

General Instructions

Section-II

465

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.

Q NO # 08 (b)

Solution:

Formula of Arithmetic mean =

$$AM = \frac{\text{Sum of Observation}}{\text{Number of observation}}$$

Prime Numbers # 2, 3, 5, 7, 11

$$AM = \frac{(2)^3 + (3)^3 + (5)^3 + (7)^3 + (11)^3}{5}$$

$$AM = \frac{8 + 27 + 125 + 343 + 1331}{5}$$

$$AM = \frac{1834}{5}$$

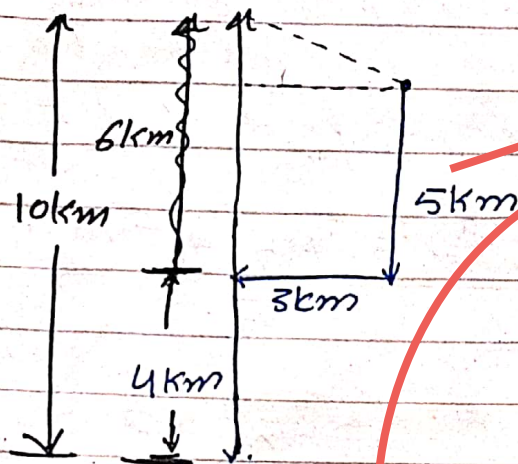
$$AM = 366.8$$

Arithmetic mean of first five prime numbers with their cubes =

$$366.8$$

QNO # 8(C)

Solution:



Apply Pythagoras Theorem

$$(BC)^2 = (AB)^2 + (AC)^2$$

$$(BC)^2 = (31\text{km})^2 + (5\text{km})^2$$

$$BC = \sqrt{91\text{km}^2 + 25\text{km}^2}$$

$$BC = \sqrt{34\text{km}^2}$$

$$BC = 5.80\text{km}$$

He is in North direction from starting point with a distance of $\boxed{5.80\text{km}}$

QNO # 8(d)

Solution:

Property left, = 1,750,000

Debt = 150,000

Property distribute
between a son and daughter = ??

Remaining property = $1,750,000 - 150,000$
= 1,600,000

Now, share of son is double of daughter =

$$= \frac{1,600,000}{3}$$

$$= 533,333.33$$

Daughter gets = Rs 533,333.33/1

Son gets = Rs 1,066,666.66/1

Q NO # 8(c)

Solution :

Days	men	Work
↑ 40	↓ 50	↑ 20km
↑ ??	↓ 70	↓ 20km

So,

$$\frac{x}{40} = \frac{50}{70} \times \frac{20}{20}$$

$$x = \frac{50}{70} \times 40 \times 1$$

$$x = 28.57 \text{ days}$$

Thus, days require to complete same piece of work by 70 men in

28.57 days

QNO # 07 (a)

Solution:

Suppose original/cost price of item is x

Now,

Net Price = Cost Price + % increase in Cost Price

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

$$80 = 1.2x$$

$$\frac{80}{1.2} = x$$

$$x = 66.66$$

Original Price was Rs: 66.66

QNO # 7 (b)

Solution:

BROTHER = R D G S M Q A

As each word is written backward with a preceding number

So,

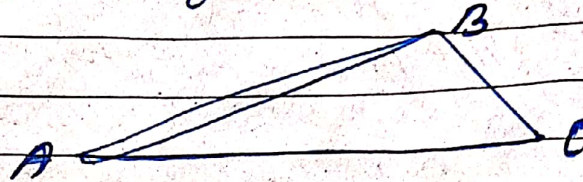
SISTER is written as

SISTER = R D S R R R R

QNO# 07(C)

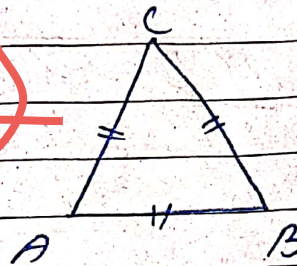
i- Scalene Triangle:

A triangle whose sides are all of different lengths.



ii- Equilateral Triangle:

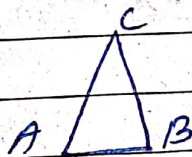
A triangle whose three sides are all the same length.



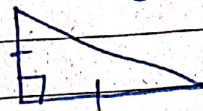
What about angles?

iii- A triangle which is Isosceles and Right at the same time

Isosceles triangle is a triangle with ^{two} of its three sides the same length.



