putting value of y in eq (i)

$$x = 12.5 + 15$$

$$x = 27.5$$

So,

The present age of Nisha = 27.5 years
& The present age of Romi = 12.5 years.

d) 210 oranges, 252 apples,
cratons needed.

To find the largest no. of cratons needed
find the HCF

HCF of 210 oranges and 252 apples is given below.

210	252
210	5
42	210
	210
	x.

No. of cartons needed to fully pack oranges and apples = 5

HCF of 210 oranges and 294 pears.

210	294
210	2
84	210
	168
	42
	84
	84
	x.

No. of cartons needed to fully pack oranges and pears = 2

HCF of 252 apples and 294 pears is given as.

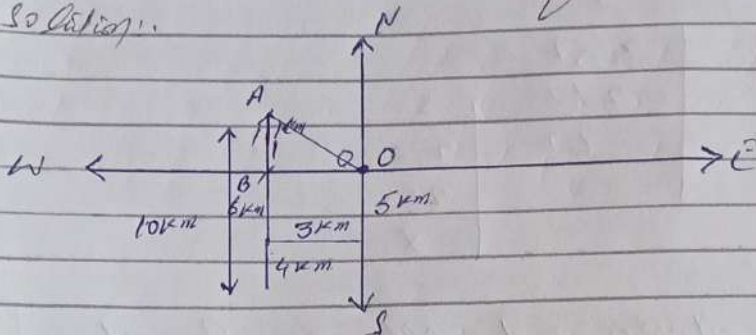
252	294
252	6
42	252
	252
	x.

No. of cartons needed to pack apples and pears = 6.

Largest possible no. of cartons = 6

2/No: 8

a) A man walks from starting point.
 Solution.



From ΔAOB

To know the distance of man from starting point \overline{OA} , applying the Pythagoras theorem.

$$(\overline{OA})^2 = (\overline{AB})^2 + (\overline{OB})^2$$

$$\text{or } \overline{OA} = \sqrt{(\overline{AB})^2 + (\overline{OB})^2}$$

$$= \sqrt{(10)^2 + (3)^2}$$

$$\overline{OA} = \sqrt{109} \text{ km}$$

$$\text{or } 3 \sqrt{109}$$

$$\text{So } \overline{OA} = 3.34 \text{ km.}$$

North west

The man is moving towards north and the distance from starting point is 3.34 km.

b) Find the arithmetic mean of 151 five prime numbers.

The prime numbers are given by

1, 2, 3, 5, 7

According to given condition, the sum of the cube of prime no. is given by

$$(1)^3 + (2)^3 + (3)^3 + (5)^3 + (7)^3 \\ 1 + 8 + 27 + 125 + 343 \\ = 644$$

Arithmetic mean is:

$$\frac{\text{Sum of the numbers}}{\text{Total numbers}} \\ = \frac{644}{5}$$

$$AM = 128.8$$

2) A group of 50 men... same length of road?

Length of road to be constructed = 70 km.

No. of days taken by 50 men to construct = 40

No. of days required by 70 men to construct = ?

From the given conditions:

Men	:	Days
50	←	40
70	→	x

From cross multiplication

$$(70)(40) = (50)(x)$$

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

$$\frac{2800}{5} = 28.5 \text{ days.}$$

d) Zahid left property ~~in~~ that of a daughter.

Total property left by Zahid = 1750,000
Debt to be paid off = 150,000
Amount left after debt payment = 1600,000

No. of heirs = 2
Share of son = 2
Share of daughter = 1

Property to be divided in 3 parts = 2 (son) and 1 (daughter)

$$\text{Share of one part} = \frac{1600,000}{3} = 533333.33$$

$$\text{Daughter's share} = 533333.33$$

Son's share = 2 (Daughter's share) (Given)

$$= 2(533333.33)$$

$$= 1066666.66$$

Share of daughter =

Rs 533333.33

Share of son =

Rs 1066666.66

Section - 9

R/No 3.

