

Part II

Section - I

Q No: 2

(a) COP 28

COP28 stands for Conference of parties 28 which was held from 30 November to 12 December 2023 at Expo City, Dubai. It was held under the United Nations Framework Convention on climate change. It was one of the most important meetings regarding the climate change because there were some important agreements including loss and damage fund.

Loss and Damage Fund.

COP28 began with a historic agreement on a loss and damage fund to help developing countries cope with the effects of climate change. Several countries have pledged money to the fund, including United Arab Emirates, Germany and United States.

While there is no formal UN definition of loss and damage, it is generally understood to encapsulate climate change impacts that cannot be addressed by mitigation or adaptation efforts. For developing countries and small island states, the consequences of stronger storms, rising sea levels, increasing temperatures and other climate-related phenomena will be difficult to endure so the concept of a loss and damage fund is to provide monetary aid to those in need.

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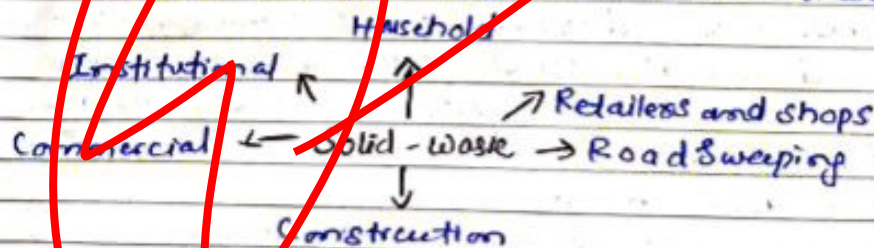
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Key Elements

- The creation of a new and independent Secretariat and governing board
- The designation of the World Bank as interim trustee and fund host for a four-year period
- Approval of the governing instrument by the fund which provides factors to be considered in allocating resources.
- Notable funding pledges:
 - \$100m UAE
 - \$100m Germany
 - £60m United Kingdom
 - \$17.5m United States
 - \$10m Japan
 - €225m from the European Union

(b) Solid-waste Management:

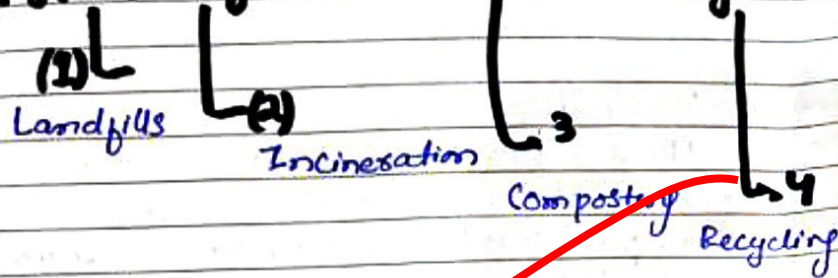
Solid waste management denotes to the process of collecting, treating and disposing of solid wastes. Solid waste can be domestic, agricultural or industrial. Basically solid-waste refers to all non-liquid wastes. It includes solids or semi-solids and non-soluble materials.



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TYPES of Solid waste management



(1) Landfill

It involves burying the waste in vacant locations around the city. The dumping site should be covered with soil to prevent contamination.

Benefit: A sanitary disposal method if managed effectively.

Limitations: A reasonably large area is required.

(2) Incineration

It is the controlled oxidation (burning/thermal treatment) of mostly organic compounds at high temperatures to produce thermal energy, CO_2 and water.

Benefit: Burning significantly reduces the volume of combustible waste.

Limitations: Smoke and fire hazards.

(3) Composting

It is a natural process of recycling organic matter like leaves and food scraps into beneficial fertilizers that can benefit both soil and plants.

Benefit: It is beneficial for crops and it is an environmental-friendly.

Limitations

- Required high-skilled labours for large-scale operations

(4) Recycling:

It is a process of converting waste material into new material.

Examples: wood recycling, paper recycling and glass recycling.

Benefit: It saves resources and it is an environmental-friendly method.

Limitation: It is expensive to set up and not reliable in case of an emergency.

(5) Vermicomposting:

It is a bio-conversion technique that is commonly used to handle solid waste. Earthworms feed on organic waste to reproduce and multiply in numbers, vermicompost, and vermicast as products in the bio-conversion process.

Benefits: It reduces the need for chemical fertilizers and enhances plant growth.

Limitations: It is time-consuming, cost ineffective and requires extra care.

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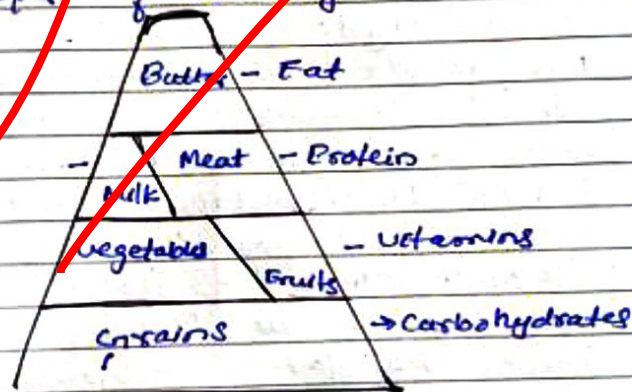
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Balanced Diet

Balanced diet refers to the food which fulfills a person's all nutritional needs. It is composed of the five food groups in varied amounts including: vegetables, fruits, grains, protein and dairy. Humans need a certain amount of calories and nutrients to stay healthy. Balanced diet provides a healthy life and prevents the diseases. It maintains or improves overall health. Balanced diet supplies the nutrients to body for proper functioning.



