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<b>R-14</b>
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**Code: 4G585**

IV B.Tech. II Semester Advanced Supplementary Examinations October 2020

**Non Conventional Sources of Energy**  
( Mechanical Engineering )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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	Marks	CO	Blooms Level
<b>UNIT-I</b>			
1. a) Explain the importance of non-conventional energy sources in the context of global warming	7M	1	2
b) Mention different types of non-conventional energy sources and write the disadvantages of utilizing solar energy	7M	1	1
<b>OR</b>			
2. a) Define solar irradiance, solar constant, extra terrestrial and terrestrial radiations. What is the standard value of solar constant	7M	2	1
b) Explain the construction and principle of operation of a sunshine recorder.	7M	2	2
<b>UNIT-II</b>			
3. a) Write the advantages and disadvantages of concentrating collectors over flat plate collectors.	7M	2	1
b) Classify concentrating collectors and Explain the working of any one type of concentrating collectors	7M	2	4
<b>OR</b>			
4. a) Explain the effect of various parameters on the performance of flat plate collector	7M	2	2
b) Discuss the working and construction of solar distillation equipment	7M	2	6
<b>UNIT-III</b>			
5. a) What are the most favorable sites for installing wind turbines also explain the major applications of wind power.	5M	3	1
b) Derive the expression for power extracted from wind. What is the maximum theoretical power that can be extracted and under what condition?	9M	3	4
<b>OR</b>			
6. a) What is the origin of biomass energy? What is its global potential	7M	4	1
b) What are the main advantages and disadvantages of biomass energy?	7M	4	1
<b>UNIT-IV</b>			
7. a) Explain various types of geothermal resources	7M	5	2
b) What are the merits and demerits of geothermal energy?	7M	5	1
<b>OR</b>			
8. a) Explain the open cycle technology available for Ocean Technology Energy Conversion	7M	5	2
b) What is the source of tidal energy? What are the main hurdles in the development of tidal energy	7M	5	
<b>UNIT-V</b>			
9. a) Explain Seebeck, Peltier and Joule Thomson effects.	7M	6	2
b) List the limitations of Direct energy conversion (DEC)	7M	6	1
<b>OR</b>			
10. Briefly describe the operation fuel cell. How do you select fuels in the cell based on different operating conditions?	14M	6	2

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