



**PANJAB UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES**

**DEPARTMENT OF NATURAL AND APPLIED SCIENCES**

<b>QUALIFICATION : BACHELOR OF SCIENCE</b>	
<b>QUALIFICATION CODE: 07BOSC</b>	<b>LEVEL: 7</b>
<b>COURSE: ENERGY AND ENVIRONMENT</b>	<b>COURSE CODE: EEN701S</b>
<b>SESSION: JULY 2022</b>	<b>PAPER: THEORY</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 100</b>

<b>SUPPLEMENTARY/SECOND OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER(S)</b>	Dr Sylvanus A. Onjefu
<b>MODERATOR:</b>	Dr Shobo A. Babajide

**THIS QUESTION PAPER CONSISTS OF 3 PAGES**  
(Including this front page)

**QUESTION 1** [23]

- 1.1 Describe passive solar heating and give one example and one challenge of using it. (6)
- 1.2 Should coal deposit be discovered in Namibia and based on your understanding of coal mining, what argument will you give against surface mining of coal in the country? (4)
- 1.3 Differentiate between petroleum and natural gas. (8)
- 1.4 How is electricity produced by solar thermal electric generation? Give one problem with this form of energy. (5)

**QUESTION 2** [21]

- 2.1 Although synfuels are promising energy sources. What major challenges do you foresee with regards to their production and usage on the following environmental phenomenon?
  - 2.1.1 Atmosphere. (3)
  - 2.1.2 Arid areas. (3)
  - 2.1.3 Topography. (3)
- 2.2 How would you explain energy taxes to your uncle in the village and give three negative effects energy taxes on the citizens of the country. (8)
- 2.3 Which of the negative environmental impacts associated with fossil fuels is the most serious and have attracted global attention? And why? (4)

**QUESTION 3** [21]

- 3.1 Explain nuclear energy and differentiate between fission and fusion. (6)
- 3.2 Explain nuclear enrichment. (4)
- 3.3 Describe how electricity is produced from nuclear power under the following parts:
  - 3.3.1 Reactor core. (2)
  - 3.3.2 Steam generator. (2)
  - 3.3.3 Turbine. (2)

3.3.4 Condenser. (2)

3.4 Why is there distrust in the international community concerning the proliferation of weapon-grade plutonium. (3)

**QUESTION 4 [35]**

4.1 How is solar energy different from fossil and nuclear fuels? (4)

4.2 Explain how energy conservation is a major source of energy and list energy conservation measures that you could adopt for each of the following aspects of your life: washing laundry, lighting, bathing, driving a car, cooking, and buying a car. (14)

4.3 Explain four ways in which solar radiation varies in intensity. (8)

4.4 Explain the problems associated with hydropower generation under the following;

4.4.1 Natural flow of water. (3)

4.4.2 Creation of reservoir in arid regions. (3)

4.4.3 Water borne diseases. (3)

**END**