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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Energy Resources, Economics and Environment
(course) [E P T G M K Units of Joules](#)



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Course outline

About NPTEL
()

How does an
NPTEL online
course work?
()

Week 1 -
Introduction
()

● Lecture 1A:
Energy Flow
Diagram (unit?)

Week 1 : Assignment 1

The due date for submitting this assignment has passed.

Due on 2025-02-05, 23:59 IST.

Assignment submitted on 2025-02-01, 15:45 IST

1) Which of the following is/are not a primary energy source?

1 point

- ☒ Electricity
- ☐ Crude Oil
- ☐ Natural Gas
- ☐ Coal

Yes, the answer is correct.

Score: 1

Accepted Answers:

Electricity

2) A coal power plant of rating 540 MW has an actual annual generation of 4258 GWh.
Calculate the plant load factor (in percentage)

1 point

- ☐ 65 %
- ☐ 75 %
- ☐ 80 %
- ☒ 90 %

Yes, the answer is correct.

unit=17&lesson=18)

● Lecture 1B:
Global Trends in Energy Use (unit? unit=17&lesson=19)

● Lecture 1C:
Energy Use in India: Some Calculations (unit? unit=17&lesson=20)

● Lecture 2A:
Energy and Environment (unit? unit=17&lesson=21)

● Lecture 2B:
The Kaya Identity (unit? unit=17&lesson=22)

● Lecture 2C:
Emission Factor (unit? unit=17&lesson=23)

● Additional Resources (unit? unit=17&lesson=24)

● Weekly Feedback (unit? unit=17&lesson=27)

● Quiz: Week 1 : Assignment 1 (assessment? name=206)

Week 2 - Energy and

Score: 1

Accepted Answers:
90 %

3) A town has its grid connected to a hydro power plant. Consider a household in that town using a fan-forced room heater during winter. What is the final energy delivered to the household, among the following options? **1 point**

- ☐ Kinetic energy
☒ Thermal energy (heat)
☐ Electricity

No, the answer is incorrect.
Score: 0

Accepted Answers:
Electricity

4) A rooftop solar PV system of peak rating 30 kW has an annual plant load factor of 20%. What is the annual electricity generation in kWh? (Answer should not have a decimal place- round off to the nearest whole number)

52560

Yes, the answer is correct.
Score: 1

Accepted Answers:
(Type: Range) 52400,52700

1 point

5) The Human Disruption Index is:

1 point

- ☐ An index computing the loss in GDP due to disruption in the environment
☐ A measurement of the gap between current health status and an ideal health situation for every 10000 persons
☒ The ratio of human generated flow of a pollutant to its natural flow
☐ A measure of number of lost years of healthy human life due to environmental pollution
☐ A measure of the impact on human habitation due to natural resource extraction

No, the answer is incorrect.
Score: 0

Accepted Answers:
A measure of the impact on human habitation due to natural resource extraction

6) Over a 100-year period, methane has more global warming potential than carbon dioxide

1 point

- ☒ True
☐ False

Yes, the answer is correct.

quality of life,
Country
energy
balance ()

Week 3 -
Energy
Economics ()

Week 4 -
Energy
Resources ()

Week 5 - Non-
Renewable
Resource
Economics ()

Week 6 -
Preferences,
Utility and
Social
choices ()

Week 7 -
Public and
private
goods,
Externalities
()

Week 8 -
Energy and
Financing ()

Week 9 -
Input-Output
Analysis ()

Text
Transcripts ()

Books ()

Download
Videos ()

Score: 1

Accepted Answers:

True

7) If the population of a country shows a trend of the form $P(t) = A + BT + CT^2$, can the energy use in this country be sustained with time ? **1 point**

[Where, A: Represents the initial population at time $t = 0$, B: Represents the constant rate of linear population growth, C: Represents the coefficient of the quadratic term, indicating the acceleration or deceleration of population growth over time. A positive value of C suggests accelerating growth, while a negative value suggests decelerating growth, T: Represents time, typically measured in years.]

- ☐ Yes
☒ No

Yes, the answer is correct.

Score: 1

Accepted Answers:

No

As population increases — especially at an accelerating rate — energy demand also increases. In reality, energy resources (especially non-renewable ones) are finite, and infrastructure or renewable alternatives take time and resources to scale.

Therefore, sustaining energy use indefinitely with accelerating population growth is not feasible unless extraordinary measures are taken — which is rarely the case at a national scale.

8) Which of the following are not environmental impacts of energy systems? **1 point**

- ☐ Respiratory health impact
☐ Sound
☐ Nuclear radiation
☒ Auxiliary consumption in a power plant: Energy consumed by plants during internal operation, support system.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Auxiliary consumption in a power plant

9) A thermal power plant has an efficiency of 40 %. Taking the NCV of coal to be 4500 kCal/kg, Calculate the coal used (in kg) per kWh output. **2 points**

- ☒ 0.478
☐ 2
☐ 0.8
☐ 0.996

Yes, the answer is correct.

Score: 2

Accepted Answers:

0.478