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(2)

Renewable Energy Sources

Renewable source of energy is the source which is replenished by the nature on human scale time. It will never run out from the planet. Moreover, renewable sources of energy are environmental friendly as they are carbon free.

Under the China-Pakistan Economic Corridor mainly three types of renewable energy sources are being harnessed:

- 1- Solar Energy
- 2- Wind Energy
- 3- Hydropower Energy

For the time being, renewable represents only a small portion of Pakistan's power generation mix. Of a total 43,775 MW, installed capacity for wind and solar represents around 4.2% (1831 MW) and 1.1% (630 MW) respectively, according to the National Electric Power Regulatory Authority's State of Industry 2022 report. Under CPEC China aims to produce 2500 MW of renewable energy in Pakistan through solar, wind and hydro power sources.

① Wind Energy

Wind is technically a form of solar energy. When the sun's radiations heat Earth's uneven surface, hot air rises and cool air settles.

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this difference in atmospheric pressure creates wind, a kinetic (motion-based) form of energy. Wind turbines capture that kinetic energy. When wind blows over the turbine's blades, its generator converts the energy of the rotating blades into mechanical power which can then be converted into power to pump water or provide electricity.

Projects Under CPEC: Jhimra Wind Farm 100 MW, Saehal Wind Farm 150 MW and Dawood Wind Farm 150 MW

③ Solar Energy

Solar energy is the solar radiation that reaches Earth when sunlight hits the photovoltaic (PV) cells inside solar panels, these cells transform the solar radiation into electricity.

Projects under CPEC:

- Quid-e-Mam Solar Park Bahawalpur
1000 MW

④ Hydro Power

Hydropower, also known as water power, is the use of falling or fast-moving water to produce electricity or to power machines. This is achieved by converting the gravitational potential or kinetic energy of water source to produce power.

Projects under CPEC: Suki Kinari 884 MW.

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- Kohalala Hydropower project 1124 MW
 - Azad Pathan Hydropower project 700-7 MW.

Q No 5'

(a) Distinguish between

RAM

ROM

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| <p>1- It stands for random access memory</p> <p>2- Temporary storage</p> <p>3- Store data in NBS</p> <p>4- Volatile</p> <p>5- Used in normal operations</p> <p>6- Writing data is faster</p> <p>7- Requires flow of electricity to retain data</p> <p>8- Larger size with higher capacity</p> <p>9- Used for both read and write</p> <p>10- Costlier</p> <p>11- Very fast but uses lot of power</p> <p>12 Used in CPU cache, primary memory</p> | <p>1- It stands for read only memory</p> <p>2- Permanent storage</p> <p>3- Store data in GBS</p> <p>4- Non-volatile</p> <p>5- Used for startup process of computer</p> <p>6- Writing data is slower</p> <p>7- Does not require flow of electricity to retain data</p> <p>8- Small size with less capacity</p> <p>9- Used only for reading</p> <p>10- Cheaper than RAM</p> <p>11- Fast and uses very little power</p> <p>12 Used in firmware, microcontrollers.</p> |
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-nible

In computing, a nibble is a four-bit aggregation, or half an octet. It is also known as a half-byte or a tetrade. The term nibble also carries on the "edible data". Because a nibble is made up of binary data, each of the four digits is either a 0 or 1 in any combination. The total number of possible combinations is 16, calculated as 2^4 .

In computing a nibble is a unit of measurement for digital files that consists of half of a byte.

-USB

USB or Universal Serial Bus, is a mechanism used to connect peripheral devices to computers. First introduced in 1996, the USB standard was developed by a number of American companies including IBM, Intel Corporation and Microsoft Corporation, as a simple way of connecting hardware to PC. A USB port represented a standardized way to connect a wide range of devices while offering significant advantages in speed over other connection types.

(b) How AI Revolutionized the world?

AI, artificial intelligence is the intelligence of machines or software, as opposed to the intelligence of humans or animals. It is a field of study in computer sciences that develops and studies intelligent machines. It is the simulation of human intelligence processes by machines, especially computer systems. It is the ability of a computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.

AI has revolutionized the world. Basically, AI has played a major role in the digitalization of society, as it has enabled one to collect, process, and analyze large amounts of data at a faster rate than ever. This has led to the creation of new technologies, improved business processes, and greater efficiency in many industries.

(c) Optical Fibre:

Fiber optics or optical fiber, refers to the technology that transmits information as light pulses along a glass or plastic fiber.

How does optic fiber work?

- Light travels down a fiber optic cable by bouncing off the walls of the cable repeatedly. Each light particle (photon) bounces down the pipe with continued internal mirror-like reflection. The light beam travels down the core of the cable. The core is the middle of the cable and the glass structure. The cladding is another layer of glass wrapped around the core to keep the light signals inside the core.

Advantages:

- Higher bandwidth means faster speed
- Longer transmission distances
 - Greater flexibility
- Stronger security
- Low power loss
- Thinner and light-weighted.

(d) Critical speed of satellite

The critical velocity of the satellite is independent of the mass of the satellite. It is constant for the planet. For Earth it is 7.9 km/h.

Geo-stationary & Polar Satellites:

Geo-stationary satellites orbit the earth at its equator. They have same period of revolution. Polar may imply that these are permanently stationed at the poles.