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UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2018

Program: BBA OG	**Semester – IV**
Subject (Course): Under-standing New Energy Resources	**Max. Marks : 100**
Course Code : BDSM 184	**Duration : 3 Hrs**
No. of page/s: 5	

Please answer all sections.
All Sections carry equal marks.

SECTION A **(10x1=10Marks)**

I. Please state true or false or fill in the blanks as the case may be:

1. Energy conservation also means not compromising on quality and quantity of production…T/F
2. Suggestion of methods of energy conservation and reduction of energy costs is associated with …….
3. Avoiding careless waste is a ……..ECO.
4. Energy distribution is not the same as energy storage…….T/F
5. Large land requirement is essential for solar/wind/both…… (Please select one)
6. H2S pollution is associated……..energy
7. SOx and NOx are examples of……..
8. The efficiency of OTEC and is……
9. Heliostats are associated with……energy.
10. The lack of association of women in spread of renewable energy is a barrier ……T/F

II. Please answer in three sentences : (5x3=15 Marks)

1. What do you understand by thermal springs?
2. Write the principle that OTEC utilizes in electricity generation.
3. Explain how maximizing energy efficiency helps conserve energy.
4. Explain the importance of reducing losses and carelessness of O&M personnel in improving energy conservation
5. Give three means of energy management and explain their importance.

SECTION B (5x5=25 Marks)

Please answer in brief:

1. Explain in detail what is energy planning. Explain what are the strategy and policy and explain its sub factors and the importance of technology.
2. Explain how energy conservation leads to economic benefits. Give some examples of energy intensive industries where these tests are essential.
3. Write short notes on the following:
   a. Rural Energy
   b. Biogas for cooking and lighting
   c. Small scale wind power
4. Explain the advantages and disadvantages of Hydro energy focusing on human and Biodiversity effects.
5. Explain what is Biomass Energy and different types of Biomass Resources. Explain the advantages and disadvantages of Biomass Energy.

SECTION C (10x3=30 Marks)

Please answer in detail:

1. Write in detail the Biomass energy scenario in India, giving the consumption, land area required , potential etc. Write in detail the government initiatives and subsidies for Biomass energy production. Explain what are the bottle necks being faced by the Indian Biomass Energy.
2. Explain your understanding of the wind energy market . Give how the wind energy market has expanded. How would the environmental and societal issues effect the wind energy opportunities.
3. Explain with a neat diagram , the Geothermal energy explaining the convective systems, conductive systems and the acquifers.

SECTION D (10X2=20 Marks)

Please read the case and answer the questions:

There is a fundamental attractiveness about harnessing such forces in an age which is very conscious of the environmental effects of burning fossil fuels, and where sustainability is an ethical norm. So today the focus is on both adequacy of energy supply long-term and also the environmental implications of particular sources. In that regard the near certainty of costs being imposed on carbon dioxide emissions in developed countries at least has profoundly changed the economic outlook of clean energy sources.

A market-determined carbon price will create incentives for energy sources that are cleaner than current fossil fuel sources without distinguishing among different technologies. This puts the onus on the generating utility to employ technologies which efficiently supply power to the consumer at a competitive price. Wind, solar and nuclear are the main contenders.

Sun, wind, waves, rivers, tides and the heat from radioactive decay in the earth's mantle as well as biomass are all abundant and ongoing, hence the term "renewables". Only one, the power of falling water in rivers, has been significantly tapped for electricity for many years, though utilization of wind is increasing rapidly and it is now acknowledged as a mainstream energy source. Solar energy's main human application has been in agriculture and forestry, via photosynthesis, and increasingly it is harnessed for heat. Until recently electricity has been a niche application for solar. Biomass (eg sugar cane residue) is burned where it can be utilised, but there are serious questions regarding wider usage. The others are little used as yet.

Turning to the use of abundant renewable energy sources other than large-scale hydro for electricity, there are challenges in actually harnessing them. Apart from solar photovoltaic (PV) systems which produce electricity directly, the question is how to make them turn dynamos to generate the electricity. If it is heat which is harnessed, this is via a steam generating system.

If the fundamental opportunity of these renewables is their abundance and relatively widespread occurrence, the fundamental challenge, especially for electricity supply, is applying them to meet demand given their variable and diffuse nature. This means either that there must be reliable duplicate sources of electricity beyond the normal system reserve, or some means of large-scale electricity storage .

Policies which favour renewables over other sources may also be required. Such policies, now in place in about 50 countries, include priority dispatch for electricity from renewable sources and special feed-in tariffs, quota obligations and energy tax exemptions.

In 2015 over 140 countries submitted to the UN's Framework Convention on Climate Change (UNFCCC) secretariat their Intended Nationally Determined Contributions (INDCs) to combat climate change. Together, these would lead to an 8% per capita reduction in CO2 emissions by 2025 and 9% by 2030. The role of India and China INDCs is noteworthy here. Regarding solar capacity, India pledged 246 GWe and China 352 GWe by 2030 on top of present world 178 GWe. Regarding wind, China pledged 345 GWe and India 78 GWe capacity by 2030 on top of 2015 world capacity.

The prospects, opportunities and challenges for renewables are discussed below in this context Most electricity demand is for continuous, reliable supply that has traditionally been provided by base-load electricity generation. Some is for shorter-term (eg peak-load) requirements on a broadly predictable basis. Hence if renewable sources are linked to a grid, the question of back-up capacity arises, for a stand-alone system energy storage is the main issue. Apart from pumped-storage hydro systems no such means exist at present on any large scale.

However, a distinct advantage of solar and to some extent other renewable systems is that they are distributed and may be near the points of demand, thereby reducing power transmission losses if traditional generating plants are distant. Of course, this same feature sometimes counts against wind in that the best sites for harnessing it are sometimes remote from population, and the main back-up for lack of wind in one place is wind blowing hard in another, hence requiring a wide network with flexible operation.

Q1. Give a brief description of the background and the use and the possibilities of harnessing the renewables……..(10)

Q2. What do you think of the policies in favor of the renewables over other sources which may be required. Give a brief description about the development in this regard globally…….(10)