

**SAMPLE QUESTION PAPER
ENVIRONMENTAL SCIENCE (333)**

Time: 3 Hrs

Marks: 80

Note:

- i. All 39 questions are compulsory. Maximum mark of each question has been indicated against it.
- ii. There will be internal choice in some questions for core and optional modules related questions. Attempt only one part of these questions having internal choice.
- iii. Answer the questions from either Optional Module- 8A or Optional Module-8B only
- iv. Questions from 1 to 16 (13 Core modules and 3 Optional modules) are Objective Question Type-I questions (MCQs) carrying out 1 marks.
- v. Questions from 17 to 24 (5 Core modules and 3 optional modules) are Objective Question Type-II questions (Comprehensive question-with two sub parts, VSA, One Word, Fill in the Blanks and True/False) carrying 1 marks.
- vi. Questions from 25 to 32 are Short Answer type questions from core modules carrying 2 marks with 40-50 words.
- vii. Questions from 33 to 34 are Long Answer-1 type questions from core modules carrying 4 marks with 80 to 100 words.
- viii. Questions from 35 to 36 are Long Answer-II type questions from core modules carrying 5 marks with 100-150 words.
- ix. Questions from 37 to 39 are Short Answer type questions from Optional modules carrying 2 marks with 40-50 words.

CORE MODULES

OBJECTIVE QUESTIONS TYPE –I

1. Arrange the following stages of Human evolution in their correct sequence 1

- i. *Homo habilis*
- ii. *Homo sapiens*
- iii. *Homo erectus*
- iv. *Australopithecus*

Correct sequence is:

- a. iv, i, iii, iv
- b. i, ii, iii, iv
- c. iii, i, iv, ii
- d. ii, iii, iv, i

2. The type of forest found near the equator is: 1

- a. Deciduous forests.
- b. Temperate rain forests.
- c. Tropical rain forests.
- d. Coniferous forests.

3. Alcoholism and use of drugs problem related to : 1
- a. Genetic influences.
 - b. Behavioral influences.
 - c. Social influences.
 - d. Social influences.
4. Tehri Power Project is located at the junction of two rivers namely : 1
- a. Dhauliganga and Ramganga.
 - b. Ganga and Banganga.
 - c. Bhagirathi and Bhilganga.
 - d. Alaknanda and Yamuna.
5. Nitrogen fixation is an important part of nitrogen cycle. It can be completed through: 1
- i. Atmospheric processes.
 - ii. Industrial processes.
 - iii. Bacterial processes.
- a. a. and b only
 - b. b and c only
 - c. a and c only
 - d. a only
6. Urban communities includes characteristics such as: 1
- a. Social heterogeneity.
 - b. Social mobility.
 - c. Availability of facilities.
 - d. Pollution free.
- Select **odd one** characteristic?
7. Till recently Rural women suffered from respiratory problems, as there were using coal as their cooking fuel. The gases responsible for these problems are: 1
- a. N_2 and N_2O
 - b. CO and CO_2
 - c. CH_4 and CO_2
 - d. C_2H_2 and Cl_2
8. What kind of water is potable water? 1
- a. Brackish water.
 - b. Fresh water.
 - c. Saline water.
 - d. Distilled water.
9. The best way to reduce garbage would be: 1
- a. not to wash your cars every day.

- b. casual attitude towards natural resources.
 - c. try to recycle and reuse rather than over use of common properties and resources available.
 - d. make full use of the writing papers
10. During the beginning of industrialization, flint axes were already in use by the farmers. They were needed for: 1
- a. Clearing dense forest land to grow crops.
 - b. Animal hunting
 - c. Making wheels.
 - d. Making tools.
11. A student included the following flora as members of Thar Desert. Which one is not a correct option? 1
- a. *Calotropis gigantea*
 - b. *Prosopis spicigera*
 - c. *Dalbergia sissoo*
 - d. *Acacia leucophloea*
12. The maximum load or pressure of human activities that the environment can withstand or tolerate is known: 1
- a. Load sharing capacity.
 - b. Carrying capacity.
 - c. Natural resource consumption capacity.
 - d. Sustainable development.
13. Provision permitting the capture and transportation of wild animals for scientific management of animal population was introduced in the: 1
- a. Forest Act.
 - b. Wildlife Act.
 - c. Biodiversity Act.
 - d. Environment (Protection) Act.

