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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Energy Resources, Economics and Environment (course)

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Course outline

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Week 1 - Introduction ()

Week 2 - Energy and quality of life,

Week 5 : Assignment 5

The due date for submitting this assignment has passed.

Due on 2025-02-26, 23:59 IST.

Assignment submitted on 2025-02-26, 21:06 IST

1) Which of the following represents a constant elasticity demand function? Note that a & b are positive constants. ***1 point***

- $P_t = a - bQ_t$
- $P_t = aQ_t^{-b}$
- $P_t = e^{(-Q_t/a)}$
- $P_t = \sqrt{(a-Q_t^2)}$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$P_t = aQ_t^{-b}$

2) What did Prof. Julian Simon believe about resources and their prices? ***1 point***

- We are facing a scarcity of resources and hence their prices will increase
- We are facing a scarcity of resources and hence their prices will decrease
- We are not facing a scarcity of resources and hence their prices will increase
- We are not facing a scarcity of resources and hence their prices will decrease

Yes, the answer is correct.

Professor Julian Simon believed that human ingenuity and technological progress make resources effectively limitless. He argued that as demand for a resource rises, people find new ways to extract, substitute, or use it more efficiently, keeping prices from skyrocketing long-term. His perspective was famously tested in a bet against ecologist Paul Ehrlich, where Simon correctly predicted that the prices of certain metals would decline over time rather than increase due to scarcity. His ideas challenged the notion that overpopulation would inevitably lead to resource depletion and crisis.

Score: 1

Accepted Answers:

We are not facing a scarcity of resources and hence their prices will decrease

3) A resource lasts longer in which type of market? ***1 point***

- (●) Monopoly
- ( ) Perfect Competition
- ( ) Lasts the same in both
- ( ) None of the above

Yes, the answer is correct.
Score: 1

Accepted Answers:

Monopoly

4) Which is the most important application of silicon (Si) in the energy sector? ***1 point***

- ( ) Batteries
- (●) Photovoltaics
- ( ) Fuel cells
- ( ) Hydrogen storage

Yes, the answer is correct.
Score: 1

Accepted Answers:

Photovoltaics

5) If the demand function is expressed as $5P_t + 8Q_t = 160$, determine the choke-off price, i.e., the price at which the quantity demanded falls to zero.

32

Yes, the answer is correct.
Score: 1.5

Accepted Answers:

(Type: Numeric) 32.0

1.5 points

6) For the same demand function as above, i.e., $5P_t + 8Q_t = 160$, calculate the initial price. Assume that the discount rate is 12% and the resource lasts for 15 years. Express your answer to two correct decimal places.

5.85

Yes, the answer is correct.
Score: 1.5

Accepted Answers:

(Type: Range) 5.70 , 6.00

1.5 points

7) Achieving material efficiency by getting the same function using less material is an example of (choose one which applies the closest) ***1 point***

- (●) Dematerialization
- ( ) Lightweighting
- ( ) Remanufacturing
- ( ) Redesigning

Yes, the answer is correct.
Score: 1

Accepted Answers:
Dematerialization

Dematerialization: This refers to reducing the quantity of materials needed to achieve the same function. It's about using less material while still providing the desired output or service.

Lightweighting: The process of making products lighter by either reducing the material used or substituting it with lighter alternatives. This is often done to improve efficiency and lower production costs.

Remanufacturing: The practice of rebuilding a product to its original specifications using a mix of reused, repaired, and new parts. It's a way to extend the life of products while minimizing waste.

Redesigning: Changing the design of a product to improve aspects like its performance, usability, or aesthetics. This could involve creating a more efficient or innovative design.

8) India recently announced discovery of the following material in Jammu and Kashmir which has a potential to play a significant rule in energy transitions. ***1 point***

- ( ) Cobalt
- (●) Lithium
- ( ) Uranium
- ( ) Mica

Yes, the answer is correct.
Score: 1

Accepted Answers:
Lithium

9) For a constant elasticity demand function, $P_t = aQ_t^{-b}$, what is the choke-off or terminal price? ***1 point***

- ( ) a
- ( ) a/2b
- ( ) a - b
- (●) does not exist

Yes, the answer is correct.
Score: 1

Accepted Answers:
does not exist