PGDM **2014-2016**

Energy Management (DM-341/IB-315)

Trimester – III End-Term Examination: September 2014

Time allowed: 2.5 Hours **Max Marks: 50**

Roll No: _____

Section A: **Max. Marks: 15**

Short answers: Answer any 3 out of 5 questions below. Each question carries 5 marks.

A-1: Write a short note on BEE and EC Act 2001

A-2: Write a short note on Energy conservation and it's impact on global warming.

A-3: What is meant by "Energy efficient Motor"? How is it different from a conventional commercial motor?

A-4: What is a Sankey diagram? Considering that your day has 24 hrs. as input, draw a Sankey diagram for your typical 24 hrs. day.

A-5: Draw a schematic diagram for a thermal power system from coal mine to the user point in the switch at your home, and highlight at least 3 places where energy losses take place, and how.

Section B **Max. Marks: 20**

Long answers: Answer any 2 out of 3 questions below. Each question carries 10 marks.

B-1: Differentiate between Refractory material and heat Insulation Material. Give any five examples where heat losses can be reduced by using heat insulation.

B-2: Differentiate between Conventional, Renewable, Alternative and Perennial sources of energy.

B-3: You have been appointed as an Energy Manager in an academic institute. Write a report highlighting five areas with scope for energy consumption reduction and the necessary steps needed.

Section C: **Case Study** **Max. Marks: 15**

The situation:

Case Study:

The case study has 2 parts:

Part 1:

1970s energy crisis led to the establishment of the Commission for Additional Sources of Energy (CASE) in the Department of Science & Technology (India) in March 1981. CASE was responsible for formulation of policies and their implementation, creation of programmes for development of new and renewable energy and coordinating and intensifying R&D in the sector. In 1982, a new Department of Non-conventional Energy Sources (DNES) was created in the then Ministry of Energy, which incorporated CASE under its umbrella.

A decade later, in 1992, DNES became the Ministry of Non-conventional Energy Sources (MNES). In October 2006, the Ministry was re-christened as the Ministry of New and Renewable Energy (MNRE). The mission of the MNRE is to bring in Energy Security; Increase the share of clean power; increase Energy Availability and Access; improve Energy Affordability; and maximise Energy Equity.

The major initiatives by the MNRE are;

- Jawaharlal Nehru National Solar Mission (JNNSM) - The objective of the mission is to establish India as a global leader in solar energy, by creating the policy conditions for its diffusion across the country as quickly as possible.
- National Biogas and Manure Management Programme (NBMMP)
- Solar Lantern Programme
- Solar thermal energy Demonstration Programme
- Remote Village Lighting Programme
- National Biomass Cookstoves Initiative (NBCI)
- National Offshore Wind Energy Authority

Achievements

As of October 2012, the Ministry was successful in deploying a total of 26266.96 Megawatt (MW) capacity of grid-based renewable energy. 18274.80 MW of which was from Wind power, 3451.49 MW from Small hydro Power, 2175.23 MW from Bagasse Cogeneration, 1226.60 MW from Biomass power, 1045.16 from Solar power (SPV), and the rest from Waste to Power. During the same time period, the total deployment of an Off-grid based renewable energy capacity was about 787.53 MW. Of these, Biomass (non-bagasse) Cogeneration consisted of 416.94 MW, Biomass Gasifier was 138.05 MW, Waste to energy was 73.72 MW, SPV Systems (of less than 1 Kilowatt (kW)) capacity was 103.81 MW, and the rest from micro-Hydro and Wind power.

Under the leadership of MNRE, the total number of villages that were provided with the Renewable Energy Systems was 8846.

The total number of deployment of Family Biogas plant was 44.08 lakhs. And the total area that it covered with Solar water heating (SWH) systems was 4.47 Million m^2.

The Ministry has 4 specialised technical institution. They are:-

- The Solar Energy Centre (SEC), located in Haryana.
- Centre for Wind Energy Technology (C-WET) in Chennai, Tamil Nadu
- The Sardar Swaran Singh National Institute of Renewable Energy (SSS-NIRE), near Jallandhar, Punjab.
- Alternate Hydro Energy Centre, located inside the Indian Institute of Technology Roorkee campus.

It also has a specialised financial institution called the Indian Renewable Energy Development Agency (IREDA), in New Delhi. The agency provides term loans for renewable energy and energy efficiency projects.

Part 2:

BEE

The Bureau of Energy Efficiency is an agency of the Government of India, under the Ministry of Power created in March 2002 under the provisions of the nation's 2001 Energy Conservation Act. The agency's function is to develop programs which will increase the conservation and efficient use of energy in India. The government has proposed to make it mandatory for all appliances in India to have ratings by the BEE starting in January 2010. The mission of Bureau of Energy Efficiency is to "institutionalize" energy efficiency services, enable delivery mechanisms in the country and provide leadership to energy efficiency in all sectors of the country. The primary objective would be to reduce energy intensity in the economy.

The broad objectives of BEE are as under:

To exert leadership and provide policy recommendation and direction to national energy conservation and efficiency efforts and programs.

To coordinate energy efficiency and conservation policies and programs and take it to the stakeholders To establish systems and procedures to measure, monitor and verify energy efficiency results in individual sectors as well as at a macro level.

To leverage multi-lateral and bi-lateral and private sector support in implementation of Energy Conservation Act and efficient use of energy and its conservation programs.

To demonstrate delivery of energy efficiency services as mandated in the EC bill through private-public partnerships.

To interpret, plan and manage energy conservation programs as envisaged in the Energy Conservation Act. Objectives Provide a policy recommendation and direction to national energy

conservation activities, Coordinate policies and programmes on efficient use of energy with shareholders, Establish systems and procedures to verify, measure and monitor Energy Efficiency (EE) improvements, Leverage multilateral, bilateral and private sector support to implement the EC Act 2001, Demonstrate EE delivery systems through public-private partnerships.

Questions:

1: Write down at least five major differences in the activities of the two parts. **(5 Marks)**

2: Suggest a policy framework and guidelines for integrating the two agencies under Part 1 and Part 2 above. **(10 Marks)**