OPTIONAL MODULE -A
WATER RESOURCE MANAGEMENT

14. (i)Name the person who founded Tarun Bharat Sangh: 1
- a. Porf Vidyut Joshi
 - b. Shri Kailash Satyarthi
 - c. Shri Rajendra Singh
 - d. Shri Mangu Ram

15. (i) Which one of the following statements is **incorrect**? 1
- a. Disinfection kills the harmful germs from water
 - b. Desalination is the removal of excess iodine from water.
 - c. The technique used for community water supply is called Nalgonda Techniques.
 - d. Microstainers are used mainly to remove algae.

16. Mortality by water borne diseases is a major problem in our country. According to you which one of the following suggestions is the simple cure of this problem? 1
- i. Ensure availability of good quality water for drinking and bathing.
 - ii. Never drink water directly from exposed water bodies or water storage vessels.
 - iii. Get the authorities to supply treated potable water.
- a. i only
 - b. ii and iii only
 - c. iii only
 - d. i, ii, and iii

OPTIONAL MODULE- B
ENERGY AND ENVIRONMENT

14. The most abundant energy source present on earth is: 1
- a. Solar energy
 - b. Biomass
 - c. Hydel power
 - d. Tidal energy
15. Identify the **incorrect pair** of 'different methods of wind energy generation' 'given in **Column A** and' their use' in **Column B**: 1

Column A

- a. Wind turbine
- b. Wind farm
- c. Aero generation
- d. Wind mill

Column B

- i. Electricity generation
- ii. Sowing seeds in farm
- iii. Charging large batteries
- iv. Pumping water

16. (i) Choose the correct **definition**. 1
- While explaining petro crops, a teacher defined petro crop as plants which:
- a. Are unfit for eating by humans or animals.
 - b. Yield fodder and fibre.
 - c. Produce hydrocarbon which can be used as fuel.
 - d. Yield crude petrol like secretions.

CORE MODULES
OBJECTIVE QUESTIONS TYPE-II

17. Provide the names of the kind of forests found in India based on the features mentioned below: 2
- a. Tropical evergreen trees where rainfall is surplus.
 - b. Abundant oak trees which show peak leaf fall during summer.
18. **Answer the following questions in one to two sentence (15-20 words) 1x6**
1. What causes methaemoglobinaemia in bottle fed babies?
 2. Why have people of India started using CFL and LED bulbs and tube lights at their homes?
 3. Suggest an agricultural practice to enhance nitrogen level of soil without the application of fertilizer.
 4. What would happen if environment is exploited beyond its carrying capacity?
 5. Mention any two advantages of GM crops.
 6. Name any two human activities that affect sustainability of biosphere.
19. **Answer the following questions in One word only. 1x6**
1. Loss of appetite, nausea, vomiting and diarrhea, accompanied with fever, urine in dark colour is the symptoms appear in a person. Name the disease which he/she suffers from.
 2. Some plants and animals are better adapted to a given environment than the others. What will you attribute this to?
 3. A factory in a state is discharging environmentally unfriendly effluents into nearby water bodies. Whom would you approach so that action can be taken against the polluting factory?
 4. After Bhopal Gas tragedy, one very powerful act came in force. Name the Act and its year.
 5. Name the Act which can be invoked to check biopiracy?
 6. The state shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country. Which Acts gives the permission?
20. **Fill in the Blanks by using appropriate words given below: 1x4**
(Hot Spots, Poverty, Estuaries, Parasitoid wasp, UV-C, Ramsar Conventio)
- a. Norman Myers had developed the concept of -----in 1988 to designate priority areas for in-situ conservation
 - b. ----- form of ultraviolet radiation is most damaging to humans.
 - c. Mealy bug pest of Cassava plant is controlled by-----.
 - d. Wetland Convention is also known as-----
21. **Write the following statement is true or false. 1x3**
- a. Indian legislations are called Acts where as the international legislation are in the form of conventions, protocols and treaties. ()
 - b. Golden rice a transgenic with enhanced Vitamin B content producing nutritionally rich rice to save many lives ()
 - c. Use of cleaner fuels such as LNG in power plants, fertilizer plants etc. which is cheaper in addition to being environmentally friendly. ()

