Subject Code: BME051

PAPER ID-310990

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

BTECH
(SEM V) THEORY EXAMINATION 2024-25
ADVANCE MANUFACTURING PROCESSES

TIME: 3 HRS **M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 07 = 14**

Q no.	Question	CO	Level
a.	Define Machining and Machinability.	1	K2
b.	What is a Pattern? Give any two types of Pattern.	1	K2
c.	Define Allowance. Give any two types of allowances allowed in casting.	2	K2
d.	What is Casting? Give any two disadvantages for the same process.	2	K2
e.	What is Welding? What are the types of welding available in Manufacturing processes?	3	K2
f.	What is the High Energy Rate Forming (HERF) process?	4	K2
g.	What is the main difference between Additive Manufacturing and Traditional Manufacturing?	5	K2

SECTION B

2. Attempt any *three* of the following: **07 x 3 = 21**

a.	Explain how Water Jet Machining can achieve precise cuts without causing thermal damage to the material.	1	K2
b.	What do you understand by Evaporate Casting? Explain the working of the process with the help of neat and clean sketch.	2	K2
c.	Describe the ultrasonic welding (USW) process, highlighting the role of high-frequency ultrasonic vibrations and pressure in joining materials.	3	K2
d.	Explain the working mechanism of Electro-magnetic forming (EMF) and its advantages	4	K2
e.	What is time compression in the context of product development, and why is it important?	5	K2

SECTION C

3. Attempt any *one* part of the following: **07 x 1 = 07**

a.	What is Abrasive Jet Machining (AJM)? Describe its working with suitable diagram. Also explain the effect of standoff distance and abrasive grit size on material removal rate in AJM.	1	K2
b.	What is Water Jet Machining (WJM)? Describe its working with suitable diagram. Also explain the effects of changing various parameters of WJM.	1	K3

4. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Discuss the principle of continuous casting, outlining the steps involved in the process and discuss its advantages.	2	K2
b.	Discuss the advantages of ceramic shell casting in terms of surface finish, dimensional accuracy, and its application in casting high-temperature alloys.	2	K3

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5. Attempt any *one* part of the following: 07 x 1 = 07

a.	Explain the working principle of Electron Beam Welding (EBW) with the neat sketch. Also write down the limitations and applications of EBW.	3	K2
b.	Explain the working principle of Laser Beam Welding (LBW) with the neat sketch. Also write down the limitations and applications of LBW.	3	K2

6. Attempt any *one* part of the following: 07 x 1 = 07

a.	Describe the Contour Roll Forming process and how it is used to shape metal continuously.	4	K3
b.	Discuss the Explosive Forming process in detail, explaining how it uses shockwaves for metal deformation.	4	K3

7. Attempt any *one* part of the following: 07 x 1 = 07

a.	Why is additive manufacturing important? Also classify additive manufacturing systems.	5	K2
b.	What are the key process parameters that influence the quality of a part produced by Powder Bed Fusion?	5	K2