NON CONVENTIONAL ENERGY RESOURCES

Subject Code: BEEE0-F94

1. What are conventional and non-conventional energy source?
2. what are meant by renewable energy sources?
3. What are the advantages and disadvantages of conventional & non-conventional energy source?
4. Explain the importance of non-conventional energy sources in the present context?
5. What is the status of non-conventional energy sources in India, and what are their future prospect?
6. What is the present status of nuclear energy and what are their future prospects?
7. Comment on the future availability trend of fossil fuel in the world?
8. What are limitations of solar energy?
9. What are the indirect forms of solar energy?
10. How is the energy being continuously being produce in the sun?
11. How does the collection of solar energy is affected by tilting a flat plate collector with respect to ground?
12. How does sun tracking helps in energy collection by a flat plate solar collector?
13. What is the average range of solar radiation received on the earth's surface during day?
14. What are the main advantages of flat plate solar collector?
15. With the help of a schematic diagram , Explain the working of solar water heating?
16. What is solar house?
17. With the help of schematic diagram, explain the working of solar thermal water pump?
18. With the help of schematic diagram, explain the working of solar pond electric power plant?
19. What are major advantages and disadvantages of solar PV system?
20. Explain mechanism of photoconduction in a PV cell?
21. What range of wind speed is considered favorable for wind power generation?
22. What factors led to the accelerated development of wind power?
23. Explain the mechanism of production of local winds.
24. What are the most favourable sites for installing wind turbines?
25. Explain the major application of wind power.
26. Sketch the diagram of a HAWT, and explain the function of its main components.
27. Explain various design of blades of HAWTs and their relative features.
28. Sketch the diagram of a VAWT, and explain the function of its main components.
29. What is the effect of solidity on the performance of wind turbine?
30. Comment on relative features of HAWT and VAWT.
31. Comment on the environmental impact of wind energy.
32. What do you understand by energy farming?

33. What are bio-mass energy resources and what is energy yield from each of them?
34. Explain the process of commercial production of ethanol from biomass?
35. What is the origin of biomass energy? What is its global potential? What is average efficiency of photosynthetic conversion of solar energy in to biomass?
36. What is the main advantage and disadvantage of biomass energy?
37. Explain the process of photosynthesis? How much energy is stored through the process? In what range of frequency spectrum of solar light photosynthesis is most marked?
38. What is the main advantage and disadvantage of biogas, what is the main constituents and heating value? In witch countries these plants are most popular?
39. Explain the process of gasification of solid bio fuels? What is the general composition of gas produced and what is heating value? What its main application?
40. What are the factors affecting on the performance of biogas digester?
41. Compare the relative performance of a floating drum and fixed one type biogas plants?
42. Explain different type of bio fuels?
43. What is the present status of development of biomass energy resources in India?
44. What is the source of tidal energy? Which is the minimum tidal range required for a practical tidal plant? How much is the potential in tides?
45. What are the main hurdles in the development in the tidal energy?
46. What is the effect of pumping on the output of tidal plant?
47. What are the potential sites for tidal energy in India?
48. What are the main advantages and disadvantages of ocean wave energy?
49. What types of sites are considered suitable for wave power development?
50. What are the main advantages and disadvantages of OTEC system?
51. Explain the technology available for OTEC.
52. What is the fuel cell and what are its main advantages?
53. What are potential applications of fuel cell?
54. What are the main hurdles in the way of common use of fuel cell?
55. Describe the classification of the fuel cells.
56. Explain the principal of operation of Alkaline fuel cell.
57. Draw a conceptual block diagram of a fuel cell power plant and explain the detail of each block.
58. What is the present state of development in the fuel cell technology?
59. Comment on environmental effect of fuel cell.
60. Describe the basic principle of operation of an MHD generator. Derive expression for maximum power generation per unit volume of generator.
61. What are the major advantages and limitation of MHD generating plant?
62. With the help of schematic diagram, explain the operation of closed cycle MHD generating plant.