**OPTIONAL MODULE- A
WATER RESOURCE MANAGEMENT**

22. Give any two precautions that are to be taken while storing rain harvested water in cisterns. 1
23. Why is it advisable to plant native plants instead of the exotics? 1
24. Visiting your village you found a eutrophied pond. What made you recognize eutrophication on first sight? 1

**OPTIONAL MODULE 8B
ENERGY AND ENVIRONMENT**

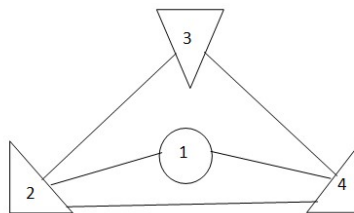
22. Give any two examples of indirect use of solar energy. 1
23. Allocate the petrocrops *Jatropha curcas* and *Calotropis procera* to their respective families. 1
24. We live between two great sources of energy, the no rocks beneath the earth and the sun in the sky. Which two sources of energy is being talked about? 1

**CORE MODULES
SUBJECTIVE PART**

25. How does Ocean get an oil spill? What effect does it have on aquatic life? 2
26. In the process of nitrogen fixation, which organism converts atmospheric nitrogen into a nitrogen compound. Name the compound which is produced during this process and How is it (compound) important? 2

Or

Fill in the blanks 1 to 4 left out in the diagram on structural components given below. Shelter, water, space, food.



27. Differentiate between rural society and urban society with reference to the following factors- 2
(i) Social differences and stratification
(ii) Mobility
28. Some people in India want to stay back in villages or rural areas. Which special features/characteristics of rural settlement attract them to settle there? Mention any 2

- four features/ characteristics to support your answer.
29. State what biological diversity is? Differentiate between the three levels of biological diversity 2
30. Discuss the economical importance of Biological diversity in the context of the following: 2
- (i) As Biological Resources and
 - (ii) their Social Benefits
31. What is the role played by Mycorrhizal fungus in agriculture? 2
- Or**
- A farmer grows two or more crops at the same time in the field. If by chance one crop fails, the other crop cover failure.
- Answer the following questions
- 1. What name is given to this crop practice?
 - 2. Generally which crop is being sown along with the main crop.
32. Why is “Environment Impact Assessment”(EIA) is important? List the different aspects of EIA. 2
- Or**
- Give the two main salient features of the biodiversity legislation.
33. What is green house effect and how is it related to global warming? 4
- Or**
- Mention four symptoms of asthma and three possible risk factors because of which one is likely to suffer from childhood asthma.
34. As a student of Environmental Science course, you are invited to give a talk on Project Tiger in India. 4
- (i) List the important aspects of Project Tiger that you would be highlighting during your talk.
 - (ii) What are the traditional practices for the protection of biodiversity in India?
35. What is “occupational health hazard? Write the causes, symptoms and prevention of black lung disease. 5
36. Mention the various levels of ecological organization with an example each, starting from individual organisms to biome. Write a sentence on each of these levels. 5
- Or**
- Explain how negative feedback mechanism maintains stability as a pond ecosystem.

**OPTIONAL MODULE 8A
WATER RESOURCE MANAGEMENT**

37. Define Water shed? List any two ways by which forests help in maintaining the quality of water. 2
38. Mention any four changes that were brought in the face of Bhikampura village in Alwar district of Rajasthan by Tarun Bharat Sangh .
2
Or
Give reasons why we are not able to use about 66% of the total fresh water found on earth?
39. Water bill of your house has suddenly gone up due to irresponsible uses of water in your residence. Suggest any four ways by which each family member can contribute towards conservation of water and there by leading to lowering the water bill. 2
Or
Your neighbor frequently waste lots of water ground water. Convince your neighbor to harvest rainwater by emphasizing one economic benefit and one usability benefit.

**OPTIONAL MODULE 8B
ENERGY AND ENVIRONMENT**

37. List any four technologies that are used during the construction of an ecohouse. 2
38. Mention any four ways/methods by which you would like to conserve energy while using refrigerator. 2
Or
Mention two examples where passive solar energy is used.
39. As an energy conservation activist, which are the points that you would like to suggest to the builder of townships for constructing environmentally friendly green buildings? 2
Or
Fossil fuels are fast dwindling. Which four alternative natural sources of energy can be used to conserve fossil fuels?

