PAPER ID-310775

Subject Code: KME071

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VII) THEORY EXAMINATION 2023-24
ADDITIVE MANUFACTURING

TIME: 3 HRS **M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question	Marks
a.	Explain Aerosol printing.	2
b.	Mention some of the applications of additive manufacturing (AM).	2
c.	What is material handling issue?	2
d.	Explain Metal systems.	2
e.	What is photo polymerization?	2
f.	Write the different process parameters in PBF.	2
g.	Explain small batch production.	2
h.	Write a short note on: Coproducing.	2
i.	Define rapid prototyping.	2
j.	Why aerospace industry employs additive manufacturing?	2

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a.	Explain the different direct and indirect processes involve in Additive Manufacturing.	10
b.	Explain the important eight steps involve in additive manufacturing.	10
c.	Explain the Powder Bed Fusion (PBF) process with a neat diagram. Also explain the various powder fusion mechanisms involve in PBF processes?	10
d.	What is STL file? Describe the various STL files formats	10
e.	Explain the nomenclature of AM Machines in detail. Discuss in brief the intellectual property issue related to AM machines.	10

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Explain with a neat sketch the working principle of laser stereo lithography process.	10
b.	What is Fused Layer Modeling (FLM)? Also describe Fused Deposition Modeling (FDM).	10

4. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Explain the different build-related factors that should considered when setting up an AM machine.	10
b.	What is CAD? How CAD technology play an important role in the development of additive manufacturing technology?	10

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5. Attempt any *one* part of the following: 10 x 1 = 10

a.	Explain Directed Energy Deposition (DED) process of additive manufacturing with a neat diagram. Describe various DED systems and also gives its advantages and disadvantages.	10
b.	Explain the extrusion-based additive manufacturing process with a neat diagram. What are the various parameters on which the path control in extrusion-based system depends?	10

6. Attempt any *one* part of the following: 10 x 1 = 10

a.	Explain customized mass production. What are the different types of customized mass production?	10
b.	Explain the various engineering design rules used for additive manufacturing**.**	10

7. Attempt any *one* part of the following: 10 x 1 = 10

a.	How additive manufacturing processes can benefit the different industries? Explain in details, the three different applications where additive manufacturing processes are employed.	10
b.	Explain in brief the possible trends and future directions in additive manufacturing. Also discuss the available business opportunities in AM.	10