63. What are the limitations of harnessing Geo-thermal energy? What are the advantages and disadvantages of Geo-thermal energy?
64. With a neat sketch explain the working of Magneto Hydro Dynamics Generator. Write any three each advantages and limitations of MHD generating plant?
65. Mention the merits of thermionic converter. On what parameter do the output voltage and current depend?
66. Comment on type of materials required in thermionic converter.
67. What are the potential applications of thermionic converters?
68. What do you understand by energy conservation? Explain its various aspects.
69. Explain various aspects of energy conservation.
70. What is various principal of energy conservation?
71. Explain the concept of daylight saving as a means for energy conservation.
72. What do you understand by cogeneration?
73. What are fossil fuels? What was the most common source of heat energy in ancient times?
74. What was the main source of energy during the industrial revolution?
75. Which fuel meets the growing demand of energy nowadays and the past?
76. What made us to look for alternative source of energy?
77. Why fossil fuels are called non-renewable sources of energy?
78. What are main disadvantages of using fossil fuels and how can we minimize it?
79. What kind of gases are released while burning fossil fuels?
80. Explain how hydro and wind energies are the indirect sources of solar energy?
81. Why most of the thermal power plants are set near coal or oil mines?
82. Why hydro power plants are associated with dams?
83. Give the reason for the coining of the word thermal power plant?
84. Write the sequence of energy transformation taking place in the following places
    a) Nuclear power plant b) Thermal power plant c) Hydro power plant d) Tidal power plant e) Geo-thermal power plant
85. Of the major requirement of different forms of energies write which one
86. is the greater requirement of India and which is the least? What is the percentage of the hydro energy requirement of India?
87. Write the working of a hydro power plant with a neat diagram?
88. What are the advantages and disadvantages of using energy from water?
89. What are the limitations of constructing dams across rivers?
90. What is bio- mass and write few examples of bio mass?
91. How is charcoal formed and what are the advantages of using charcoal as a source of energy?
92. What is the Indian name of bio-gas and why is it called so?
93. What is the composition of bio-gas and the matter rich in the slurry left behind in the bio-gas plant?

94. With a neat diagram of a bio-gas plant write its construction and working?
95. What is the major disadvantage of bio-mass and how can it be overcome?
96. With a neat diagram of a wind mill write its construction and working?
97. What are the advantages and disadvantages of establishing wind mills?
98. What is a wind energy farm? How is the total output taken from it?
99. Write the differences between renewable and non-renewable resources of energy
100. Write a similarity and a dissimilarity between hydro energy and thermal energy.
101. Write a similarity and a dissimilarity between thermal energy and nuclear energy
102. How do nuclear energy and wind energy differ from each other and also write a similarity between them.
103. What percentage of solar energy reaching the upper atmosphere of earth reaches the lower atmosphere? What happens to the rest?
104. Draw the schematic picture a solar cooker?
105. How do you classify the solar energy devices ? and explain.
106. What energy transformation takes place in the solar cooker?
107. Explain the working of a solar cooker. What is the role of a glass sheet and black coated surface of a box type solar cooker?
108. What is the use of the plane mirror of a box type of solar cooker?
109. Which type of solar spectrum is trapped in the solar cooker?
110. What solar water heaters? And what principle is used in their working? 111. What is a solar cell? What are the advantages and disadvantages of a solar cell? 112. What energy transformation takes place in a solar cell?
113. What are the limitations of using solar cell?
114. What factors make a solar cell very expensive?
115. What are the uses of solar cells?
116. What is the potential difference and power generated by a typical solar cell?
117. What is a solar panel?
118. What are the different forms of energies available from the oceans?
119. What is the cause for the tides on the ocean? (or) how are tides formed? How do you harness tidal energy?
120. How wave energy is an indirect form of solar energy?
121. What are the limitations of harnessing wave energy?
122. What is ocean thermal energy and how is it harnessed?
123. What is OTEC? What is the minimum requirement to operate the OTEC system?
124. How is electricity generated from Ocean Thermal Energy?
125. What is Geo-thermal energy?
126. List out the energies that are dependent and non-dependent of solar energy?
127. What are hot spots? Why hot spots are important in harnessing Geo-thermal energy?
128. How is electricity generated from Geo-thermal energy?

129. Name a few cites where geothermal energy is harnessed?
130. What are the limitations of harnessing Geo-thermal energy?
131. What are the advantages and disadvantages of Geo-thermal energy?
132. What are the different type of nuclear reactions?
133. Define nuclear fission and fusion reactions
134. What is a nuclear chain reaction?
135. Explain how electricity is generated from a nuclear reactor?
136. What is the major hazard of nuclear power generation?
137. What are advantages and disadvantages of nuclear reactors?
138. What makes large-scale use of nuclear energy prohibitive?
139. On what factors the source of energy that we choose depends on?
140. Why any source of energy has less consequence? Explain your answer with suitable example.
141. Define energy.
142. Explain why it is necessary to develop non-conventional method of generating electrical energy.
143. What are the prospects of renewable energy sources in India?
144. What is Kyoto protocol and what are its implications for developed and developing countries.
145. Write a note on total solar energy received in India.
146. Give three types of solar energy collectors.
147. Define PV effect.
148. What are the main components of a flat plate solar collector, explain the function of each?
149. Enumerate the different types of concentrating type collectors.
150. Why orientation is needed in concentrating type collectors?
151. With the help of a neat sketch describe a solar heating system using water heating solar collectors. What are the advantages and disadvantages of this method?
152. What is the principle of solar photovoltaic power generation? What are the main elements of a PV system?
153. Explain the principle of building integrated PV system with suitable sketch.
154. Explain with a neat sketch the working principle of standalone and grid Connected solar system.
155. Explain about the applications of solar PV system in rural areas.
156. Describe briefly about PV system.
157. What is the type of generator used in wind power plant?
158. What are wind farms?
159. How the wind mills are classified?
160. What are the advantages of wind power?
161. What are the disadvantages of wind power?