ENVIRONMENTAL SCIENCE (333)
MARKING SCHEME

Q. No.	Value Points	Distribution of Marks	Total Marks
CORE MODULES			
1	a	1	1
2.	c	1	1
3.	b	1	1
4.	c	1	1
5.	a	1	1
6.	d	1	1
7.	c	1	1
8.	b	1	1
9.	d	1	1
10.	a	1	1
11.	d	1	1
12.	b	1	1
13.	b	1	1
	OPTIONAL MODULE- 8A WATER RESOURCE MANAGEMENT	1	1
14.	c	1	1
15.	a	1	1
16.	d	1	1
	OPTIONAL MODULE- 8B ENERGY AND ENVIRONMENT	1	1
14.	a	1	1
15.	b	1	1
16.	c	1	1
17.	a. Tropical rain forest. b. Temperate broad leaf forest.	1x2	2
18.	1. High concentration of nitrates in drinking water. 2. Consumption is low hence lowers/cuts down electricity bill. 3. Sowing a leguminous crop as a rotational crop, after a non-leguminous crop. 4. Environment may be severely damaged and losses its ability to get back to its harmless state. 5. Enhanced taste and quality; reduced maturation time; increased nutrients, yields and stress tolerance; improved resistance to disease, pests etc. (Any two) 6. Agriculture; Industrialization; Urbanization (Any two)	1x6	6
19.	1. Infective hepatitis		

	<ol style="list-style-type: none"> 2. Natural selection 3. State Pollution Control Board 4. The Environmental Protection Act, (1986) 5. Biodiversity Act2000 6. Article-48A 	1x6	6
20.	<ol style="list-style-type: none"> a. Hot Spots b. UV-C c. Parasitoid wasp d. Ramsar Convention 	1x4	4
21.	<ol style="list-style-type: none"> a. T b. F c. T 	1x3	3
OPTIONAL MODULE - 8A WATER RESOURCE MANAGEMENT			
22.	Debris and leaves should be filtered; cisterns to be kept covered to minimize algal growth/ mosquito breeding.	$\frac{1}{2}$ x2	1
23.	Native plants use less water than the exotics.	1	1
24.	Algal bloom (like a floating green scum)	1	1
OPTIONAL MODULE- 8B ENERGY AND ENVIRONMENT			
22.	Wind, biomass, waves, hydroelectric power (Any two)	$\frac{1}{2}$ x2	1
23.	<ol style="list-style-type: none"> 1. Jatropha: Euphorbiaceae 2. Calotropis: Asclepiadaceae 	$\frac{1}{2}$ x2	1
24.	<ol style="list-style-type: none"> 1. Geothermal 2. Solar 	$\frac{1}{2}$ x2	1
CORE MODULES SUBJECTIVE PART			
25.	When oil gets spilled accidentally from ships or oil tankers in ocean, due to lack of oxygen, marine life is killed.	1x2	2
26.	<p>Free living bacteria; symbiotic bacteria (Name of nitrogen fixing bacteria) Ammonia or NH₃; it is used by plants in this form only</p> <p style="text-align: center;">Or</p> <p>1 = Space 2 = Water 3 = Food 4 = Shelter/cover</p>	$\frac{1}{2}$ x4 $\frac{1}{2}$ x4	2

