Register Number:……..

KUMARAGURU
college of technology
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B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Forth Semester

MECHATRONICS ENGINEERING

U18MCR0002**:** Additive Manufacturing Processes

COURSE OUTCOMES

CO1: Understand the fundamentals of additive manufacturing
CO2: Describe the operating principles of liquid based additive manufacturing process.
CO3: Describe the operating principles of solid based additive manufacturing process.
CO4: Explain the concepts of powder based additive manufacturing process.
CO5: Describe the principles of binder and LOM additive manufacturing process.
CO6: Understand the various types of post-processing in additive manufacturing process.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	List the advantages of the additive manufacturing process.	CO1	[K_2]
2.	Classify the additive manufacturing process.	CO1	[K2]
3.	How digital light processing differs from Stereolithography Apparatus.	CO2	[K2]
4.	Brief the FDM process.	CO3	[K2]
5.	Write the applications of selective laser sintering.	CO4	[K2]
6.	Distinguish selective laser sintering and selective laser melting.	CO4	[K2]
7.	Brief the working of binder jet additive manufacturing.	CO5	[K2]
8.	What is thermal bonding in additive manufacturing?	CO5	[K2]
9.	Why post processing required for 3D printed part?	CO6	[K2]
10.	What is the role of additive manufacturing process in rapid prototyping?	CO6	[K2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Discuss the need and advantages of additive manufacturing.	08	CO1	[K_2]
	b)	Explain the Procedure of product development in additive manufacturing.	08	CO1	[K_2]
12.	a)	Describe the working principles of digital light processing with its advantages.	08	CO2	[K_2]
	b)	Explain the working of SLA process with suitable sketch.	08	CO2	[K_2]
13.		Discuss the fusion deposition modelling process with suitable sketch. And mention its advantages & applications.	16	CO3	[K_2]
14.		When do you prefer powder bed fusion technology? Explain any one with suitable sketch.	16	CO4	[K_2]
15.		Discuss the basic working principles of laminated object manufacturing with suitable sketch. Mention its applications and advantages.	16	CO5	[K_2]
16.	a)	Discuss the various techniques used for support removal and their impact on surface texture improvement.	08	CO6	[K_2]
	b)	Explain how additive manufacturing has been used effectively in medical implants.	08	CO6	[K_2]

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