

**QUESTION # 2**

Part a:

COP 28, Conference of parties, holds each other year in different countries. It is the conference hold under the auspices of UNFCCC. It has 198 countries. This include all countries of UN and EU. This year's COP held in Dubai. Following are the key features of COP 28 in context of Loss and damage fund and some other financial issues of developing countries

**(i) LOSS AND DAMAGE FUND:**

Loss and damage fund is the fund that is meant to compensate the losses of countries which do not contribute to global emission at considerable level but has to bear the brunt of climate crisis.

This year's COP made a breakthrough by reaching to an agreement of establishing the fund. The first success of COP 28 is the agreement on loss and damage fund. The president of COP 28 pledged \$100mn, Germany donated \$100 million, EU contributed \$256mn, USA contributed \$17.1 million and Japan contributed to about \$7.2 million. All these contribution accounted for \$700mn. However,

This fund is not enough to compensate the losses of developing countries. According to an estimate it is 0.2% of fund required.

### (ii) FOOD AND AGRICULTURAL ASSISTANCE:

Around 198 countries endorsed the 'Emmanti Food and Agriculture initiatives'. This initiative has two purposes - First is to reduce the emissions from agriculture sector and make the practices of agriculture sustainable - Second one is to address the food insecurity in developing countries - Food insecurity is rampant in developing countries - Most of the countries lack resources to address the issue of food crisis

### (iii) CLIMATE, RELIEF, RECOVERY AND PEACE:

Another initiative that was taken is climate, relief, recovery and peace - This initiative outline a non-binding call to governments, international institutions and NGOs to address climate crisis in those countries first that are plagued in conflicts and facing humanitarian

Date \_\_\_\_\_

Crisis. Most of the developing countries lack fund to address the humanitarian crisis. Poverty, diseases, unemployment and violence is at a rise in these countries. This initiative would prove lifeline for these countries.

## Part b

Management :  
Solid Waste ~~handling~~ is the systematic handling, collection, transportation, treatment and disposal of waste.

### AIMS OF SOLID WASTE MANAGEMENT:

- Reduction in the volume of waste
- Protect the environment from waste through safe handling
- Protect people from the waste.
- Convert waste into useful material, if feasible
- Generate economic value from waste

### METHODS OF WASTE MANAGEMENT:

Following are the methods of waste management

#### 1) Generation:

Waste is generated through different activities of human. This is the waste which is to be handled

in subsequent steps.

### ③ Storage:

The waste that was generated is temporarily stored in the 'near by' facility. This can be stored in bins, Carbage bags and other suitable Storage Facility

### ④ Collection:

The waste is collected from temporary storage site by the staff of municipal. This task is generally performed by government-with the help of municipal department. Efficient and periodic collection are the most prominent features of effective waste management.

### (4) Transportation:

The collected waste is transferred to central authority. This is done with the help of different vehicles. The size and type of vehicle depend upon the volume of waste, nature of waste and distance to be travelled.

### (5) Treatment of waste:

In this <sup>step</sup> treatment of waste take place. All the material that can be

recycled are separated from other-  
Moreover, precious component from  
waste are sorted. Different types  
of wastes are separated for  
different disposal method.

### (6) Disposal:

This is the last <sup>step</sup> method in waste  
management. This ~~subject~~ is meant  
to either convert waste into some  
other material or store it in some  
safe place. There are different methods  
for disposal. This includes incineration,  
composting, open dumping and land  
filling.

### Part C

Balanced diet is the diet that  
contain sufficient proportions of  
all the essential nutrient required  
for the proper functioning and grow-  
th of the body.

### CONSTITUENTS OF BALANCED DIET:

Balance diet must contain following  
items

- 1) Proteins
- 2) Carbohydrates
- 3) Fats
- 4) Mineral

## 5) Vitamins

The body of human beings require all these substances in proper amount. Each of the material is responsible for performing specific function of the body. The absence of any essential substance from diet would jeopardize the whole body functioning. Therefore, balanced diet is necessary for living a healthy life.

## Part d:

CPEC is the Flagship project of BRI. It was started in 2015. Although, it was mainly focused on non-renewable project; yet, it also established some of the renewable project. Following are the renewable energy resources under CPEC.

