

Name:  
Enrolment No:



**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, June/July 2020**

**Course: Rapid Prototyping and tooling**  
**Program: B.Tech ADE**  
**Course Code: MEEL 413**

**Semester: VIII**  
**Time 03 hrs.**  
**Max. Marks: 100**

**Instructions:**

**SECTION A**

| S. No. |  | Marks | CO  |
|--------|--|-------|-----|
| Q 1    | Statement<br>A) Manufacturing is a value addition process.<br>R) Manufacturing utilizes resources and processes that changes the shape size and properties of raw material to convert it in a useful product.<br><br>Options:<br>a) A and R are correct and R is a correct explanation of A<br>b) A and R are correct but R is not a correct explanation of A<br>c) A is correct but R is incorrect<br>d) A is incorrect but R is correct. | 5     | CO1 |
| Q 2    | Statement<br>A) Material handling cost will be increased in cellular manufacturing.<br>R) Each part is processed in a single cell result in reduction in material travel time<br><br>Options:<br>a) A and R are correct and R is a correct explanation of A<br>b) A and R are correct but R is not a correct explanation of A<br>c) A is correct but R is incorrect<br>d) A is incorrect but R is correct.                                 | 5     | CO1 |
| Q 3    | “Creating a CAD model from the physical product and then using this model to produce the product by automated machines”. The statement defines which of the following<br><br>a) Rapid prototyping<br>b) Reverse Engineering<br>c) Cellular manufacturing<br>d) Flexible manufacturing  | 5     | CO2 |
| Q 4    | Which of the following is not a preprocessing step of Rapid prototyping<br>a) Triangulation<br>b) Slicing<br>c) Depositing layered material<br>d) Generating the support structure   | 5     | CO2 |
| Q 5    | Selective laser sintering uses a moving laser to sinter the.....polymers.<br>a) Powder   | 5     | CO3 |

|                  |  |    |     |
|------------------|--|----|-----|
|                  | <ul style="list-style-type: none"> <li>b) Liquid</li> <li>c) Foiled</li> <li>d) wired</li> </ul>   |    |     |
| Q 6              | <p>Hollow part cannot be manufactured by</p> <ul style="list-style-type: none"> <li>a) Stereo lithography</li> <li>b) Layered object manufacturing</li> <li>c) Selective laser sintering</li> <li>d) Fuse deposition modeling</li> </ul>   | 5  | CO3 |
| <b>SECTION B</b> |  |    |     |
| Q 7              | Classify manufacturing systems. Explain cellular manufacturing and flexible manufacturing systems in details   | 10 | CO1 |
| Q 8              | <ul style="list-style-type: none"> <li>a) Discuss the basic principle of rapid prototyping</li> <li>b) “Rapid prototyping is a promising tool for reverse engineering” justify the statement</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>a) Discuss advantages and need of computer integrated manufacturing</li> <li>b) Describe the types of prototypes at different stages of manufacturing.</li> </ul>  | 10 | CO2 |
| Q 9              | Compare stereolithographic technique with solid ground curing technique  | 10 | CO3 |
| Q 10             | Describe the ballistic particle manufacturing. Explain its advantages, disadvantages and applications.   | 10 | CO2 |
| Q 11             | Compare layered object manufacturing with repetitive masking and deposition technique  | 10 | CO3 |
| <b>SECTION-C</b> |  |    |     |
| Q 12             | <ul style="list-style-type: none"> <li>a) Discuss the selective laser sintering process in details. Explain challenges involved with the implementation of SLS process.</li> <li>b) Compare 3D printing with holographic interference solidification technique</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>a) Compare fuse deposition modelling with beam interference solidification technique</li> <li>b) Describe the selective powder bonding technique in detail.</li> </ul> | 20 | CO3 |