27.	<table border="1"> <thead> <tr> <th data-bbox="305 264 545 338">Factors</th> <th data-bbox="545 264 786 338">Rural Society</th> <th data-bbox="786 264 1073 338">Urban Society</th> </tr> </thead> <tbody> <tr> <td data-bbox="305 338 545 632">i. Social differences and stratification</td> <td data-bbox="545 338 786 632">Much less due to similar vocation</td> <td data-bbox="786 338 1073 632">Differentiation pronounced due to work related differenced in earnings. Different strata of urban society noticeable.</td> </tr> <tr> <td data-bbox="305 632 545 926">ii. Mobility</td> <td data-bbox="545 632 786 926">Social mobility low. Migration of population towards cities mainly due to poverty much more.</td> <td data-bbox="786 632 1073 926">Social mobility based on achievement. Migration towards villages low.</td> </tr> </tbody> </table>	Factors	Rural Society	Urban Society	i. Social differences and stratification	Much less due to similar vocation	Differentiation pronounced due to work related differenced in earnings. Different strata of urban society noticeable.	ii. Mobility	Social mobility low. Migration of population towards cities mainly due to poverty much more.	Social mobility based on achievement. Migration towards villages low.	1+1	2
Factors	Rural Society	Urban Society										
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28.	<ul style="list-style-type: none"> • Close to natural environment • Community size is small • Social difference much less\mobility is low • Fresh air and less pollution • Simple and peaceful living • Any other • Any four 	$\frac{1}{2} \times 4$	2									
29.	<p>Sum total of all the variety of living organisms on earth constitute biological diversity.</p> <p>Genetic diversity: refers to the variety of genes, contained within the species of plants, animals and microorganisms.</p> <p>Species diversity: refers to the variety of species within a geographical area.</p> <p>Ecosystem diversity: refers to the present of different types of ecosystem.</p>	$\frac{1}{2} \times 4$	2									
30.	<p>Biological resources: Food, fibre, medicines, fuel wood and ornamental plants.</p> <p>i. Breeding material for crop improvement ii. Future resources</p> <p>Social benefits: i. Recreation ii. Cultural values</p>	$\frac{1}{2} \times 2$ $\frac{1}{2} \times 2$ 1 1	2									
31	-Absorption of nutrient is increased in plants infected											

	<p>with Mycorrhiza. -Has ability to dissolve and absorb phosphorus that plant can't readily absorb.</p> <p style="text-align: center;">Or</p> <p>1. Mixed cropping 2. Leguminous crop</p>	1x2	2
32.	<ul style="list-style-type: none"> • To prevent detrimental impact on environment due to developmental activities. • Risk Assessment, Environment Management and Post Product Monitoring. 	$\frac{1}{2}$ $\frac{1}{2} \times 3$	2
33.	<p>Green house effect is the way in which heat is trapped close to earth's surface by green house gases.</p> <ul style="list-style-type: none"> • Solar radiations strike the earth. Some radiations are reflected back by the atmosphere into the space but some pass through the atmosphere towards the earth. About half of radiations are absorbed by the atmosphere and heat the air. • The rest reaches the earth's surface. The earth surface now heats up and gives off longer wavelength or infra red radiations. • These infra red radiations pass back up into the atmosphere. Instead of being radiated 100 percent back into the space, much of it is absorbed by the atmosphere and are reradiated back to the earth's surface. • The temperature near the earth's surface as well as that of the atmosphere then rises. <p style="text-align: center;">Or</p> <p>Symptoms of asthma are: Breathlessness, wheezing, chest tightness or pain around the chest, persistent cough that can last several weeks.</p> <p>Risk factors</p> <ul style="list-style-type: none"> • Family history of allergy and allergic disorders. • High exposure of airborne allergy causing substance among susceptible children in the first five years of life. • Exposure to tobacco smoke. • Frequent respiratory infections early in life. <p style="text-align: center;">Any two</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">$\frac{1}{2} \times 6$</p> <p style="text-align: center;">$\frac{1}{2} \times 4$</p> <p style="text-align: center;">1x2</p>	4
34.	<p>(i) Project tiger was initiated in 1973 with the objective of conserving and rescuing tiger species from extinction; a total ban has been imposed on hunting of tigers and trading in tiger products at the national and international levels; elaborate management plans are made for each of the tiger reserves for tiger habitat improvement; and anti-</p>	$\frac{1}{2} \times 4$	4

