CETM- 2018

ASSIGNMENTBOOKLET

CERTIFICATE IN ENERGY TECHNOLOGY AND MANAGEMENT (CETM)

Last date for submission:

30th March for January session
30th September for July session

School of Engineering and Technology
Indira Gandhi National Open University
MaidanGarhi, New Delhi-110068

Dear Student,

We advise you to go through your programme guide carefully and read the section pertaining to assignments. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation which would consist of **one tutor-marked assignment** for each of OEY 001, OEY 002 and OEY 003 of this course. You have to score a minimum of 40 marks out of 100 marks in each of the assignments. **Submit your assignment response at your Study Centre.**

A feedback form is enclosed with this assignment. Please complete it after solving this assignment and send it to the Course Coordinator (CETM) on the address specified on the feedback form.

Instructions for Formatting Your Assignments

Before attempting the assignment please read the following instructions carefully.

1) On top of the first page of your TMA answer sheet, please write the details exactly in the following format:

ENROLMENT NO: ……

NAME: ……

ADDRESS: ……

……

……

COURSE CODE: ……

COURSE TITLE: ……

ASSIGNMENT NO.: ……

STUDY CENTRE: …… **DATE:** ……

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) While solving problems, clearly indicate the question number along with the part being solved. Be precise. Recheck your work before submitting it.

Answer sheets received after the due date shall not be accepted.

We strongly feel that you should retain a copy of your assignment response to avoid any unforeseen situation and append, if possible, a photocopy of this booklet with your response.

We wish you good luck.

Assignment -1
(To be done **after** studying the course material)

Course Code: OEY 001
Assignment Code: OEY-001/TMA/2018
Maximum Marks: 100

Note:

1. In any question, whenever we ask you to suggest an activity we expect you to give one other than those covered in the units.

2. For any question worth 5 marks the word limit is 200 words, for a 10 mark question it is 350 words, and for a 15 mark question it is 500 words.

3. All questions are compulsory. All questions carry equal marks.

Q.1. What are the types of energy sources? State various forms of renewable and non-renewable energy sources.

Q.2. A car of mass 2000 kg is lifted up a distance of 30 m by a crane in 1 minute. A second crane does the same job in 2 minutes. Do the cranes consume the same or different amounts of fuels? What is the power applied by each crane? Neglect power dissipation against friction.

Q.3. Enumerate the characteristics of a good fuel.

Q.4. Define charcoal and write its main characteristics.

Q.5. List the biomass technologies and describe their applications.

Q.6. Discuss in brief advantages and disadvantages of liquid fuel.

Q.7. Explain the principle and working of horizontal and vertical axis wind machines.

Q.8. Discuss energy conversion processes in a steam thermal power plant.

Q.9. Describe in detail, the various uses of hydrogen as a fuel.

Q.10. Explain how fuel switching to natural gas from coal based power production technologies help in cleaning up the environment.

Assignment-2
(To be done **after** studying the course material)

Course Code: OEY 002

Assignment Code: OEY-002/TMA/2018

Maximum Marks:100

Note:

1. In any question, whenever we ask you to suggest an activity we expect you to give one other than those covered in the units.

2. For any question worth 5 marks the word limit is 200 words, for a 10 mark question it is 350 words, and for a 15 mark question it is 500 words.

3. All questions are compulsory. The marks of each question are indicated against it.

Q 1. (a) What is the Kirchoff's Law of radiation and what are the main features of Solar radiation? 10

(b) Explain the principles and working of solar cooker. Also highlight its features over conventional cooker. 10

Q.2 (a) Name the different type of Biogas plant and explain Janta Fixed Dome Biogas plant. 10

(b) Draw and explain current –voltage characteristics of a solar cell. What is packing factor? 10

Q.3 (a) Explain the difference between direct gain and indirect gain with suitable example.

(b) Classified the different categories of solar building system and also explain main features of three main types of building. 20

Q.4. (a) Explain the Trombe wall in detail. Also explain effect of window orientation. 10

(b) Draw the block diagram of solar drying system and explain its different component. 10

Q.5. (a) Explain Solar water heater with neat schematic diagram. Also compare it with electric heater in terms of advantages and disadvantages. 10

(b) Write short notes on followings: 10

. (i) Standalone PV System

(ii) Solar air heater

Assignment-3

(To be done **after** studying the course material)

Course Code: OEY 003
Assignment Code: OEY-03/TMA/2018
Maximum Marks: 100

Note:

1. In any question, whenever we ask you to suggest an activity we expect you to give one other than those covered in the units.

2. For any question worth 5 marks the word limit is 200 words, for a 10 mark question it is 350 words, and for a 15 mark question it is 500 words.

3. All questions are compulsory. The marks of each question are indicated against it.

Q.1 Define energy audit. Discuss energy management with the help of suitable examples. 10

Q.2 (a) Energy conservation and energy efficiency are separate but related concepts. Discuss the statement.
(b) How do an Industry, nation and globe would benefit from energy efficiency programmes? 5+5= 10

Q.3 (a) What is Life cycle cost analysis? Explain the significance of inflation in this analysis?
(b) List down 10 energy conservation opportunities in pumping systems. 5+5= 10

Q.4 (a) State key elements of Energy monitoring and targeting system. Also discuss its benefits.
(b) Write down five good housekeeping measures to conserve electricity in your home. 5+5= 10

Q.5 Differentiate between 5+5= 10
(a) Preliminary energy audit and detailed energy audit.
(b) Renewable and non-renewable sources of energy.

Q.6 (a) Define real power, apparent power and power factor.
(b) A company has power factor of 0.6. Determine the power capacitor rating for improving the power factor to 0.95. 5+5=10

Q.7 (a) Which are typical applications of waste heat boilers?
(b) How do they differ from ordinary steam boilers? 5+5= 10

Q.8 (a) Explain in brief energy conservation measures in any industry you have visited recently.
(b) What is the use of Sankey diagram? Draw the Sankey diagram for the case which you have developed in above case. 5+5=10

Q.9 Write short notes on the following: 4x5=20
(a) Energy efficient lighting devices (b) Renewable energy systems (c) Combustion Analyzer (d) Rural energy planning