B.TECH/CE/CHE/8TH SEM/MECH 4222/2022

MODERN MANUFACTURING TECHNOLOGY (MECH 4222)

Time Allotted : 3 hrs

1.

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group - A (Multiple Choice Type Questions)

Choo	$10 \times 1 = 10$				
(i)	Sprue in casting (a) gate	refers to (b) runner	(c) riser	(d) vertical passage.	
(ii)	Quick return me (a) lathe	chanism is used ir (b) shaping	ı (c) milling	(d) drilling.	
(iii)	The ability of a when the forces (a) elasticity	deformed materia causing the deform (b) hardness	l body to return mation are remo (c) toughness	to its original shape and size ved is termed as (d) ductility.	
(iv)	Which of the following method is not related to Rapid Prototyping?(a) Stereolithography(b) Fused deposition(c) Selective laser sintering(d) Reverse sintering.				
(v)	The contribution of labour workforce when Flexible Manufacturing System(FMS) concept is used(a) increases(b) decreases(c) remain same(d) gradually increases with time.				
(vi)	Which of the following is not a high energy rate(a) Explosive forming processes(b) I(c) Electromagnetic forming(d) I			ming process? tro-Hydraulic forming umatic forming.	
(vii)	Cellular Manufacturing relates to (a) product layout (c) group layout		(b) proc (d) all o	(b) process layout (d) all of these.	
(viii)	Choose the odd ((a) AJM	one out. (b) USM	(c) WJM	(d) EDM	

1

Full Marks: 70

B.TECH/CE/CHE/8TH SEM/MECH 4222/2022

- (ix) Laser beam machining process can be used for
 (a) conductors
 (b) insulators
 (c) metals
 (d) all of the mentioned.
- In which of the following processes, the shape of tool is not same as that of cavity produced?
 (a) Plasma Arc Machining
 (b) Ultrasonic machining
 - (c) Electro Discharge Machining (d) All of these.

Group - B

- (a) Explain the use and types of pattern in casting. Name any two pattern allowances. [(CO1)(Apply/IOCQ)]
 (b) Explain the set-up required for rolling process with neat sketch.
 - Explain the set-up required for rolling process with neat sketch.
 [(CO1)(Create/HOCQ)]

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(4+2)+6=12
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3. (a) Explain arc welding process. Name any two types of arc welding process.

[(CO1)(Understand/LOCQ)]

(b) Differentiate between elasticity and plasticity. [(CO2)(Analyze/IOCQ)]

6 + 6 = 12

Group - C

4. (a) Justify the reason to choose CNC over Traditional machines.
 [(CO3)(Evaluate/HOCQ)]
 (b) Explain the steps of "fused deposition modelling" with figure.
 [(CO2)(Aurola (IOCO)]

[(CO3)(Apply/IOCQ)]

6 + 6 = 12

- 5. (a) Define Flexible Manufacturing System (FMS). Justify the benefits of Flexible Manufacturing System. [(CO4)(Evaluate/HOCQ)]
 - (b) Explain the procedure to code a product and identify it's part family applying the principle of group technology. [(CO4)(Apply/IOCQ)]

6 + 6 = 12

Group - D

- 6. (a) Make a comparison between traditional and non-conventional machining processes in terms of cost, application, scope, machining time, advantages and limitations. [(CO5)(Analyze/IOCQ)]
 - (b) Explain with neat diagram construction and working of USM processes.

[(CO5)(Understand /LOCQ)]

6 + 6 = 12

7. (a) What are the advantages and Disadvantages of ECM? [(CO5)(Analyze/IOCQ)]

MECH 4222

B.TECH/CE/CHE/8TH SEM/MECH 4222/2022

With the help of a neat sketch, explain the working of EDM Processes. (b)

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[(CO5)(Understand/LOCQ)]
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6 + 6 = 12

Group - E

8. With a suitable diagram, explain the working principle of LBM process. (a)

[(CO5)(Understand/LOCQ)]

What are the application of PAM and also mention advantages and limitations? (b) [(CO3)(Apply/IOCQ)]

6 + 6 = 12

- Identify the mechanism of material removal, transfer media and energy source 9. (a) [(CO5)(Understand/LOCQ)] for EBM. [(CO6)(Understand/LOCQ)]
 - Explain the explosive forming process. (b)

6 + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	37.50	43.75	18.75

Course Outcome (CO):

At the end of the course, a student will be able to:

- 1. Explain basic idea about conventional manufacturing processes.
- 2. Describe different mechanical properties.
- 3. Discuss basic ideas of NC and CNC machines and Rapid Prototyping.
- 4. Explain working knowledge on Computer Integration in manufacturing.
- 5. Discuss various Non-traditional Machining processes and their application.
- 6. Explain the basic idea of high energy rate forming processes.

*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; **HOCO: Higher Order Cognitive Question**