TOOBA GUL BATCH # 339

LMS ID: 29249

PART-II

SECTION-II

Q.No.7

a- A concert hall ...

Solution:- Number of seats in a concert hall = 400

Occupied seats = 325 $\quad 400 - 325 = 75$

Attendance percent = ?

$$= \frac{325}{400_4} \times \cancel{100^1} \qquad = \frac{75}{325} \times 100$$

$$= \cancel{81.25\%} \qquad = 23.7\%$$

Hence, the attendance at a percent of capacity is 23.7%.

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b. If 30-percent use 40 Kg ...

Solution:- 30-persons use 40 Kg in 10 days

80-persons will use 320 Kg Kg in = ?

Persons		Weight of sugar		Days	
30	↓	40	↑	10	↑
80	↓	320	↑	x	↑

$$\frac{x}{10} = \frac{320}{40} \times \frac{30}{80}$$

$$\frac{x}{10} = 3$$

$$x = 30 \text{ days}$$

So, 80 persons will use 320 kg sugar in 30 days.

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c. A crow travels ....

Sol:- $d_1 = -5$ Km

$d_2 = -3$ Km

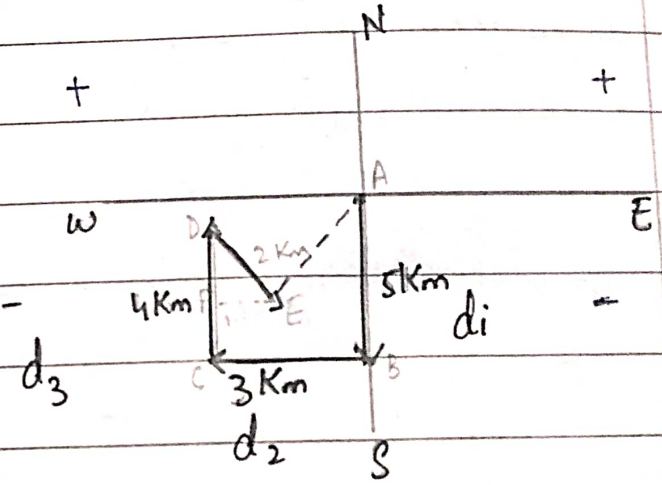
$d_3 = 4$ Km

$d_4 = 2 \text{ Km} \cos 45^\circ$

$= 1.41$ Km

$- 2 \text{ Km} \sin 45$

$= -1.41$ km



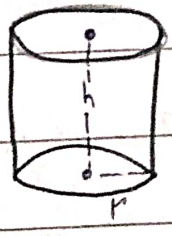
$$R = \sqrt{(1.59)^2 + (-2.41)^2} = 2.63 \text{ Km}$$

d. If radius of a cylinder....

Sol:- Radius of cylinder = 10 cm

Height of cylinder = 36 cm

Volume of cylinder = ?



Volume of cylinder $= \pi r^2 h$

$$= \frac{22}{7} (10)^2 (36)$$

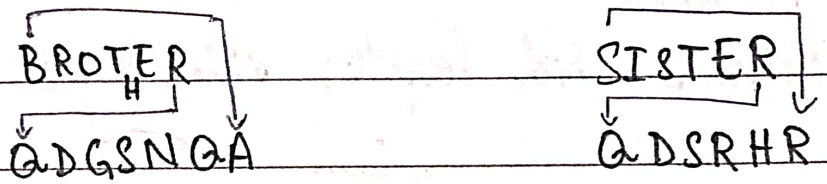
$$= \frac{22}{7} \times 100 \times 36$$

Volume of cylinder $= 11314.28 \text{ cm}^3$

Q. No. 8

a. If in a certain language ---

In the given code BROTHER — QDGSNQA, is written as ~~backward~~ last alphabet R of BROTHER against first alphabet of QDGSNQA i.e Q. Hence, all alphabets are one step backward in the opposite direction. Similarly, SISTER is written as QDSRHR



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b. A card is drawn at random ---.

