

ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE FACULTY OF ENGINEERING DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

FIRST SEMESTER EXAMINATION, 2017/2018 ACADEMIC SESSION

COURSE TITLE: RENEWABLE ENERGY

COURSE CODE: EEE 425

EXAMINATION DATE: 19TH MARCH, 2018

COURSE LECTURER: DR. O. M. Longe

HOD's SIGNATURE

TIME ALLOWED: 2 HOURS

INSTRUCTIONS

- 1. ATTEMPT ANY FOUR QUESTIONS ONLY.
- 2. ALL QUESTIONS CARRY EQUAL MARK.
- 3. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM.
- 4. YOU ARE <u>NOT</u> ALLOWED TO BORROW CALCULATORS AND ANY OTHER WRITING MATERIALS DURING THE EXAMINATION.

a. Mention two renewable and non-renewable energy sources. [4 mks] b. Describe a stand-alone microgrid with the aid of diagram. [5 mks] c. State the global warming effect (%) of the following greenhouse gases: i. Carbondioxide iii. Methane iii. Ozone [3 mks] d. Mention one renewable energy resources found in the following regions of Nigeria: i. North-East iii. South-West iiii. South-West iiii. South-South [3 mks] QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. [10 mks] b. Give three examples of solar collectors. [3 mks] c. Mention two advantages of solar thermal energy. [2 mks] QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. [4 mks] b. Use diagram to illustrate Horizontal axis wind turbine [4 mks] c. Explain any one environmental impact of wind energy. [3 mks] QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [6 mks] d. Define the following: i. Biofuel ii. Biofuel ii. Biofuel ii. Biofuel ii. Biofuel iii. Bioelectricity [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks]	Qυ	ESTION ONE		
c. State the global warming effect (%) of the following greenhouse gases: i. Carbondioxide ii. Methane iii. Ozone [3 mks] d. Mention one renewable energy resources found in the following regions of Nigeria: i. North-East ii. South-West iii. South-South [3 mks] QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. [10 mks] b. Give three examples of solar collectors. [3 mks] c. Mention two advantages of solar thermal energy. [2 mks] QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. [8 mks] b. Use diagram to illustrate Horizontal axis wind turbine [4 mks] c. Explain any one environmental impact of wind energy. [3 mks] QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [6 mks] d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable		a. Mention two renewable and non-renewable energy sources.	4 mks]	
i. Carbondioxide ii. Methane iii. Ozone d. Mention one renewable energy resources found in the following regions of Nigeria: i. North-East ii. South-West iii. South-South QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. [10 mks] b. Give three examples of solar collectors. [3 mks] c. Mention two advantages of solar thermal energy. [2 mks] QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. [8 mks] b. Use diagram to illustrate Horizontal axis wind turbine and yone environmental impact of wind energy. QUESTION FOUR a. Explain any one environmental impact of wind energy. [6 mks] b. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] c. Mention three advantages of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [6 mks] d. Define the following: i. Biofuel ii. Biofuel iii. Bioselectricity [4 mks] CUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable		-	5 mks]	
iii. Ozone (3 mks) d. Mention one renewable energy resources found in the following regions of Nigeria: i. North-East ii. South-West iii. South-South [3 mks] QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. [10 mks] b. Give three examples of solar collectors. [2 mks] c. Mention two advantages of solar thermal energy. [2 mks] QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. [8 mks] b. Use diagram to illustrate Horizontal axis wind turbine [4 mks] c. Explain any one environmental impact of wind energy. [3 mks] QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [5 mks] b. Explain two environmental impacts of hydroelectric power. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] c. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] c. Mention any four components of a photovoltaic system. [4 mks] c. Mention any four components of a photovoltaic system. [4 mks]				
d. Mention one renewable energy resources found in the following regions of Nigeria: i. North-East ii. South-West iii. South-South [3 mks] QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. [10 mks] b. Give three examples of solar collectors. [3 mks] c. Mention two advantages of solar thermal energy. [2 mks] QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. [8 mks] b. Use diagram to illustrate Horizontal axis wind turbine [4 mks] c. Explain any one environmental impact of wind energy. [3 mks] QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] c. Mention three advantages of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [5 mks] d. Define the following: i. Biofuel ii. Biofuel iii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] c. Mention any four components of a photovoltaic system. [4 mks] c. Mention any four components of a photovoltaic system. [4 mks]				
d. Mention one renewable energy resources found in the following regions of Nigeria: i. North-East ii. South-West iii. South-South [3 mks] QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. [10 mks] b. Give three examples of solar collectors. [3 mks] c. Mention two advantages of solar thermal energy. [2 mks] QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. [8 mks] b. Use diagram to illustrate Horizontal axis wind turbine [4 mks] c. Explain any one environmental impact of wind energy. [3 mks] QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [3 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] d. Define the following: ii. Biofuel iii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks]				
i. North-East ii. South-West iii. South-South [3 mks] QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. [10 mks] b. Give three examples of solar collectors. [3 mks] c. Mention two advantages of solar thermal energy. [2 mks] QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. [8 mks] b. Use diagram to illustrate Horizontal axis wind turbine [4 mks] c. Explain any one environmental impact of wind energy. [3 mks] QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable			3 mks]	
QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. [10 mks] b. Give three examples of solar collectors. [3 mks] c. Mention two advantages of solar thermal energy. [2 mks] QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. [8 mks] b. Use diagram to illustrate Horizontal axis wind turbine [4 mks] c. Explain any one environmental impact of wind energy. [3 mks] QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity:	(i. North-East	a: ,	
QUESTION TWO a. With the aid of diagram describe a parabolic trough plant. b. Give three examples of solar collectors. c. Mention two advantages of solar thermal energy. QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. [6 mks] c. Mention three advantages of biomass energy. QUESTION FIVE a. Briefly explain hydroelectric power generation. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] c. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable		10.00		
a. With the aid of diagram describe a parabolic trough plant. b. Give three examples of solar collectors. c. Mention two advantages of solar thermal energy. QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. c. Define the following: i. Biofuel ii. Bioelectricity QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks]		iii. South-South	3 mks]	
a. With the aid of diagram describe a parabolic trough plant. b. Give three examples of solar collectors. c. Mention two advantages of solar thermal energy. QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. c. Define the following: i. Biofuel ii. Bioelectricity QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks]	OUESTION TWO			
b. Give three examples of solar collectors. c. Mention two advantages of solar thermal energy. QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. d. Mention one open-source software that can be used to model hybrid renewable		· · · · · · · · · · · · · · · · · · ·	O estral	
C. Mention two advantages of solar thermal energy. QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [6 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	b		_	
QUESTION THREE a. With the aid of diagram describe the principle of operation of a wind turbine. b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity:			-	
a. With the aid of diagram describe the principle of operation of a wind turbine. b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. d. Mention one open-source software that can be used to model hybrid renewable		The mention the datantages of solar thermal energy.	Z mksj	
b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. [5 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	QUE	STION THREE		
b. Use diagram to illustrate Horizontal axis wind turbine c. Explain any one environmental impact of wind energy. QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. [5 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	а	. With the aid of diagram describe the principle of operation of a wind turbine.	8 mks]	
QUESTION FOUR a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [3 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	b	. Use diagram to illustrate Horizontal axis wind turbine	4 mks]	
a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. [3 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	C.	Explain any one environmental impact of wind energy.	3 mks]	
a. Explain the following methods by which biomass is converted to electricity: i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. [3 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	OHE	STION FOLID		
i. Burning ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [3 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable				
ii. Decomposition [6 mks] b. Explain two environmental impacts of biomass energy. [6 mks] c. Mention three advantages of biomass energy. [3 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	a.			
b. Explain two environmental impacts of biomass energy. c. Mention three advantages of biomass energy. [6 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. c. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. d. Mention one open-source software that can be used to model hybrid renewable				
c. Mention three advantages of biomass energy. [3 mks] QUESTION FIVE a. Briefly explain hydroelectric power generation. [5 mks] b. Explain two environmental impacts of hydroelectric power. [6 mks] d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	h			
QUESTION FIVE a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. d. Mention one open-source software that can be used to model hybrid renewable		Beauting the second sec	_	
a. Briefly explain hydroelectric power generation. b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. d. Mention one open-source software that can be used to model hybrid renewable	C.	Mention three advantages of biomass energy.	[3 mks]	
b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	QUESTION FIVE			
b. Explain two environmental impacts of hydroelectric power. d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	a.	Briefly explain hydroelectric power generation.	[5 mks]	
d. Define the following: i. Biofuel ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	b.		-	
ii. Bioelectricity [4 mks] QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	d.	Define the following:	. ,	
QUESTION SIX a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. d. Mention one open-source software that can be used to model hybrid renewable		i. Biofuel		
a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. d. Mention one open-source software that can be used to model hybrid renewable		ii. Bioelectricity	[4 mks]	
 a. Give two similarities and dissimilarities between renewable and non-renewable energy sources? [4 mks] b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable 	OUESTION SIV			
sources? b. Explain two environmental impacts of solar energy. c. Mention any four components of a photovoltaic system. d. Mention one open-source software that can be used to model hybrid renewable				
 b. Explain two environmental impacts of solar energy. [6 mks] c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable 	a.			
c. Mention any four components of a photovoltaic system. [4 mks] d. Mention one open-source software that can be used to model hybrid renewable	1.			
d. Mention one open-source software that can be used to model hybrid renewable		•	-	
			[4 mks]	
sources. [1 mk]	d.			
		sources.	[1 mk]	