

General Science and Ability

Part - II

Section - I

Question #02

Part (a)

COP-28 Key Features in Context of Loss and Damage Fund:

1. Introduction to COP28:

Conference of Parties (COP)'s 28 meeting was held in UAE from 30th November, 2023 to 12th December, 2023 under the United Nations ~~the~~ Framework of Convention on Climate Change. The main agenda of COP-28 was climate finance and phasing out of fossil fuels from the globe within next few decades. The meeting was hosted in Dubai.

2. COP 28 and Climate Finance:

COP 28's primary focus was on the activation of Loss and Damage Fund that was pledged in COP-27. The Loss and Damage Fund is a financial loan and investment program for the developing countries that are stuck by climate crisis.

3. Pledges at COP28 regarding Loss and Damage Fund:

Loss and Damage Fund was established in COP27. Pakistan played an active role in the formation of this fund. Loss and Damage Fund was not disbursed to the developing countries. However, in COP-28, various developed nations and intergovernmental organization's banks have pledged to finance Loss and Damage Fund. Germany, France and Canada are among prominent countries to donate. Asian Development Bank has also contributed in Loss and Damage Fund.

Part (b)

Solid Waste Management and its different Methods:

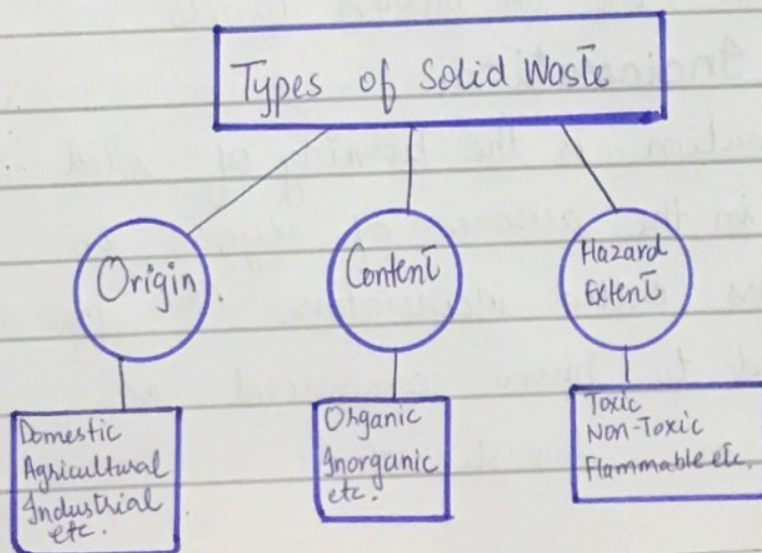
1) Introduction to Solid Waste Management:

Solid waste management is the process of generation, collection, recovery and disposal of solid wastes. Solid waste management (SWM) is a huge governance issue in various developing countries.

2) Categorisation of Waste:

Solid waste management is ~~also~~ performed by categorising waste into different types and then implementing the specific method of disposal for that category.

Solid waste is categorised on the basis of content, origin and hazardous nature of waste.



3) Methods of Solid Waste Management:

There are different methods of solid waste management which include:

3.1: Open Dumping 3.2: Incineration

3.3: Composting 3.4: Landfilling

Apart from the above mentioned methods, there are some other methods to dispose solid waste. These include pyrolysis, combustion and burning in open air.

A brief introduction of these methods has been given below.

3.1: Open Dumping:

Open dumping is the disposal of solid waste in open air. In 1992 Rio Declaration, it was declared that open dumping sites must be away from residential areas, commercial areas, and crop lands. Open dumping must be done on barren lands.

3.2: Incineration:

Incineration is the burning of solid waste in the absence of oxygen in reactors called incinerators. This process is used to burn commercial as well as domestic waste.

3.3: Composting:

It is the process of decomposition of organic and biodegradable solid waste. Composting produces the end product called compost which is used as ~~for~~ fertilizer.

~~3.3~~ 3.4: Landfilling:

Landfilling is the most eco-friendly solid waste management method. Landfilling is the burial of waste in land pits.

Landfilling is the process in which solid waste is buried underground.

Solid Waste Management requires an efficient governing structure for better results.

Part(c)

Balanced Diet

Balanced diet is the diet containing all necessary nutrients that are essential for human body. A balanced diet is full of foods that provide all essential micronutrients as well as macronutrients.

Part(d) Three Renewable Energy under CPEC

1. Introduction to Renewable Energy Resources and CPEC:

Renewable energy resources can be defined as the sources of energy that can be replenished and that do not deplete over the passage of time. In Pakistan, various renewable energy resources have been developed under CPEC. China Pakistan Economic Corridor is a network of transport and railway infrastructure from China to Pakistan. Under CPEC, various renewable energy plants have been established in Pakistan. These are mentioned below:

2. Solar Power Plants :

Solar energy is the most significant form of renewable energy. Solar panels are installed to convert solar energy in electric energy. Under CPEC, a major solar power plant has been established in Bahawalpur. The solar panel parks have also been founded in other parts of Pakistan.

3. Hydro Power Plants:

Generating energy from water waves is also a renewable energy resource named as hydroelectric power. Under CPEC, power plants and dams have been built. Diamer Bhasha Dam and the Hydropower plant associated to it have been built under CPEC.