- 1) Wind power
- 2) Solar power
- 3) Nuclear power

## 1) WIND POWER:

Wind power is the energy that is harnessed from the moving air. Wind rotates the wind turbine. Wind turbine is connected to rotor which is connected to the

shaft of generator. As the shaft of generator moves, electricity is generated. Thus, wind energy or kinetic energy is converted into mechanical energy which is transformed into electrical energy. There are many wind power projects under CPEC. These are Sukhi Kinari, Karote and many other.

## 2) SOLAR POWER:

Solar power is the energy generated from the light of sun. Photovoltaic cells are placed on roof tops where they can receive sunlight. When sunlight fall on them, they convert it into electricity. This electricity can be supplied to homes, offices and industries. Batteries can also be used for storing this electricity which can be used in night time or in rainy weather. Solar power project under CPEC is Qandahar Azam solar power plant.

## 3) NUCLEAR POWER:

Nuclear power is the energy generated from the nucleus of an atom. Fissile material such as Uranium is required for producing electricity. As the electron hit the element, fission reaction is started which generates heat. This heat is used to run the turbine for electricity generation or used for heating purposes.

## QUESTION 4

Part a:

Earth crust is covered with plates - tectonic. These plates are continuously moving. As the plates are moving, they rub against each other, spread apart in other places and sink beneath each other in some places. Motion at these place is not smooth. Although the plate is continuously moving but the rock at the edges start distorting. A point ~~come~~ comes when these rocks cannot withstand further bending. With an abrupt move, the rock break. Earthquake is the shaking radiating from the breaking of rock.

There can also be some other causes. These are iso-static plate adjustment, construction work through nuclear detonation and ~~the~~ volcanic eruption.

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### TSUNAMI:

Tsunami is the series of water waves generated due to rapid displacement of sea bed. Tsunami can occur due to undersea quake, undersea volcanic eruption, undersea land slide and

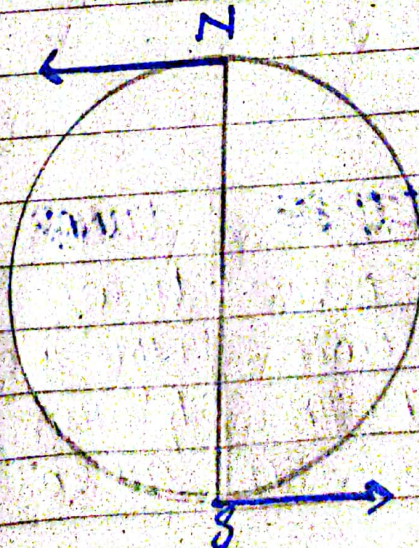


metres hitting ocean:-  
**TSUNAMI DUE TO EARTHQUAKE:**  
Almost 80% of tsunamis occur due to undersea quake. For tsunami to occur due to earthquake, following condition must be satisfied.

- 1) Focus of earthquake should be near to coastal belt
- 2) The intensity of quake should be more than 7 or 7.5 on Richter scale. This is because only the earthquake of this intensity can displace the seabed.
- 3) The seabed must be uplifted and then lowered - side to side movement of seabed does not cause tsunami.

### Part 6:

Coriolis effect is the motion due to spinning of Earth. Due to the spinning of Earth, the force moves object to right in northern Hemisphere and to the left in Southern Hemisphere.



## GENERATION OF HURRICANE:

Generation of hurricane occur due to two phenomena - First is the pressure gradient and other is Coriolis force.

When sunlight falls on ocean, it evaporate some water. This water is converted into vapour. These vapour travel upward into atmosphere - As they rising, they experience lower temperature at some point which leads to condensation of these water vapour.

The air present there rises upward which cause pressure difference. Air from surroundings diffuse in 'due to' pressure gradient. This phenomena then continues. Due to Coriolis effect ~~the~~ moving air currents are deflected toward right in northern hemisphere and toward left in southern hemisphere. This result in the formation of rotating column of air from right to left which is called as hurricane.

