



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF NATURAL AND APPLIED SCIENCES

QUALIFICATION : BACHELOR OF SCIENCE	
QUALIFICATION CODE: 07BOSC	LEVEL: 7
COURSE: ENERGY AND ENVIRONMENT	COURSE CODE: EEN701S
SESSION: JULY 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

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

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the question2. Write clearly and neatly3. Number the answers clearly4. All written work MUST be done in blue or black ink

PERMISSIBLE MATERIALS

Non-programmable Calculators

ATTACHMENT

None

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 Differentiate between lignite and bituminous coal. (6)
- 1.4 Why do most power plant prefer the use of anthracite. (5)
- 1.5 Explain the disease called the black lung disease. (3)

QUESTION 2 [21]

- 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 Explain energy subsidies and determine the cost of subsidizing fuel in Namibia if gasoline trades for N\$1 per gallon on the world market, but cost only N\$ 0.75 per gallon within Namibia. (8)
- 2.4 Why are synfuels promising, but not a panacea for global energy needs? (5)

QUESTION 3 [30]

- 3.1 Explain the term radioactivity. (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? (3)

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 Argue **For** or **Against** the use of wind power. (4)
- 4.4 What do you understand by ocean thermal energy conversion? And is this possible in Namibia? And why? (7)
- 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