4. Wind Power Plants:

Wind power plants generate energy by means of wind mills. Wind mills must be installed in remote coastal areas as they produce noise which disturbs residential areas. These are the renewable energy sources in Pakistan available under CPEC.

Question #05

Part (a)

Difference between RAM and ROM

RAM

RAM stands for Random Access Memory.

It is temporary in nature as it is removed once the system stops operating.

It is ~~not~~ volatile in nature.

It can be accessed by any user.

ROM

ROM stands for Read only Memory.

It is permanent in nature as the instructions are built in the CPU.

It is ~~not~~ non-volatile in nature.

It is only readable by the system itself.

Part (b)

Artificial Intelligence has Revolutionized the World

Artificial Intelligence has been considered as the most significant technological breakthrough of this era. AI has revolutionized the world due to its remarkable contribution in the technological as well as routine based activities. AI has enabled humans to replace routine-based activities with AI operated robots. Driverless vehicles are also operated via AI.

The world has been progressing at a fast pace due to AI. It has been estimated that in upcoming years, AI will be able to replace humans in various manual as well as office based tasks.

Part (c)

Working and Advantages of Optical Fibre

1) Introduction to Optical Fibre:

Optical fibres are the thread-like delicate glass structures that are used to transfer data at a high speed as light. Optical fibre is used to transfer data at long as well as short distances.

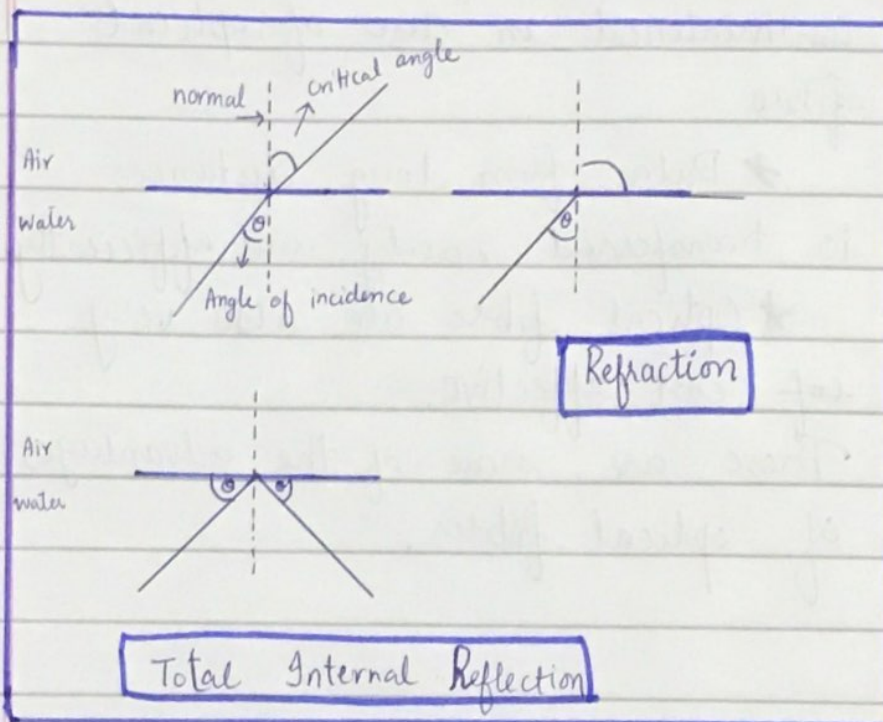
Optical fibre has two main parts:

- (i) Core: central part of optical fibre with high density and high refractive index
- (ii) Cladding: part that surrounds the core and has less refractive index and density as compared to core.

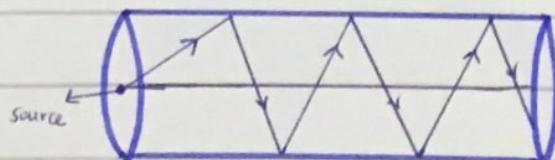
2) Working of Optical Fibre:

Optical fibre works on the principle of total internal reflection. When a ray refracts, it bends from normal. The incident angle is different from critical angle.

When the angle of incidence becomes same as the critical angle, light starts to reflect in the same medium. Optical fibre works on the same principle.



Optical fibre works when the source ray totally reflects internally in the core. The angle of incidence and critical angle are of approximately 42° for optical fibre.



3) Advantages of Optical Fibre:

Optical fibre has a lot of advantages which include

- * Transmission of data at a high speed.

- * Security of data is also unthreatened in case of optical fibre.

- * Data from long distances is transferred easily and efficiently.

- * Optical fibre are also very cost effective.

These are some of the advantages of optical fibres.

Question 06
Part (b)

Data:

$$\text{Mean of } 10, 30, Y \text{ and } 50 = 50$$

To Find:

What is the value of $Y = ?$

Solution:

$$\text{Mean} = \frac{\text{Sum of all values}}{\text{Total number of values}}$$

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

$$50 = \frac{90 + Y}{4}$$

$$\frac{90 + Y}{4} = 50$$

$$90 + Y = 50 \times 4$$

$$90 + Y = 200$$

$$Y = 200 - 90$$

$$Y = 110$$

$$\begin{array}{r} 110 \\ 50 \\ 30 \\ 10 \\ \hline 200 \\ 4 \end{array}$$