

①

M T W T F S S

Date _____

Shafira Fayyaz

Rurp-68

Part II

Question #05

(a) Sol.

students of age 8 = 48

$$\text{Above 8 years old} = \frac{2}{3} \times 48 = 32$$

$$\begin{aligned} \text{Students of age 8 \& above} &= 48 + 32 \\ &= 80 \end{aligned}$$

$$\text{let total students} = x$$

$$\begin{aligned} 20\% \text{ of } x \text{ below 8} &\Rightarrow \frac{20}{100} x \\ &= 0.2x \end{aligned}$$

$$0.2x + 80 = x$$

$$0.2x - x = -80$$

$$80 = 0.8x$$

$$\text{Students} \Rightarrow x = 100$$

(b)

Sol.

$$\text{let Rasnid's Age} = x$$

$$\begin{aligned} \text{Father Age} &= x + 3x \quad (\text{As father is } 3 \text{ times old}) \\ &= 4x \end{aligned}$$

after 8 years

$$\text{Father} = 4x + 8$$

$$\text{Rasnid} = x + 8$$

Father will be 2.5 times Rasid's age

Given

$$4x + 8 = 2.5 \cdot (x + 8)$$

$$4x + 8 = 2.5x + 20$$

$$4x - 2.5x = 20 - 8$$

$$1.5x = 12$$

$$x = \frac{12}{1.5}$$

$$x = 8 \Rightarrow \text{Rasid's age}$$

$$\text{Father's age} = 4x$$

$$= 4(8)$$

$$= 32$$

(c)

Sol

Dice total outcomes $= 6 \times 6 = 36$

Prime no's: 2, 3, 5, 7, ...

By combinations.

$$2 : (1, 1) \rightarrow 1$$

$$3 : (1, 2) (2, 1) \rightarrow 2$$

$$5 : (1, 4) (2, 3) (3, 2) (4, 1) \rightarrow 4$$

$$7 : (1, 6) (2, 5) (3, 4) (4, 3) (5, 2) (6, 1)$$

$$\rightarrow 6$$

$$11 : (5, 6) (6, 5) \rightarrow 2$$

$$\text{Total} = 1 + 2 + 4 + 6 + 2 = 15$$

$$\text{Probability} = \frac{15}{36} = \frac{5}{12}$$

(a)

let captain's age = x

$$\text{Total Age} = 11 \times 26 = 286$$

Wicket keeper = 3 years

$$\text{remaining} = 25$$

$$\text{Total } 25 \times 9 = 225$$

So

$$x + 225 + 3 = 286$$

$$x = 286 - 228$$

$$= 58 = \text{captain's age.}$$

Question # 06

(a)

$$\text{let CP} = 100$$

$$\text{SP} = x$$

$$\text{profit} = x - 100$$

By double it

$$2x - 100$$

$$\text{Given } 2x - 100 = 3(x - 100)$$

$$2x - 100 = 3x - 300$$

$$-100 + 300 = 3x - 2x$$

$$200 = x$$

$$\text{Profit} = (200 - 100) \cdot x \\ = 100 \cdot x$$

(b)

sol

$$\text{let } x = y$$

$$\text{then } x = 1.2y$$

$$x + y = 550$$

$$x + y = y + 1.2y \Rightarrow 550$$

$$2.2y = 550$$

$$y = 250$$

$$\Rightarrow x = 300$$

$y = \text{Rs } 250 \text{ per week}$

(d)

Tickets 1 to 20

Probability that is multiple
of 3 and 5

Multiples of 3 : 3, 6, 9, 12,

15, 18 $\rightarrow 6$

multiples of 5 $\Rightarrow 5, 10, 15,$

20 $\rightarrow 4$

Common = 15

$$\text{total } 6 + 4 - 1 = 9$$

$$\text{Probability} = \frac{9}{20} = \frac{\text{multiples}}{\text{Total}}$$

(C)

Ratio $\Rightarrow 5:1$

$$\text{Area} = 216 \text{ cm}^2$$

Solⁿlet breadth x & length $= y$

$$\text{Perimeter} = 2(x+y)$$

Given =

$$\frac{2(x+y)}{x} = 5$$

$$\frac{x+y}{x} = 2.5$$

$$\frac{x}{x} + \frac{y}{x} = 2.5$$

$$1 + \frac{y}{x} = 2.5$$

$$\frac{y}{x} = 2.5 - 1$$

$$y = 1.5x$$

$$\text{Area} = x \times y = 216$$

$$= x \times 1.5x = 216$$

$$1.5x^2 = 216$$

$$\sqrt{x^2} = \sqrt{\frac{216}{1.5}}$$

$$x = 12$$

$$y = 1.5 \times 12$$

$$= 18 \text{ cm} \leftarrow \text{length}$$

SECTION - I

Q NO 3

(a) Structure and function of Human heart -

Structure

Human heart is a fist-sized muscular organ that pumps blood through out the body.