Sol:- Total number of cards = 12

$$\text{Probability (E)} = \frac{\text{No. of all possible ways of events}}{\text{Total number of possible outcomes}}$$

(i) $\text{Prob}(8) = \frac{8}{12} = \frac{2}{3}$

(ii) $\text{Prob}(\text{even No.}) = \frac{6}{12} = \frac{1}{2}$

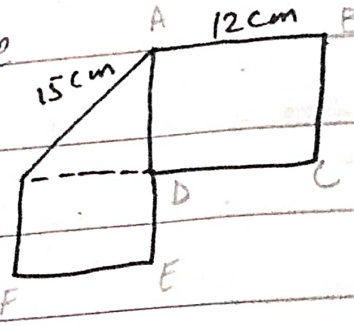
(iii) $\text{Prob}(\text{Perfect sq}) = \frac{2}{12} = \frac{1}{6}$

(iv) $\text{Prob}(\text{neg no}) = \frac{0}{12} = 0$

(v) Prob (No. less than 13) $= \frac{12}{12} = 1$

c. Calculate the total area and ...

Sol:- According to the given figure, these are square ABCD, triangle ADG and square DEFG. So, in order to find the area and perimeter of given shape, firstly calculate their individual area and perimeter.



Area of sq. ABCD = Side length x side length

$= 12\text{cm} \times 12\text{cm}$

$= 144\text{cm}^2$

Perimeter of sq ABCD = 4x side length

$= 4\text{cm} \times 12\text{cm}$

$= 48\text{cm}$

Area of $\triangle ADG = \frac{1}{2}(b \times h)$

In order to find base, calculate base via pythagoras theorem

$Hyp^2 = B^2 + Perp^2$

$(15)^2 = B^2 + (12)^2$

$225 = B^2 + 144$

$225 - 144 = B^2$

$\sqrt{81} = \sqrt{B^2}$

$9 = \text{Base}$

So, Area of $\triangle ADG = \frac{1}{2}(9 \times 12)$

$= \frac{1}{2} \times 108^{54} = 54\text{cm}^2$

Perimeter of ΔADG = sum of all sides

$= 15 + 12 + 9$

$= 36\,cm$

Area of square DEFG = $9cm \times 9cm$

$= 81cm^2$

Perimeter of square DEFG = $4(9)$

$= 36\,cm$

Now, to calculate the total area of the shape,

Area of sq ABCD + Area of ΔADG + Area of DEFG

$= 144_{cm^2} + 54\,cm^2 + 81cm^2$

$= \boxed{279\,cm^2}$

Perimeter of shape = Perimeter of ABCD + ADG + DEFG

$= 48 + 36 + 36$

$= \boxed{120cm}$

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d. There are nine students ---

Ages of 9 students are 15, 15, 16, 16, 16, 17, 17, 18, 19.

$$\text{Mean} = \frac{\text{Sum of observations}}{\text{No. of observations}}$$

$$= \frac{15+15+16+16+16+17+17+18+19}{9}$$

$$= \frac{149}{9} = \boxed{16.55}$$

Median = $\frac{n+1}{2} = \frac{9+1}{2} = \frac{10}{2} = 5^{th}$ value

15, 15, 16, 16, (16), 17, 17, 18, 19

Median = **16**

Mode: most repeate value is **16**

Range:

Range = Max value − Min value

= 19 − 15

Range = **4**

Q No. 4

a. Define the following:

1. **Pesticides:** Pesticides are chemical substances that are meant to kill pests. These pests can include virus, bacteria and other pests.
2. **Herbicides:** Herbicides are chemicals used to control undesirable vegetation and retards plants growth.
3. **Insecticides:** Insectidsides are pesticides used to kill insects. They control insects by killing them or preventing them from engaging in destructive behaviones.
4. **Ceramics:** Ceramic is an organic, non-metallic solid i.e, hard, brittle and resistant to corrosion and heat.

Examples: Titles, cement, Procelain, plates, watches and toilets.