## Part C :

### SOLAR ECLIPSE

- 1) Solar eclipse occur when moon comes in between Earth and sun.

### LUNAR ECLIPSE

Lunar eclipse occur when earth comes between sun and moon.

2) Moon casts its shadow on Earth	Earth casts its shadow on moon
3) Occurs after every 18 month	Partial lunar Occurs twice a month
4) Not safe to look at	safe to look at
5) It has following types: total solar eclipse, partial solar eclipse and Annular solar eclips	It has following types: Penumbra lunar eclipse, Umbra lunar eclipse and Partial Penumbra lunar eclipse

## Part d

Semiconductors are materials that conduct electricity partly which means their conductivity lies between conductors and insulators. Semiconductors are made of element that contains 4 electrons in valance shell that are bound to each other. These can be silicon, germanium, and etc.

### DOPING:

Doping is the process where by an impurity is added in semiconductor. This is done to change the conductivity of semiconductor. The material that is added is dopant. The dopant

can be from  $\text{II}$  or  $\text{III}$  or  $\text{V}$  group of periodic table. If element of  $\text{III}$  group is added as dopant then it result in the formation of N-type semiconductor because it can give free electron in its structure. However, if element from  $\text{V}$  group is added as dopant, it result in the formation of P-type semiconductor because it has hole in its structure.

## DIFFERENT TYPES OF CERAMICS

Ceramics are inorganic and nonmetallic material made up of clay that are hardened and shaped into desired structure. There are different types of ceramics.

### (1) Traditional Ceramics

Traditional Ceramics are those that are used in ordinary application. These are following

- Cement
- Abrasives
- Pottery, dinnerware

### (2) Modern Ceramics

Modern Ceramics are those that are used in modern application. These have certain properties that make suitable for specific purposes. Following are these.

## Modern Ceramics

Electro ceramic

→ Optical Ceramics

→ Magnetic Ceramics

→ Conductive Ceramics

Advanced  
Ceramics

→ Bio Ceramics

→ Nuclear

Ceramics

→ Nuclear

Ceramics

## TYPES OF CERAMICS ON THE BASIS OF COMPOSITION:

- (i) Oxides: This contain zirconia and alumina
  - (ii) Non-Oxide: This contain carbides and boride
  - (iii) Composite: This is the composite of both.
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# SECTION - II

Date

## QUESTION 6

### Part a

Let the age of father is  $x$

The correspondance of ages of father and son 5 years ago

$$x-5 = 3(y-5)$$

where  $y$  is age of son

As the age of son is 30 years

now

$$x-5 = 3(30-5)$$

$$x-5 = 3(25)$$

$$x-5 = 75$$

$$x = 80$$

### Part b

$$\text{Mean} = \frac{x_1 + x_2 + \dots + x_{n-1} + x_n}{n}$$

As mean in given condition is 50

$$50 = \frac{10 + 30 + Y + 50}{4}$$

$$200 = 90 + Y$$

$$Y = 200 - 90 = Y$$

$$Y = 110$$

## Part c

(i)  $2, 6, 18, 54, x$

$2 \times 3 = 6$

$6 \times 3 = 18$

$18 \times 3 = 54$

$54 \times 3 = 162$

$x$  is  $162$

(ii)  $3125, 256, x, 4, 1$

$5^5 = 3125$

$4^4 = 256$

$x = 3^3 = 27$

$2^2 = 4$

$1^1 = 1$

So  $x$  is  $27$

## Part d

Let 2 numbers are  $x$  &  $y$ Product of two numbers is  $x \cdot y = 320$  — (i)Ratio of two number is  $\frac{x}{y} = \frac{1}{5}$  — (ii)

$x = \frac{y}{5}$  — (from (ii))

Put in (i)