162. Define Vertical Axis Wind Turbine (VAWT).
163. Explain briefly about the horizontal wind mills with neat sketch?
164. Explain briefly about the vertical wind mills with neat sketch?
165. State the essential features of a probable site for a wind form.
166. Why a tall tower is essential for mounting a horizontal axis wind turbine ?
167. With a neat diagram, explain how wind energy can be converted into electrical energy.
168. Explain with a neat diagram the working of various types of wind generators.
169. Name a few projects harnessing tidal power.
170. What is geothermal power?
171. Discuss the disadvantages of geothermal plant.
172. Discuss the advantages of geothermal plant.
173. What are the special problems in construction of barriers for tidal scheme?
174. Give the advantages of tidal power plant.
175. Mention some organic materials used in bio-mass plant.
176. Differentiate tide and wave.
177. Classify the geothermal sources.
178. What are the constituents of biogas?
179. Explain how ocean tides are generated and how the power can be tapped?
180. Discuss the limitations of this method.
181. Explain with neat sketches, the operation of a geothermal power plant.
182. Write short note on bio energy by burning plants.
183. Explain with neat sketch, the methods of operation of tidal power generation.
184. What is geothermal energy? How can geothermal energy are utilized for electric power Generation?
185. Write about energy from biogas.
186 What are the factors affecting biogas generation.
187. Describe the single basin arrangement in tidal power generation.
188. Write short notes on wave energy conversion machines.
189. What are the advantages and limitations of small scale hydroelectric power?
190. What are the main types of OTEC power plants? Describe their working in brief.
191. List the types of fuel cells.
192. What are the main components of fuel cell? List some applications of fuel cells.
193. Explain the performance characteristics of battery and its equivalent circuit.
194. What is a fuel cell? Describe the principle of working of a fuel cell with reference to H2 – O2 cell.
195. Describe the importance of environment studies.
196. "The need for public awareness about environment is of vital importance." Discuss.
197. Write a note on the need of public awareness about environment.

198. What is meant by Natural Resources? Explain Renewable and Non-renewable Natural resources.
199. Write a note on Water resources. Describe the main resources of water.
200. Write the definition of pollution in your own words and also explain the causes of pollution.
201. Explain the types of pollution. Write the precautions to minimize the pollutions (air, water, soil, marine, noise).
202. Explain the role of an individual in prevention of pollution and how it is possible?
203. What are urban problems? How we can solve the problem related to water conservation?
204. What are the ways to resettlement and Rehabilitation of people affected by the pollutions?
205. Explain the Environment Protection Act in your own words.
206. What are the issues involved in enforcement of environment legislation?
207. What do you understand by the population growth and population explosion? Explains.
208. What is the relation between the environment and human health?
209. What are wastelands? How do we reclaim the wastelands?
210. Discuss in detail the methods of water conservation
211. What is thermionic power conversion? Discuss the process of thermionic power conversion with a neat diagram of thermionic convertor.
212. What do you understand by energy conservation? Explain in brief the salient features of Energy Conservation Act
213. Explain the working principle of thermionic power convertor with a neat sketch.
214. What is radiation? Discuss their effects on the human health.
215. Explain in detail nuclear accidents and their effects on the environment
216. What is particulate matter? How do particulate matters harm human health
217. What do you understand by fixed and mobile sources of air pollution? Explain in brief.
218. What are the control measures to be taken to minimize the air pollution in respect of particulate matter
219. Discuss the effect of air pollution on human health.
220. Classify the sources of radioactive pollution with a neat flow chart. Explain the effects of non-ionising radiations.
221. What are the sources of pollution?
222. Discuss the effects of air pollutions
223. Discuss Air Act 1981
224. How do solid wastes affect the environment?
225. Explain sources, effect and control of soil pollutions

226. What are the control measures used for controlling soil pollution? List at least six of them.
227. Explain BOD and Eutriphication in connection with water pollution.
228. What are the various methods of safe disposal of wastes? Discuss in brief.
229. Define the term soil pollution. Explain in brief the sources of soil pollution.
230. What are the main causes of water pollution? How can water pollution be controlled?
231. What are the sources of water pollutions?
232. What is the effect of water pollutions?
233. How can water pollutions can controlled Write short note on the Biological magnification
234. What are the sources and effects of noise pollutions and how it is controlled?
235. Discuss various environmental problems and their possible long term solutions
236. How can landslides are controlled?
237. Discuss the environmental effects of producing more food reservation
238. Discuss the various provisions of Forest Conservation Act, 1980
239. Discuss the salient features of the Environment (Protection) Act, 1986.