However, an Isosceles Right Triangle is a right triangle that consists of two equal length legs.



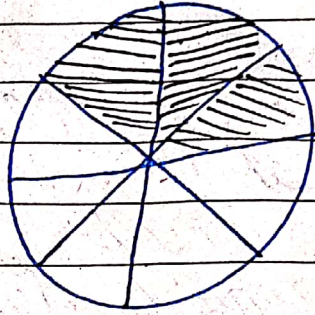
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Date

Q NO # 07 (d)

Solution :



Total slice # 8

Raisin containing slice # 03

So, Probability of getting / picking Raisin slice is

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

Formula?

Date

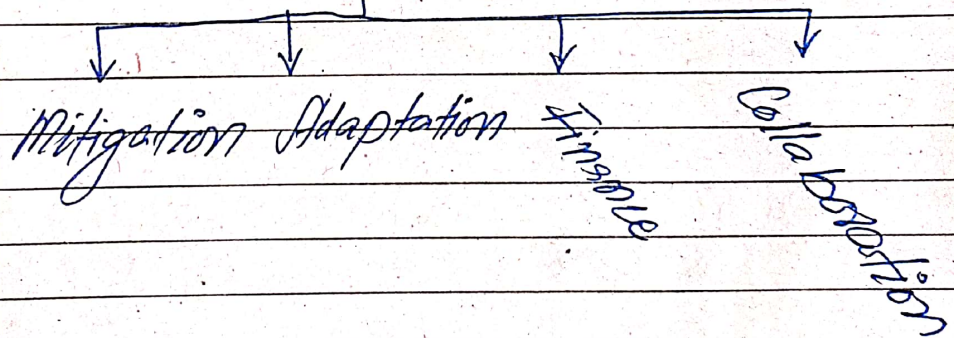
Section - I

QNO # 04 (b)

Main Goals of COP27:

COP27 was held in Egypt last year with variety of topics brought under discussion. They include financial loss, climate financing, adaptation, and mitigation on its agenda that fell directly under the main agenda of "climate justice".

Main Goals of COP27 includes
COP27 vision was divided into
4 agendas



Mitigation:

It was agreed in COP27 that Paris Agreement remains intact - no backsliding or backtracking as commitments reaffirmed and strengthened despite global headwinds!

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COP27 called rapid, deep and sustained reductions in global greenhouse gases (GHGs) emissions.

Adaptation:

Numbers?

In last two COPs - COP26 and COP27 - worked programme on the global adaptation goal progressed with a conclusion to happen in COP28.

Finance:

In financial agreements, it calls for multilateral development banks (MDB) and international financial institutions to reform practices and prioritise to ensure simplified access to climate finance.

Loss and Damage Fund:

Countries agreed to establish a historic loss and damage fund. Pakistan played a crucial role in development of this fund.

This fund will support developing countries that are particularly vulnerable to the adverse effects of climate change.

QNO# 04(d)

Fundamentals of Artificial Intelligence
AI has the potential to help human lives by creating more meaning and ease lives devoid of hard labour.

Fundamentals of AI:

Irrelevant answer

AI works on Artificial Neural Networks (ANN) which is similar to principal of Human Neural cells by recognising the patterns in speech, data, text or visual images.

Functions of AI:

AI involves transferring some of the capabilities which are traditionally associate with humans to machine in a satisfactory manner. These human capabilities currently include decision-making, visual perception, speech recognition, natural language processing and communication.

Examples of AI:

- i- Personal Assistants such as Siri, Google Assistant and Amazon Alexa.
- ii- Use in social media
- iii- Autonomous vehicles.

QNO # 04 (C)

Role of GIS in Environmental Science

Geographic Information System (GIS) is a computer system for capturing, storing, checking and displaying data of information related to position on earth. However, information collecting methods can vary.

Role of GIS in Environmental Science
Following are main uses of GIS in environmental science:

- i- Use in Climate Change ✓
- ii- Use for military purpose ✓
- iii- Use for pollution control
- iv- Use for disaster management
- v- Use for conservation process
- vi- Use of forecasting weather and analysing weather pattern.

Date

QNO # 04(a)

Causes of Land Pollution:

Land Pollution:

Land pollution is also known as soil contamination, or soil pollution. It is a part of land degradation which is caused by the presence of xenobiotic chemicals or other alterations in the natural soil environment.