5. **Green House Effect:**

When sunlight reaches the Earth, it can either be reflected back into space or absorbed by Earth. Once absorbed, the planet releases some of the energy back into the atmosphere as heat. Greenhouse gases like water vapour (H_2O), CO_2 and CH_4 absorb energy, slowing or preventing the loss of heat into the atmosphere. In this ways GHGs act as a blanket and trap heat. This process is known as **Green House Effect:**

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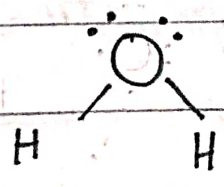
b.

Explain the bonding of water molecule.

BONDING IN WATER MOLECULE:

Water molecule (H_2O) is made up of covalent bonds between **two hydrogen and one oxygen molecule**



In H_2O molecule, hydrogen bonds form

between neighbouring hydrogen and oxygen atoms of adjacent water molecules. The attraction between individual water molecules creates a bond known as a hydrogen bond.

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d.

what are advantages and disadvantages of AI.

ARTIFICIAL INTELLIGENCE:

Artificial Intelligence is the ability of a computer-controlled robot to perform the tasks commonly associated with human beings.

ADVANTAGES OF AI:

a. **Education:** AI has applications in education sector. students may benefit from **Chat GPT, Siri** etc to get quick knowledge.

b. **Healthcare:** AI has proved innovative in healthcare and medicine. It made the cure of various fatal disease like tumours possible.

c. AI has also improved efficiency and productivity.

DISADVANTAGES OF AI:

a. **Data Privacy and Misinformation:**

with AI, information and data become less ~~sec~~ secure. Many ways have been invented to hack confidential information quickly.

b. **Unemployment:** 4000 Americans lost their jobs due to AI. with the invention of robotic-assistants, need for human intelligence has diminished.

c. **Loss of creativity and laziness:**
AI has made people sluggish. with the availability of easy access to information, people do not go towards creativity and innovative ideas.

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c.

what types of waves are used in —

a- **RADAR:**
Radar uses **radio waves** for detection purposes.

b- **SONAR:**
SONAR uses **ultrasonic** waves to detect and locate under-water objects and their distance. Both RADAR and SONAR work on the principle of **Echo detection.**

c. **LIDAR:**
A LIDAR transmits and receives **electro-magnetic radiations**, but at a higher frequency.

d. **MOBILE PHONES:** Radio waves are used in communication technologies such as television, mobile phones,

and radios. These devices convert radio waves into mechanical vibrations to create sound waves.

e. **Thermistors:** Thermistors use micro-waves.

Q. No. 2

c. Explain the structure of Eye.

HUMAN EYE:

Human eye is a sensory organ. It helps in sight. Eyes are enclosed in small sockets of skull known as **Eye sockets**. Eyelids wipe eyes and prevent dehydration. Eyelashes prevent fine pasticles and dust from entering eye.

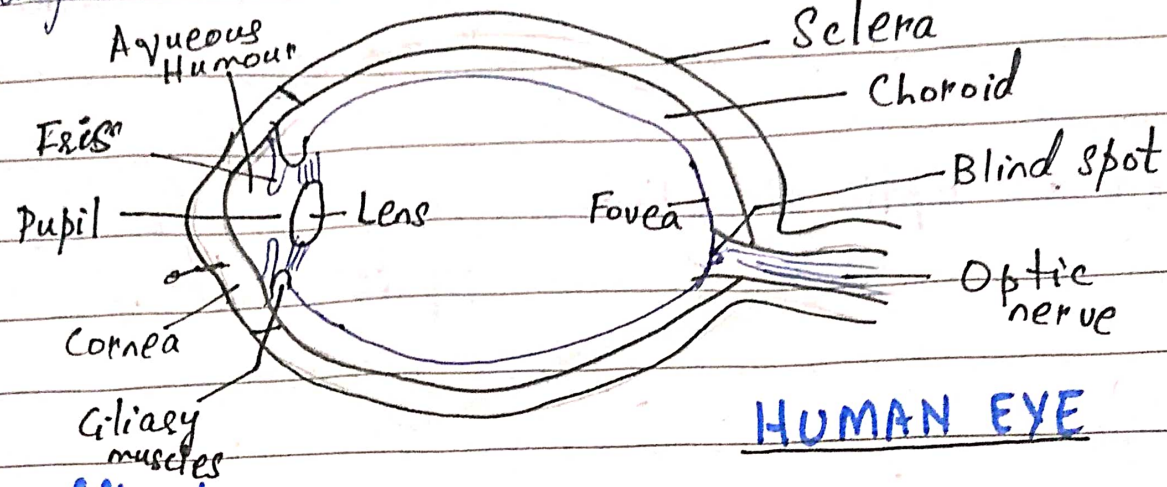
COMPONENTS OF HUMAN EYE:

The structure of human eye is divided into three main layers.

a. Outer layer:

The outer layer of eyeball consists of **sclera** and **cornea**. Sclera gives eye most of its white colour. It consists of dense connective tissue and protects the inner components of eye and maintains its shape. Cornea admits light to the interior of the eye and bends

light rays so that they can be brought to a focus.



HUMAN EYE

b. **Middle layer:**

The middle layer of eye is called **Choroid**. It contains blood vessels and gives the inner eye a dark colour. Behind cornea, choroid bends to form a muscular ring called **Iris**. There is a round hole, called **Pupil**, in the center of Iris. After striking the cornea, light passes through the pupil. Pupil constricts in bright light and dilates in dim light. Behind Iris, there is a **convex lens**, which focuses light on **retina**. Lens is attached to **ciliary muscles** of eye via a ring of **suspensory ligaments**.

c. **Inner layer:**

The inner layer is sensory called as **retina**. It contains the photosensitive cells

called **rods** and **cones** and associated neurons. **Rods** are sensitive to dim light while **cones** are sensitive to bright light and so distinguish different colours. Retina has two points i.e. **fovea** and **optic disc. Fovea** is responsible for colour vision and sharpness. **Optic disc** is a point on retina where the optic nerve enters retina. There are no rods and cones at this point, that is why it is also refered to as the **blind spot.**

The iris divides the cavity of eye into **anterior** and **posterior chambers.** The anterior chamber contains **aqueous humour**, which helps to maintain the shape of eye.

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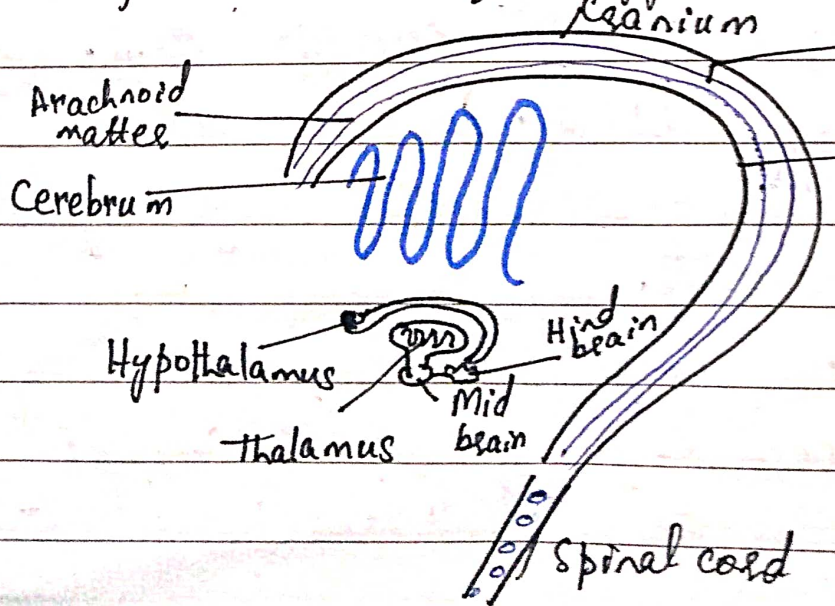
d.

Draw a flow chart of different part of Brain.



HUMAN BRAIN