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Course # Power Generation

Date: 25/06/2020

Ans No 1: 01

Ocean thermal energy is used for many applications, including electricity generation. Closed-cycle systems use the ocean's warm surface water to vaporize a working fluid which has a low-boiling point, such as ammonia. The vapor expands and turns a turbine. The turbine then activates a generator to produce electricity.

workers install equipment for an ocean thermal energy conversion experiment in 1994 at Hawaii's Natural Energy Laboratory.

Credit:

A. Resnick, Makai Ocean Engineering inc.

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The ocean can produce two types of energy: thermal energy from the Sun's heat, and mechanical energy from the tides and wave.

Explanation:→

Tidal current turbine

A tall turbine (much like a wind turbine) enchored to a base, is placed on the sea floor, The tidal currents move the rotors, generation electricity.

When the tide goes out, the rotors reverse direction and continue to generation electricity. Electricity is sent to the grid on shore via a cable.

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Ans No 2 :→

Solar thermal power systems use concentrated solar energy.

In mast types of systems, a heat-transfer fluid is heated and circulated in the receiver and used to produce steam. The steam is converted into mechanical energy in a turbine which power generator to produce electricity.

Solar thermal power plants are electricity generation plants that utizile energy from the sun to heat a fluid to a high temperature. This fluid then transfer its heat to water, which then becomes superheated steam. This steam is then used to turn turbines in a power plants and this mechanical energy

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is converted into electricity by a generation. This type of generation is essentially the same as electricity generation that uses fossil fuels, but instead heats steam using sunlight instead of combustion of fossil fuels. These System use Solar collectors to concentrate the sun's rays on one point to acheive appropriately high temperatures.

There are two types of systems to collect solar radiation and store it: passive systems and active systems. Solar thermal power plants and considered ative system.s. These plants are designed to operate using only solar energy, but mast plants can use fossil fuels combustion to supplement output when needed.

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Ans No :-> 3

Current scenario of the wind energy in Pakistan challenges and furture perspectives: A case study

Electricity plays an important role the socioeconomic growth and social properity of any country. It is to be considered as the basic need for human development. Nowadays load production of electricity is a serious problem in Pakistan, which directly restricts the development of the state.

one - third of Pakistan's population does not have any electricity in the rural areas and about 10-12 hours load shedding in urban areas and is quite common. Although the state of pakistan always shows deficit in the conventional resource,

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but no progress was also being made in the renewable resources such as the wind and solar energy. Therefore, it is better to utilize those natural assets in order to fulfill the electricity supply the country. In this manuscript, our main objective is to study and outlooks the country energy profile situation vis-a-vis wind energy potential characteristics of the most important wind corridor in the southern part of the country.

Key words :=> Pakistan energy status: wind energy potential: wind speed. Power generation Sindh wind Corridor

Pakistan 1st 50MW wind power plant (zorlu energy Turkish company) 2012

Pakistan 1st 100MW solar power plant (chinese company) 2015 (Tso and yau, 2007)

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Ans No :-> 4

Nuclear energy is also cheaper and has a lower fuel cost than other sources of energy. The cost of Uranium which is used as a fuel in generating electricity is quite low. Also set up costs of nuclear power plants is relatively high while running cost is low.

Advantages	Disadvantages
(1) Produces no polluting gases.	waste is radioactive and safe disposal is very difficult and expensive.
(2) Does not contribute to global warming	Local thermal pollution from wastewater affects marine life.
(3) very low fuel costs.	Large-scale accidents can be catastrophic.

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(4) Low fuel quantity reduces mining and transportation effects on environment.	Public perception of nuclear power is negative.
(5) High technology research required benefits other industries (6) Power station has very long lifetime.	Costs of building and safely decommissioning are very high. Cannot react quickly to changes in electicity demand.

Nuclear Power

The nuclei of atoms contain a large amount of energy. Releasing this energy would free the world from having to use fossil fuels. There are two methods of doing this: fission and fusion.