Q 4 (a)

Tropical Cyclone

The word cyclone is derived from the Greek word, which means coil of snake. It is one of the serious disasters that cause massive damage

Characteristics

(i) ge and powerful, closed circulation system forms over the warm oceans in the tropics

(ii) ~~They~~ It has different names based on different geographical location. Hurricanes in the Atlantic, Cyclones in the Indian Ocean and Typhoons in the Pacific Ocean.

(iii) They rotate in anti-clockwise direction in the northern hemisphere and clockwise in the southern hemisphere (v) Produce strong winds and heavy rains.

Formation Process

1	Warm Ocean water	Cyclones require the warm water of at least 26.5°c in the ocean. This heats up the air and makes it warm and moist.
2	Low-Atmospheric Pressure	Then the warm and moist air rises vertically and creates the low-atmospheric pressure downward. This attracts more air from surrounding.
3	Thunderclouds	Air rising in the troposphere gets cool and condensed. It forms the cumulonimbus cloud. This process releases the latent heat which fuels the system.
4	Coriolis Effect	Due to this force, the air starts to spin fast.

The continued rising of warm air releasing latent heat and the rotation make the well structured tropical cyclone. It goes through three stages based on intensity.

(i) Tropical Disturbance where winds are weak and disorganized

(ii) Tropical depression where winds are less than 39 miles per hour (mph)

(iii) Tropical storm where winds are greater than 74 mph.

Damage to coastal communities

When the cyclone forms over the ocean, it produce heavy rains and strong winds. This will badly affect the communities near coastlines.

(i) It threatens the communities residing near coastline, citing bad weather

(ii) It may cause infrastructure and economic loss when approaches the shore.

Q 4.
(c)

Vitamins

Vitamins are organic compound. They are needed in a small quantity to support metabolism and maintain good health in a human body. There are various types of vitamins which include;

(i) Vitamin A
(ii) Vitamin B-complex (B1, B2, B3, B5 etc)
(iii) Vitamin C
(iv) Vitamin D
(v) Vitamin E
(vi) Vitamin K

Importance of Vitamin

Vitamins are micro-nutrients which are the important part of healthy diet. They play a vital role in maintaing healthy skin, hair and eyes.

(i) Vit A supports vision by improving the eye health. It also maintain skin health and repair epithelim tissue.

(ii) Vit C serves as an anti-oxidant. It protects skin from oxidation damage and make the skin tone fairs. It forms collagen in the teeth and bones and makes them strong.

(iii) Vit D helps absorb calcium, which is essential for bones, muscles and the overall health of body.

(iv) Vit E also serves as an anti-oxidant. It protect the cells from oxidant damage. It makes the eyes, skin and hair strong.

Consequences of Vitamin Deficiency

(i) Vitamin A deficiency can lead to night blindness, Keratosis and tissues degen

(ii) Vitamin B1 deficiency results in Beri-Beri, Vit B2 and Vit B3 deficiency can lead to Glossitis and Pellagra.

(iii) Vitamin C deficiency causes scurvy.

(iv) Vitamin D deficiency results in Osteomalacia and rickets.

(v) Vit E deficiency may cause anaemia, Sterility and damage to retina.

(vi) Vit K absense allow uncontrollable bleeding.

(4)

Polio

Polio is a viral disease. It affects mostly to the infants and young children. It can invade the nervous system and lead to paralysis or even death. It spreads due to the lack of proper sanitation and hygeine, access to clean water and negligence of affected individuals.

★ How it is transmitted

The Polio virus enters the body through an intake of contaminated food and water. It gets multiply in the intestine and affect the nervous system of human.

★ Global Efforts to eradicate Polio

The World Health Organization (WHO) has launched the Global Polio Eradication Initiative in 1998. It aimed to eradicate polio from every part of the world. This effort resulted in sweeping off the disease from the world except two polio-endemic countries; Pakistan and Afghanistan. The first reported 70 cases and the latter 25 cases in 2024. Both are doing efforts to expand polio vaccination coverage amid public awareness and political issues.

★ Vaccination

"Prevention is better than cure". There is no treatment of polio disease. It can only be prevented through vaccination. This helps body to build immunity against polio and leads to its complete eradication. Polio vaccines are of two types.

(i) Oral Polio vaccine, which is widely used in Pakistan

(ii) Inactivated Polio vaccine which is given by injection.

Every children needs 4 doses of vaccine to fight with this virus. First in the age of 2 months, second in 4 months, third in 6-12 months and the last booster dose at 4-6 years age.

