

CETM-2017

ASSIGNMENT BOOKLET

**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
Maidan Garhi, New Delhi-110 068**

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.**

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/2017
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.
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- Q.1. Describe in detail, the scope of natural gas as an energy source.
- Q.2. Discuss the advantages and disadvantages of renewable energy.
- Q.3. Describe in detail the various classifications of biomass.
- Q.4. Explain the effect of moisture content and ash melting point on the gasification of biomass.
- Q.5. Discuss, in detail the various active and passive applications of solar energy.
- Q.6. Explain, in detail the operation and maintenance of a biogas plant
- Q.7. Explain the principle and operation of a fuel cell.
- Q.8. Name some biofuels and explain the 1st and 2nd generation bio-fuels.
- Q.9. Discuss, in detail the characteristics of lignite and anthracite.
- Q.10. Write short notes on the following:
 - a) Animal energy
 - b) Tidal energy

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

Course Code: OEY 002

Assignment Code: OEY-002/TMA/2017

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.
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- Q 1.** Explain the differences between concentrating solar power and other solar technologies? 10
- Q.2** (a) What is solar photovoltaics or "SPV"?
(b) How can we get electricity from the sun?
(c) What are the components of a photovoltaic (PV) system?
(d) How much electricity does a photovoltaic (PV) system generate? 4 x 10
- Q.3** (a) What does energy conversion efficiency mean?
(b) Draw and explain current –voltage characteristics of a solar cell.. 2 x 10
- Q.4.** Explain construction and working of solar dryer with neat schematic. 12
- Q. 5.** (a) How many kinds of Solar Cookers are there?
(b) Why we use glass covers in solar cooker? 2 x 4
- Q. 6.** Explain the difference between solar active and solar passive buildings? 10

Assignment-3

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

Course Code: OEY 003
Assignment Code: OEY-03/TMA/2017
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.

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1. State key elements of Energy monitoring and targeting system. Also discuss its benefits.
 2. (a) What is the NPV (net present value) of a project, (life 2 year) which requires an investment of Rs.50000 & yield Rs.30000 in the 1st year and Rs.40000/- in the next year, if the interest rate is 10%.
(b) What is the future value of Rs.1000/- after 3 years if the interest rate is 10%?
 3. (a) Which are typical applications of waste heat boilers? How do they differ from ordinary steam boilers?
 4. List down 10 energy conservation opportunities in pumping systems.
 5. Explain in brief energy conservation measures in any industry you have visited recently.
 6. What are renewable energy systems? Are they useful for energy conservation? Justify your answer with suitable examples.
 7. A genset is operating at 800 kW loading with 480°C exhaust gas temperature. The DG set generates 8 kg gas/ kWh generated, and specific heat of gas at 0.25 kCal/ kg °C. A heat recovery boiler is installed after which the exhaust gas temperature reduces to 180 °C. How much steam will be generated at 3 kg/ cm² with enthalpy of 650.57 kCal/ kg. Assume boiler feed water temperature as 80°C.
 8. List down 10 energy conservation opportunities in pumping systems.
 9. Explain in brief energy conservation measures in any industry you have visited recently.
 10. A genset is operating at 800 kW loading with 480°C exhaust gas temperature. The DG set generates 8 kg gas/ kWh generated, and specific heat of gas at 0.25 kCal/ kg °C. A heat recovery boiler is installed after which the exhaust gas temperature reduces to 180 °C. How much steam will be generated at 3 kg/ cm² with enthalpy of 650.57 kCal/ kg. Assume boiler feed water temperature as 80°C.