→ The heart has four chamber -

The upper two ^{chambers} the right & left atria are receiving chambers for blood. The atria are also known as **Auricles**.

The Lower two chambers the right and left ventricles are pumping chambers - these chambers pump blood into arteries, blood vessels that carry blood away from the heart.

→ Four valves in the heart are preventing blood from flowing back in the heart.

Tricuspid valve: Right Atrium →
Right ventricle

Bicuspid valve: left Atrium → left
ventricle

Pulmonary valve Right semi-lunar
valve, b/w the right ventricle & pulmonary
artery.

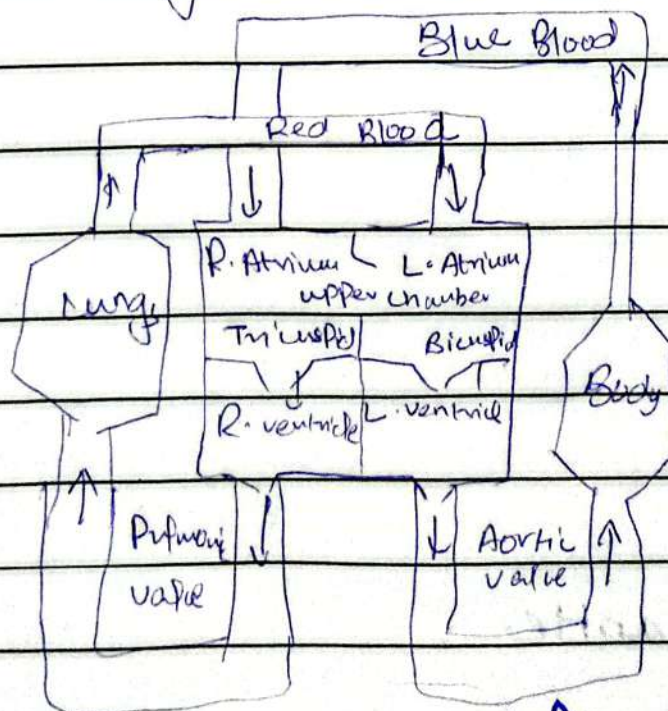
Aortic valve:

The left semi-lunar valve, b/w
left ventricle & aorta called aortic
valve.

Function :-

Pumps blood into lungs &
body.

The function of heart shown
in diagram



cardiac cycle

Regulation of blood pressure:

→ Baroreceptors

Sense pressure changes

→ Hormones (~~to brain~~) signals

like adrenaline & renin influence BP.

→ Medulla oblongata (in brain)

signals heart to adjust rate

(d)

Structure of Earth's interior & Plate Tectonics

Earth interior has 3 layers named as

Crust: Outermost layer which is 40 km thick -

- It is composed of aluminosilicates.
- Temp within crust's deepest part may reach 870°C .
- The three quarters of crust is covered with water.
- It is made up of 3 kinds of rocks - igneous, sedimentary and metamorphic.

The mantle:

The next layer is mantle made up of ferro-magnesium silicates. It is 2900 km deep.

- The upper mantle is composed of iron and magnesium silicates.
- The asthenosphere is zone of upper mantle.

- The mantle below 670 km called lower mantle.

- It consists of magnesium, iron & silicon.

- It is denser than upper mantle.

Core (outer & inner)

- The outer core is 2300 km thick while inner core is 1200 km thick.

Composition

- Outer core composed of nickel-iron alloy.

- Inner core composed of iron.

- The earth's magnetic field is controlled by liquid outer core.

How tectonic plate shape the Earth's surface?

Tectonic Plates shape the earth's surface by constantly reshaping the landscape over millions of years. They ~~are~~ constantly moves large pieces of earth's lithosphere.

(b) Biofuels, Production,
Renewable fuels made from biomass.

Its main types are Bioethanol, Biodiesel, Biogas.

Production

- Bioethanol produces by fermentation of sugars.
- Biodiesel produces via transesterification of oils.
- Biogas from animal waste.

Advantages

- Lower carbon emissions
- Waste reduction
- Renewable and sustainable
- Energy security for countries dependent on oil

Disadvantage :-

- 1- can lead to deforestation
- 2- can increase food crop diversion
- 3- land & water intensive
- 4- High cost.

Contribution :-

Recycle ~~loss~~ CO_2 through crops.

Carbon neutrality

waste to fuel.

Replaces fossil fuel use.

Utilizing waste efficiently.

(C) Factors determining food quality

• Nutritional value

• Freshness & taste.

• color, texture & appearance.

• Additives & Preservatives.

• Hygienic handling & packaging.

Importance

• Prevents illness.

• Protects public health.

• Builds consumer trust.

Tips for consumer:

- Buy from reliable sources
- Always check expiry dates.
- Cook & store food properly.
- Wash fruits, vegetable etc.
- Avoid street food.