GSA - Mock 1

72
48
24

Section - II

Q. Q05 (a)

Data:

20% student < 8 year

Let, 8 year students = x

So Student above 8 year = $\frac{2}{3}$ x = 48

T. Students = ?

Step: 1 : No. of Students of 8 years

$\frac{2}{3}$ x = 48

$= \frac{24}{48} \times \frac{3}{2}$

x = 72 students

Step: 2 : Sum of 8 years and above 8 year stude

= 48 + 72

= 120 students

Step: 3 : Since 20% student are less than 8 years, the 80% of students above and at 8 years is 120 stud

T. Students = $\frac{3}{120} \times \frac{5}{100}$

$= 80$

Total = 150 students

(b)

Let Rashid = x

Father = 3x

After 8 years.

Rashid = (x + 8) 2.5

= 3x + 8

Rashid's age = Father's age

$(x+8)\ 2.5 = 3x$

$2.5x + 20 = 3x + 8$

$20 - 8 = 3x - 2.5x$

$12 = 0.5x$

$x = \frac{12}{0.5}$

$\boxed{x = 24}$

⇒ So

Rashid's Age = 24 years

Father's Age = 80 years

⇒ After further 8 years, their ages would be;

Rashid = 24 + 8 = 32 years

Father = 80 + 8 = 88 years

Father	:	Rashid
88	:	32
22	:	8
11	:	4

$$4\overline{)11}\ (2.75$$

8

30

28

20

Father age would be of '2.75' times of Rashy after further 8 years.

(c)

$$S = \begin{Bmatrix} (1,1)(1,2)(1,3)(1,4)(1,5)(1,6) \\ (2,1)(2,2)(2,3)(2,4)(2,5)(2,6) \\ (3,1)(3,2)(3,3)(3,4)(3,5)(3,6) \\ (4,1)(4,2)(4,3)(4,4)(4,5)(4,6) \\ (5,1)(5,2)(5,3)(5,4)(5,5)(5,6) \\ (6,1)(6,2)(6,3)(6,4)(6,5)(6,6) \end{Bmatrix}_4$$

Prime Number = 2, 3, 5, 7, 11

$P(\text{Prime Number}) = \frac{P(A)}{P(S)}$

$= \frac{15}{36}$

$= \frac{5}{12}$

$= 41.667\%$

5/36

0.4166
12) 50 (
48
20
12
80
72
8

(d)

$\bar{X} = \frac{\Sigma x}{n}$

$\bar{X} = \frac{x + 26 + 29}{13}$

If the age of captain and wicke[illegible] excluded, the mean is

$\bar{X}_1 = \bar{X}_2 - 1$

Let $\bar{X} = A$, Team player = x

$A - 1 = \frac{\quad}{11}$

$x = 11A - [illegible]$ — eq 1

30.5 years

Put

$A = \frac{11A - 11 \quad 50}{13}$

$13A = [illegible] + 39$

$2A = 39$

$A = \frac{39}{2}$

$\boxed{A = 19.5}$

The average age of whole team is 19.5

Ans

180
-18
162
18
144

Q.7

(a)

Data giv.

$0.05A + 0.04B = \frac{2}{3} \times (0.06A + 0.08B)$

$0.05A + 0.04B = \frac{0.12}{3}A + \frac{0.16}{3}B$

$0.05A + 0.04B = 0.04A + 0.053B$

$0.05A - 0.04A = 0.053B - 0.04B$

$0.01A = 0.013B$

So their Ratio of A and B

$\frac{A}{B} = \frac{0.01}{0.013} = \frac{1}{13}$ Ans

(b)

To a two-digit numbers,

$T = T$

$U = T+2$

$(T \times U) * (T+U) = 144$

$(T \times (T+2)) \times (T + T+2) = 144$

$(T^2 + 2T) \times (2T+2) = 144$

$2T^3 + 2T^2 + 4T^2 + 4T = 144$

$2T(T + T + 2T + 2) = 144$

$2T(4T + 2) = 144$

Using Quadratic equation method, we put $T = 4$

$2(4) \times [4(4) + 2] = 144$

$8 \times (16 + 2) = 144$

$8 \times 18 = 144$

$144 = 144$

If $T = 4$ so $U = 4 + 2 = 6$ Ans

The number is 24.

(c)

A : B : C : D

5 : 2 : 4 : 3

C's share = D + 1000 — eq 1

B's share = ?

Sum of Ratios = 5 + 2 + 4 + 3 = 14

$$\frac{C}{D} = \frac{4}{3}$$

$$\frac{D + 1000}{D} = \frac{4}{3}$$

$3D + 3000 = 4D$

$D = 3000$

C's share = 3000 + 1000

C's share = Rs 4000

Total Amount to be distributed is;

$T = \frac{14}{4} \times 4000$

$T = 14000$

B's share = $14000 \times \frac{2}{14}$

B's share = Rs. 2000

(d)

Let age of son = x

Father's age = $2x$ = 38 years

$x = 38/2 = 19$ years

Five year back, son's age would be:

Son = $x - 5$

= $19 - 5$

Son = 14 years

2