$\frac{y}{5} \cdot y = 320$

$y^2 = 1600 \times 5$

$$y^2 = 400 \cdot 1600$$

$$y = 400$$

$$x = \frac{400 \cdot 80}{8}$$

$$x = 80$$

Difference between squares of  
numbers

$$y^2 = 400 \cdot 1600$$

$$x^2 = 64$$

$$y^2 - x^2 = 1600 - 64$$

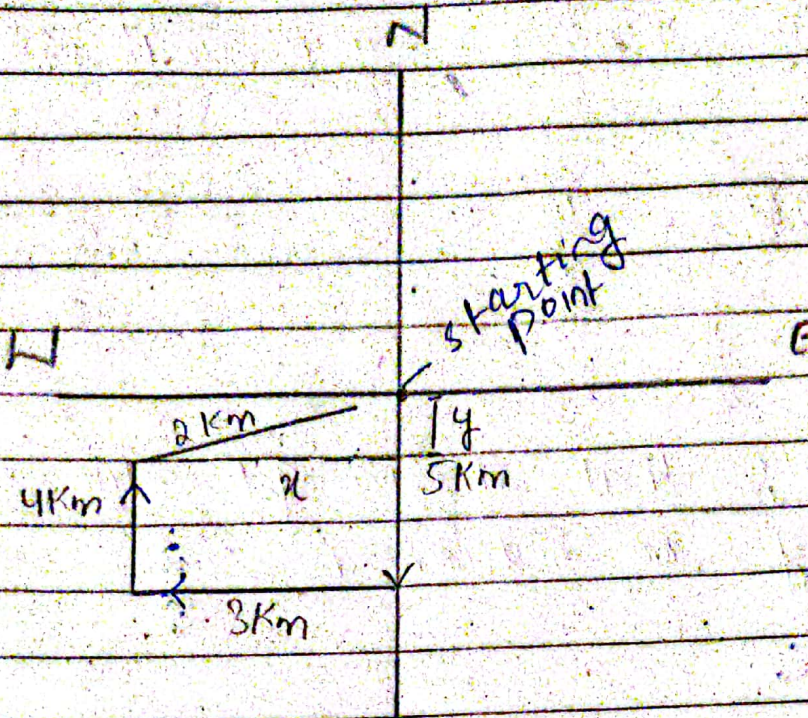
$$\boxed{y^2 - x^2 = 1536}$$





# QUESTION 8:

Part a:



$$\text{As } x = 2 \text{ km}$$

$$\text{and } y = 5 \text{ km} - 4 \text{ km}$$
$$y = 1 \text{ km}$$

Applying pythagoras theorem

$$H = \sqrt{B^2 + D^2}$$

$$H = \sqrt{2^2 + 1^2}$$

$$H = \sqrt{4 + 1}$$

$$H = \sqrt{5}$$

As the crow has travelled 2 km toward south east so crow is  $(\sqrt{5} - 2)$  km from point of start

Part b:

Pizza is divided into 8 slice, so

$$n = 8$$

3 slices contain housin in it, so

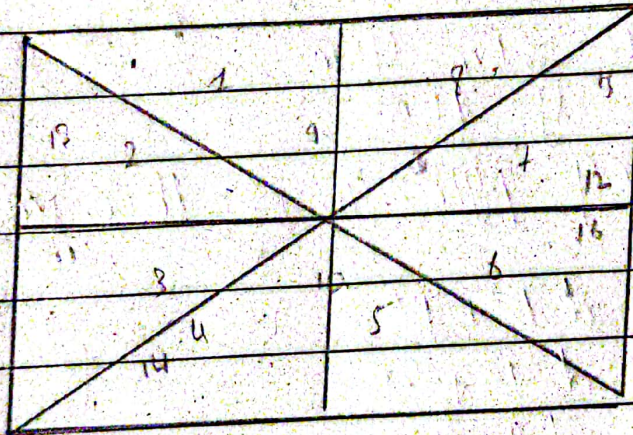
$$m = 3$$

$$\text{Probability} = \frac{m}{n}$$

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

Probability that shazra get slice containing ~~no~~ housin is  $\frac{3}{8}$

Part c



Formula is number of diagonals

$\times$  number of blocks

number of ~~blocks~~ diagonals

are 2

number of blocks are 8

$$\text{number of triangles are} = 8 \times 2 = 16$$

### Part d:

There are different factors that can affect IQ

- 1) Dietary habits
  - 2) Life style
  - 3) Frequency of using brain for some cognitive tasks
  - 4) Hereditary characteristics
  - 5)
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