Major Causes of Land Pollution:

i- Deforestation:

It is a leading cause of land pollution as deforestation is happening in a greater pace across the world.

ii- Municipal Solid Waste (MSW):

It includes non-hazardous garbage, rubbish, and trash from homes, institutions, and industrial facilities.

iii- Urbanisation and Construction:

to accommodate our increasing ^{Gracy}

population construction activities also emits, which results in large waste materials, such as plastic, wood and bricks.

IV- Pesticides and Fertilizers:

Myriad type of pesticides and fertilizers is also caused soil pollution as they contain a large amount of toxic chemicals and poisons which also affects land properties.

V- Sewage Treatment:

The leftover material of solid waste is sent to the landfill site, which ends up polluting the environment.

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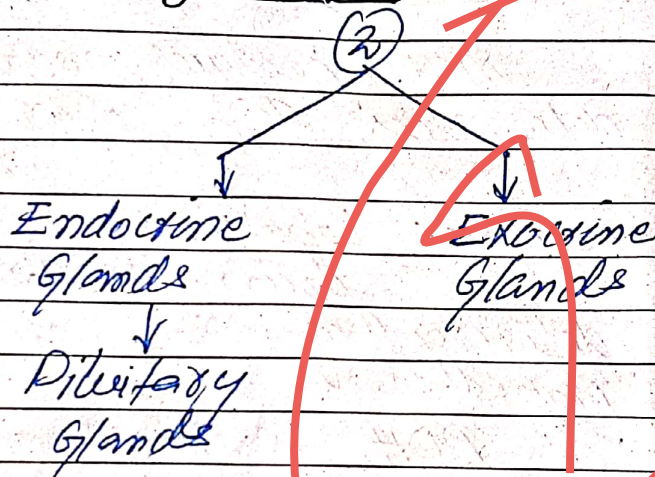
Q No # 05 (d)

Functions of Pituitary Glands:

Glands:

Gland is a group of cells which secrete special chemicals and called Hormones.

Types of Glands:



Pituitary Glands:

Pituitary gland is very small (equal to the size of pea). It is also known as master glands and it regulates all other glands present in the body.

Lobes of Pituitary Gland which performs its major functions:

It has three lobes:

Anterior, Median, and posterior.

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Anterior Lobe:

• The presence of STH in pituitary glands performs growth in the body.

• TSH acts on thyroid.

• $ACTH$ regulates adrenal gland

Median Lobe:

MSH produces melanin, and determines skin colour.

Posterior Lobe:

$Oxytocin$ is used during delivery of baby or parturition process.

ADH maintains water level.

QNO # 05 (b)

Digestive System and role of Small intestine in digestion:

Digestive System:

The large and complex food particles cannot enter into the cells without broken down by our body into smaller, simpler and diffusible form. This process of breaking down food into simple and diffusible molecule is called digestion. However, this whole process is called digestive system.

Role of Small Intestine in Digestion

Small intestine is a long tube of six meter where digestion completes. Diagram missing.

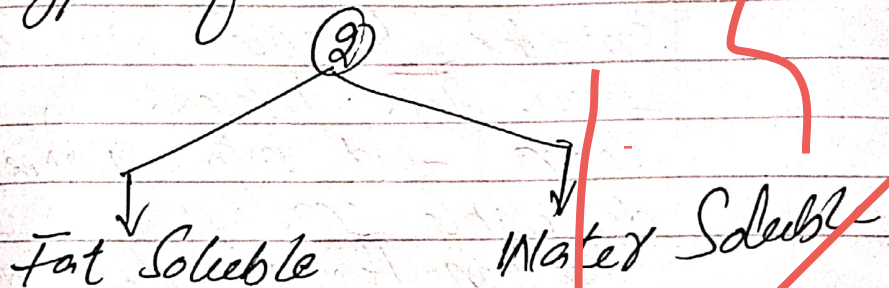
At the end of the small intestine, the digested, soluble and diffusible components of food now diffuse through the walls of the small intestine into the blood stream.

Q NO # 05 (C)

Vitamins:

Vitamins are natural substance found in ~~human~~ food that is an essential part of what humans and animals eat to help them grow and stay healthy.

Types of Vitamins:



Fat Soluble:

These are the vitamins which are dissolved in fat ~~in human~~ which is present in human body. They are:
A, D, E, K.

Water Soluble:

The vitamins which are dissolved in water. They include B, C vitamins.