	<p>poaching measures.</p> <p>(ii) A traditional strategy for the protection of biodiversity has been in practice in India in the form of sacred forest; these are small forest patches protected by tribal communities due to religious sanctity; some lakes also declared sacred by the people; for the protection of aquatic flora and fauna.</p>	<p>½ x4</p>	
35.	<p>Work environment exposes hazards like injuries, respiratory diseases, cancer, and musculoskeletal disorders, reproductive disorders, mental and neurological illness, hearing loss in human beings is known as occupational health hazards.</p> <p>Black lung disease:</p> <p>Cause: Accumulation of coal dust in the lungs of coal miners.</p> <p>Symptoms: A primary symptom is shortness of breathe which gradually get worse, may eventually cause heart failure. In some case, a progressively develops massive fibrosis.</p> <p>Prevention:</p> <ul style="list-style-type: none"> • To avoid long term exposure to coal dust. • Coal mines may help to prevent this condition by lowering coal dust level and providing protective clothes to coal miners. 	<p>1</p> <p>½</p> <p>½ x3</p> <p>1x2</p>	5
36.	<p>Organism: Basic unit of study ex. deer, dog, and mango tree etc.</p> <p>Population: a group of organisms consisting of a number of different populations that live in defined area and interact with each other. Ex Human population</p> <p>Community: a group of organisms consisting of a number of different species that live in an area and interact with each other. Ex. Different plants and animals in a forest</p> <p>Ecosystem: A communities of organisms and their physical environment, interacting as an ecological unit. Ex. Pond ecosystem</p> <p>Biome: A large community unit, characterized by a major vegetation type and associated fauna, found in a specific climatic region is biome. Or study of physical and biological features of a particular biome. Terrestrial area, sea, river etc.</p> <p style="text-align: center;">Or</p> <ul style="list-style-type: none"> • Phytoplankton increase. • Excess food so zooplankton increases. • Phytoplankton reduces as eaten up. 	<p>1x5</p>	5

	<ul style="list-style-type: none"> • Zooplankton reduces due to starvation. • Phytoplankton increases again as less consumed now. 		
	OPTIONAL A SUBJECTIVE PART WATER RESOURCE MANAGEMENT		
37.	<ul style="list-style-type: none"> • An area through which a water body gets water either run off or underground path. • Water moves through soil and litter layers are excellent filter and relatively pour. 	1+1	2
38.	<ul style="list-style-type: none"> • Dead river began to flow. • Round the year agriculture became possible. • Villagers return from cities. • Enough water and fodder became available and, animal husbandry flourished. • Better nutrition and improvement in public health. <p>Wild life back in forests(Any four)</p> <p style="text-align: center;">Or</p> <p>It is locked in the ice caps of Antarctica and glaciers as solids; that occupy high alpine locations.</p>	½ x4	2
39.	<ul style="list-style-type: none"> • Use only the amount you actually need. • Do not leave the tap running while you are brushing your teeth or soaping you in your face • Make sure that your home is leak free. • Use different methods for storing rain water. • Avoid flushing the toilet unnecessarily • Any other (Any four) <p style="text-align: center;">Or</p> <ul style="list-style-type: none"> - Reduces monthly bill (economic) - Excellent quality water/ Can be used for various purposes 	½ x4	2
	OPTIONAL B SUBJECTIVE PART ENERGY AND ENVIRONMENT		
37.	<ul style="list-style-type: none"> • Rain water harvesting with underground cistern • Roof integrated solar water heater • Window mounted retractable solar cooker • Multifed biogas plant, usable as septic tank if required. • Three different types of experimental roofs (Hollow concrete tiles, prefab brick jack arches, madras terrace roof) • Design for ventura (ventilation via inner courtyard). <p style="text-align: center;">Any four</p>	½ x4	2

<p>38.</p>	<ul style="list-style-type: none"> • Keep refrigerator temperature between 37°F to 40°F and freezer set at 50°F. • we should refrigerator as full as possible • Close door properly because it consume more energy. • Avoid keeping uncovered liquid in the fridge. • Food should be cooled upto room temperature before putting into refrigerator. • Door should not be opened several times. • Any other • Any four <p style="text-align: center;">Or</p> <ul style="list-style-type: none"> • Evaporation of sea water for producing salt, • Drying of clothes; • Drying of food/plant parts; • Heating/cooling/daylight of homes/buildings <p style="text-align: center;">Any two</p>	<p style="text-align: center;">$\frac{1}{2} \times 4$</p>	<p style="text-align: center;">2</p>
<p>39.</p>	<ol style="list-style-type: none"> i. Building designs and construction practices should promote energy conservation ii. Use of renewable energy sources should be encouraged. iii. Facilitate energy conservation as related to local transportation needs iv. Awareness should be raised among people for conservation of energy sources. v. Promote community self-sufficiency and independence with respect to energy levels and encourage use of the least environmentally damaged sources of energy. vi. Town should be minimize its energy consumption. <p style="text-align: center;">Any four</p> <p style="text-align: center;">Or</p> <ul style="list-style-type: none"> • Tidal • Direct solar • Wind • Hydel / hydro power • Any Other • Any four 	<p style="text-align: center;">$\frac{1}{2} \times 4$</p>	<p style="text-align: center;">2</p>