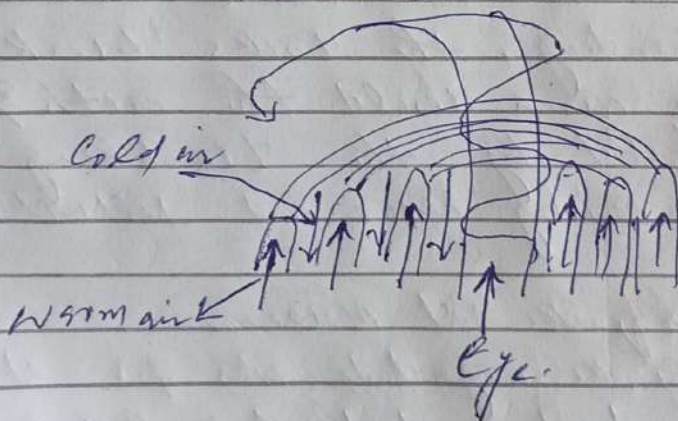
Q

Q) What causes a cyclone? strongest & destructive

Causes of a Cyclone:

Cyclones are caused by

- i) When warm and moist air over the ocean rises up due to the less density, leaving less air near ocean surface resulting in creation of a low-pressure zone.
- ii) Due to surrounding high pressure areas, air flows into the low pressure and forming a cyclone.
- iii) Constant heating, warm air rises, the entire cloud and wind system starting to spin and grow.
- iv) When it acquires more speed, the eye of the cyclone starts forming at the center.
- v) When the wind's rotating speed reaches at 63 km/hr, it is called a tropical storm and when the speed reaches at 119 km/hr, the formation of cyclone takes place.



Most Destructive part of a Cyclone

The "Eye wall" is the most destructive part of the cyclone as it is located outside the eye. Here the winds are strongest, rainfall is heaviest.

b) What are shallow and deep focus earthquakes in Morocco recently?

Based upon the depth of focus, the earthquakes have been classified as shallow, intermediate and deep.

i) Shallow Focus:

When the depth of origin is less than 60 km.

Diagram?

ii) Deep Focus:

When the depth of origin is greater than 300 km.

Causes of Earthquakes:

The earth is geologically made up of plate tectonics. These plates slide past against each other at certain places and sometimes sink beneath each other, motion of the plates, not being smooth. As a result of this motion, the strain builds up. When the rock can't further withstand further bending, the rocks break with an abrupt move as a result the earthquake results, which is felt by the trembling of the earth surface causing havoc and destruction.

Magnitude of Earthquake at Morocco:

Earthquake magnitude was 7.2 at Morocco, which is considered a deadliest in last 60 years.

c) Write a note on Dengue fever.
avoid Dengue fever.

Dengue is the mosquito borne viral disease that has rapidly spread in all regions in the

Recent years, Dengue is spread by female mosquitoes mainly of species *Aedes aegypti*. Severe Dengue was first observed in 1950s in Philippines and Thailand. Today serious Dengue effects are observed in Asia and Latin America and has become the leading cause of deaths in these regions.

Cause of Dengue Fever:

1) The *Aedes aegypti* mosquito is the primary vector of Dengue fever.

2) The fever is transmitted in humans by the biting of ~~off~~ infected female mosquitoes.

3) Infected asymptomatic or ~~even~~ symptomatic are the main carrier and multipliers of the virus.

Preventive Measures against Dengue:

1) By environmental management and modifications, protect the mosquitoes from egg laying habitat.

2) Disposing the solid waste properly and removing the artificial man-made habitats.

3) Covering/emptying the domestic carriers of clean water storage.

4) Including community participation and mobilization of sustained vector control.

5) Active monitoring or surveillance of vectors should be carried out to determine the effectiveness of control measures.

d) Difference between ionic and covalent bonds

Ionic bond	Covalent bond
i) It is formed by the complete transfer of electrons.	i) It is formed by sharing of electrons.
ii) It is formed between metal and non metal.	ii) It is formed between non-metals.
iii) It has very high melting and boiling points.	iii) It has low melting and boiling points.
iv) It is polar bond formed by electrostatic attraction of oppositely charged ions.	iv) It is less polar or non polar.
v) Good conductor of electricity.	v) It is bad conductor of electricity.

Examples

- i) Ionic bond:
NaCl, K2SO4 etc.
- ii) Covalent bond:
HCl, CH3OH etc.

Q/No: 4

a) What are the causes of land pollution?

Some cause of land pollution are given as:

i) Solid waste:

Solid waste is sent to the landfills ultimately leading to the land pollution.

ii) Urbanization and Industrialization, Detail missing. Too short.
Excessive urbanization and industrialization has contributed to the land pollution.

iii) Mining Activities
Mining activities have ~~significantly~~ added to the land pollution.

iv) Chemical and nuclear wastes
Chemical and nuclear wastes flowing off from industries have caused the land pollution and causing the water logging and salinity.

b) What were the main goals of COP-27?
Main goals of COP-27 are given below.

- i) mitigation
- ii) Adaptation
- iii) Finance and Collaboration.
- iv) Establish the loss and damage fund.

The purpose of establishing the loss and damage fund was to hold accountable the countries having major share in degradation of environment and resulting in affecting of the damage to the world environment.