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General Science and Ability

Q No.3

a) **Cyclone**

A cyclone is a result of a thunderstorm and intense wind. Cyclone occurs in a sea. The part of cyclone winds which are the strongest and most destructive are the inner most winds. Heavy rainfall also contributes to cyclones. Water bodies such as the Arabian Sea and the Persian gulf have witnessed cyclones.

The strongest and destructive part of cyclone winds

The inner most part of cyclone winds is the most destructive and the strongest part of these winds.

b) **Shallow Focus**

Shallow focus is that part of an earthquake which is not too deep. An earthquake which takes place on the surface or in a superficial manner has a shallow focus. The magnitude of an earthquake with a shallow focus is low. The intensity and destructiveness are also low.

Deep focus

Deep focus earthquakes are intense and destructives in nature. The deep focus part of an earthquake goes deep in to the surface of the place it is affecting. The implications of a deep focus earthquake are quite alarming and concerning, as they can be very damaging.

Causes of Earthquake

Earthquakes are caused by the movement of rocks under the surface of the earth. When there are movements under earth's surface, the result is an earthquake. Moreover, shifting of tectonic plates also result in an earthquake.

The magnitude of earthquake in Morocco recently

The magnitude of earthquake in Morocco recently was around 2.5. This is a huge magnitude and must be thoroughly analyzed in order to determine the causes of the earthquake.

C Dengue Fever

Dengue fever is disease born out of a bacteria.

The primary causes of Dengue fever:

When a female mosquitoes infected with dengue bites a person, the person gets infected with dengue fever.

These female mosquitoes are usually found in contaminated water especially in unclean or slum areas.

Moreover, when a person eats contaminated food or drink contaminated water, he or she could get infected with this fever.

Preventive measures that can be taken to avoid Dengue infection:

i) Not leaving unclean water open for long periods of time.
ii) Taking care of the hygiene of a place where water is used.
iii) Keeping food items covered.
iv) Keeping water covered.
v) Conducting fumigation activities
vi) Applying mosquito prevention techniques at home and at work.

d)

Ionic bonds	Covalent bonds
There is a tranfer of electrons	There is a sharing of electrons
They exist in solid state	They exist in three states - Solid, liquid, gases.
They have high melting and boiling point	They have low melting and boiling point
They are soluble in water	They are generally insoluble in water.
Ionic bonds are good conductors of electricity	They are insulators, i.e. they do not conduct electricity
Example: NaCl (Sodium Chloride) $CaCO_3$ (calcium Carbonate)	Example: H_2O Cl_2 (Chlorine gas)

b)

Q. No. 4

Causes of Land pollution

(a) There are several causes of land pollution:

i) Dumping of wastes leads to land pollution.

ii) Landfills leads to Land pollution

iii) Improper semerage system also causes Land pollution.

iv) Poor infrastructure also results in land pollution

v) Over urbanization and excessive buildings also lead to land pollution.

(b) Main goals of the COP-27

COP-27 which was held in Egypt had the following main goals:

i) Reducing the carbonfoot print of the most carbon producing countries of the world

ii) Investing more in renewable energy sources.

iii) Controlling the over all rise in the temperature of the world.

iv) Protecting the most climate vulnerable countries of the world

v) Increasing collaboration in areas such as climate, environment and sustainable energy.

Role of GIS in environmental science

GIS refers to graphic interface system. It has a critical role in environmental science:

i) It is useful for environmental navigation.

ii) It can be used for searching areas and lands which are under-developed or underutilized.

iii) Sites which are unsafe or prone to external threats and atmospheric hazards.

iv) It can help reach areas which are difficult to reach physically.

v) It can be used for the purpose of sustainable development without any harm to the environment.

vi) Environmental protection initiatives can be undertaken with the help of GIS.

d. The fundamentals of artificial intelligence

i) Artificial intelligence is the use of machines and technology to perform complex tasks.

ii) Analytics is an important aspect of artificial intelligence as it helps predict future trends and make decision easier.

iii) Machine learning and the Internet of Things are part of artificial intelligence.

iv) Artificial intelligence is useful for forecasting and minimizing risk

v) This intelligence makes use of algorithms and advanced technology to perform time-consuming and multi-dimensional tasks.

vi) Artificial intelligence is improved through a process of trial and error.

Section-II

Q.No.6

a.

(i) 10, 100, 200, 310 — 430 Ans//

(ii) 3, 7, 23, 95 — 479 Ans//

(b)

$3x - y + 2x + y + 2x - 3 = 114$

$7x - 3 = 114$

$9x - 6 = 114$

$9x = 114 + 6$

$9x = 120$

$x = \frac{40}{3}$

$3x - y = 2x + y$

$3x - 2x = 2y$

$\frac{x}{2} = y$

$\frac{\frac{40}{3}}{2} = y$

$\frac{40}{3} \div 2 = y$

$\frac{20}{3}$

$\frac{40}{3} \times \frac{1}{2} = y$

$y = \frac{20}{3}$

$2\left(\frac{40}{3}\right) - 3 \times \left(2\left(\frac{40}{3}\right) + \frac{20}{3}\right)$

$\frac{\frac{80}{3} - \frac{3}{1}}{3} \times \frac{80 + 20}{3}$

$\frac{80 - 9}{3} = \frac{71}{3} \times \frac{100}{3} = \frac{7100}{9}$

Area $= \frac{7100}{9}$ cm2 Ans//

2	210
2	105
3	25
5	5
5	1

2	252
2	126
7	63

2	210
3	105
5	35
7	7
	1

2	252
2	126
7	63
3	9
3	3
	1

2	294
7	147
7	21
3	3
	1

$= 2 \times 3 \times 7 = 42$

42 cartons needed Ans//

Qe. No. 7

$P = X$ $\quad P_1 = X - X \cdot 20$

$P = X + X \cdot 20$

$P = 1.20X$

$X + X \cdot 20 = 80 + X - X \cdot 20$ ~~+80~~

$X - X \cdot 20 + 80 =$ New Price

$$x + x \cdot 20 = 80 + x - x \cdot 20$$

$$x \cdot 20 + x \cdot 20 = 80$$

$$x \cdot 40 = 80$$

$$x = \frac{80}{.40}$$

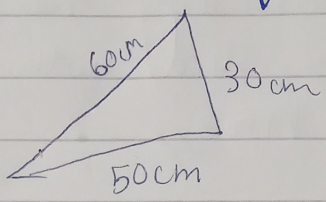
$x = 200$ Ans//

6. BROTHER = ⊙DCGSNQA

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y
Z				

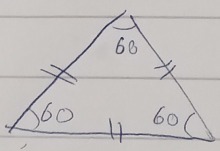
SISTER = ⊙DSRHR ~~QA~~

c) Scalene Triangle



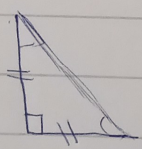
In a scalene triangle all sides are of different length.

ii) Equilateral Triangle



In an equilateral triangle all sides are equal.

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



A triangle which is isosceles and right at the same time would have one different side, while two of the sides of the triangle would be the same. One angle would be 90° and the remaining

two would be 45° and 45° Ans//

d) The probability she will pick a slice with raisin = $\frac{3}{8}$ Ans//