



**NAMIBIA 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: JUNE 2022</b>	<b>PAPER: THEORY</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 100</b>

<b>FIRST 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** [22]

- 1.1 What do you understand by fossil fuel? (3)
- 1.2 Explain the reasons why some coal are drier more compact than others and have more heating value. (5)
- 1.3 Describe surface mining and explain the environmental impacts of surface mining process and burning of coal. (10)
- 1.4 Give four reasons why most power plant prefer the use of anthracite. (4)

**QUESTION 2** [22]

- 2.1 Explain cogeneration as applied to the new role of natural gas. (4)
- 2.2 Discuss acid precipitation and how it occurs. (4)
- 2.3 Briefly explain how sulfur emission associated with combustion of coal can be reduced. (5)
- 2.4 Describe the clean coal technology and give one example of clean coal technology. (4)
- 2.4 Why are synfuels promising, but not a panacea for global energy needs? (5)

**QUESTION 3** [29]

- 3.1 Explain the term radiation. (2)
- 3.2 Discuss the three-water circuit in a typical nuclear power plant. (12)
- 3.3 Describe the safety features of a nuclear power under the following parts:
  - 3.3.1 reactor vessel. (4)
  - 3.3.2 Containment building. (4)
- 3.4 Explain the breeder nuclear fission and why there is public distrust for it. (5)
- 3.5 What do you understand by nuclear meltdown? (2)

**QUESTION 4**

**[27]**

- 4.1 Discuss the solar thermal electric generation and give one problem associated with it. (6)
- 4.2 Describe the working of photovoltaic solar cells. (4)
- 4.3 The Government of your country plan to decommission her nuclear power plant. However, the first and second options of decommissioning was completely kicked out. Explain the third option and safety measures that should be put in place to protect workers and what could be the likely risk to both workers and the environment. (6)
- 4.4 What do you understand by ocean thermal energy conversion? An is this possible in Namibia? And why? (5)
- 4.5 Discuss why some scientist argue that the use of wood as fuel is non-renewable energy while other says it is renewable. (6)

**END**