

Hall Ticket Number :

R-17

Code: 7G583

IV B.Tech. II Semester Supplementary Examinations November 2022

### Rapid Prototyping

(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks )

\*\*\*\*\*

Marks CO Blooms Level

#### UNIT-I

1. a) Discuss the evolution of RP systems indicating the history and their growth rate in the industrial sector 7M CO1 L2
- b) What is rapid prototyping? Give its advantages and limitations. 7M CO1 L2

OR

2. a) Discuss the steps followed in rapid prototyping process. 7M CO1 L2
- b) Describe the role of RP in product development. 7M CO1 L2

#### UNIT-II

3. a) Explain the effect of part building, part finishing and part deposition orientation on accuracy of rapid prototyping model. 7M CO2 L2
- b) What is meant by data preparation error? 7M CO2 L2

OR

4. a) Discuss about the influence of various factors in determining the part building error and data preparation error. 7M CO2 L3
- b) Write short note on the following: (i) Errors in SH files. (ii) Influence of building orientation. 7M CO2 L2

#### UNIT-III

5. a) Distinguish the following process: FDM, LOM, SGC and SLS. 7M CO3 L2
- b) What are the materials suitable for FDM process? 7M CO3 L2

OR

6. a) With neat sketch explain the process of selective laser sintering process and its advantages, disadvantages and applications. 7M CO3 L2

- b) What are the applications of FDM models? Give an example.

7M CO3 L2

<b>UNIT-IV</b>
----------------

7. a) Differentiate SLA and SLS in rapid prototyping.  
b) Explain in detail the LENS process with a neat diagram. Also write the advantages and disadvantages.

7M CO4 L3

7M CO4 L3

**OR**

8. a) Describe laminated object manufacturing process and discuss the principle and effect of process parameters on qualities of final product.  
b) Write advantages and disadvantages of (i) Model maker. (ii) Multi jet modeling.

7M CO4 L3

7M CO4 L2

<b>UNIT-V</b>
---------------

9. a) Explain how SLS process can be used to produce direct and in-direct prototypes.  
b) List out the various indirect rapid tooling methods and explain about the silicon rubber tooling

7M CO5 L2

7M CO5 L2

**OR**

10. a) Explain the following:  
(i) Aluminum filled epoxy tooling (ii) Spray metal tooling  
b) Discuss in detail about the direct rapid tooling and indirect rapid tooling.

7M CO5 L2

7M CO5 L2

\*\*\*END\*\*\*

Hall Ticket Number :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**R-17**

**Code: 7G586**

IV B.Tech. II Semester Supplementary Examinations November 2022

## **Non-Conventional Sources of Energy**

(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

\*\*\*\*\*

	Marks	CO
<b>UNIT-I</b>		
1. a) Explain the role and potential of new and renewable energy sources in the present scenario	7M	CO1
b) What advantages do solar energy have when compared to other renewable sources	7M	CO1
<b>OR</b>		
2. a) Define solar irradiance, solar constant, extra terrestrial and terrestrial radiations. What is the standard value of solar constant	7M	CO1
b) Explain the construction and principle of operation of a sunshine recorder	7M	CO1
<b>UNIT-II</b>		
3. a) Explain the working and constructional details of solar flat plate collector	7M	CO2
b) What are the main advantages of flat plate collector?	7M	CO2
<b>OR</b>		
4. a) Classify concentrating collectors and Explain the working of any one type of concentrating collectors	7M	CO2
b) Discuss the working and construction of solar distillation equipment	7M	CO2
<b>UNIT-III</b>		
5. a) Explain the working and constructional details of horizontal axis wind turbine with the help of neat sketch	7M	CO3
b) What are the advantages of horizontal axis wind turbine over vertical axis wind turbine?	7M	CO3
<b>OR</b>		
6. a) What are the raw materials and their properties required for producing biogas from biomass	7M	CO3
b) What are the advantages and disadvantages of biomass energy?	7M	CO3
<b>UNIT-IV</b>		
7. a) What is the origin of wave energy? Write the advantages of wave energy	7M	CO4
b) Explain the working of any one wave energy conversion technology with neat sketch	7M	CO4
<b>OR</b>		
8. a) Explain various types of geothermal resources	7M	CO4
b) What are the merits and demerits of geothermal energy?	7M	CO4
<b>UNIT-V</b>		
9. a) Explain the need for DEC and also mention its limitations	7M	CO5
b) Explain the following effects		
i) Seebeck effect    ii) Peltier effect    iii) Joule Thompson effect	7M	CO5
<b>OR</b>		
10. a) Explain the working of MHD generator with neat sketch	7M	CO5
b) What are the economic aspects to be considered for extracting energy through Direct Energy Conversion?	7M	CO5

\*\*\*END\*\*\*