Hall Ticket No | | | | | | | | | | | Question Paper Code: AMEB05

NSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER - II

B. Tech III Semester End Examinations

Regulations: R18

MANUFACTURING PROCESSES

(MECHANICAL ENGINEERING)

Time: 3 hours **Max. Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

MODULE – I

1.	a)	Discuss the solidification process for pure metal and an alloy in casting.	**[7M]**
	b)	Draw a sketch to describe the procedure of placing sprue and risers in sand mould.	**[7M]**
2.	a)	What is a pattern? Explain different materials suitable for pattern making.	**[7M]**
	b)	Distinguish between a pattern, a mould and a casting	**[7M]**

MODULE – II

3.	a)	Explain different types of flames with neat sketches in gas welding process.Give applications for each type.	**[7M]**
	b)	Explain the advantages and limitations of oxy-acetylene welding	**[7M]**
4.	a)	Discuss shielded metal arc welding process with a neat sketch.	**[7M]**
	b)	Explain the function of coating in shielded metal arc welding process.	**[7M]**

MODULE – III

5.	a)	Name and sketch different metal forming processes.	**[7M]**
	b)	Name some important products manufactured by metal forming processes.	**[7M]**
6.	a)	What are the types of rolling processes? What products are made by rolling processes?	**[7M]**
	b)	Explain how do you find force and power requirement for rolling processes?	**[7M]**

MODULE – IV

7.	a)	What are the advantages of hydrostatic extrusion?	**[7M]**

	b)	Explain manufacture of seamless tubes by extrusion process.	**[7M]**
8.	a)	Discuss the evolution of RP systems indicating the history and their growth rate in the industrial sector.	**[7M]**
	b)	Categorize of applications in rapid prototype technology in manufacturing industries and also compare rapid prototype technology with computer numerical control technology	**[7M]**

MODULE – V

9.	a)	What are various forces involved in forging process? Explain briefly.	**[7M]**
	b)	How are internal cavities minimized during extrusion of a metal? Explain.	**[7M]**
		Write a note on metals that are included in friction extrusion process.	
10.	a)	Write a note on tools used for forging process.	**[7M]**
	b)	Explain the forces in forging operations.	**[7M]**

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COURSE OBJECTIVES:

The course should enable the students to:

I	Understand and develop an appreciation of the manufacturing processes in correlation with material properties.
II	Learn the material properties which change the shape, size and form of the raw materials into the desirable product.
III	Understand the processes for creating products by conventional or unconventional manufacturing methods.

COURSE OUTCOMES (COs):

CO 1	Describe the concept of manufacturing and material, design and properties of casting.
CO 2	Understand the functions of casting defects, welding and industrial concepts.
CO 3	Understand the working of design related and causes and NDT techniques systems.
CO 4	Explore the concept of heat inputs and rapid prototyping, sheet metal and forging.
CO 5	Classification of various manufacturing processes for industrial applications and their use in real world competition.

COURSE LEARNING OUTCOMES (CLOs):

AMEB05.01	Understand and various manufacturing processes used in various industries.
AMEB05.02	Explain the steps involved in casting processes
AMEB05.03	Use design principles to incorporate sprue, runner, gates, and risers in foundry practice.
AMEB05.04	Evaluate properties of sand for use in sand casting.
AMEB05.05	Solve problems and find methods to rectify casting defects.
AMEB05.06	Demonstrate the preparation of moulds for various casting processes
AMEB05.07	Describe applications of various casting processes
AMEB05.08	Explain principles of welding, brazing and soldering processes..
AMEB05.09	Demonstrate use of welding equipment for various industrial applications.
AMEB05.10	Demonstrate use of Brazing and soldering equipment for various industrial applications.
AMEB05.11	Explain design of welded joints, residual stresses, distortion and control.
AMEB05.12	Explain causes and remedies of welding defects.
AMEB05.13	Compare destructive and non-destructive testing techniques.
AMEB05.14	Understand the affect of heat input in welds.
AMEB05.15	Understand the concepts to Additive manufacturing
AMEB05.16	Understand the importance of sheet metal forming, bending, and deep drawing.
AMEB05.17	Compare extrusion and forging processes to identify advantages and limitations.
AMEB05.18	Enable students to understand various manufacturing processes for industrial applications.

AMEB05.19	Enable students to understand importance of manufacturing for lifelong learning, Higher Education and competitive exams.

Mapping of Semester End Examinations to Course Learning Outcomes:

SEE Question No.		Course Learning Outcomes		Blooms Taxonomy Level
1	a	AMEB05.02	Explain the steps involved in casting processes	Understand
	b	AMEB05.01	Understand and various manufacturing processes used in various industries	Understand
2	a	AMEB05.01	Understand and various manufacturing processes used in various industries	Understand
	b	AMEB0 .03	Use design principles to incorporate sprue, runner, gates, and risers in foundry practice.	Understand
3	a	AMEB05.08	Explain principles of welding, brazing and soldering processes	Understand
	b	AMEB05.08	Explain principles of welding, brazing and soldering processes	Remember
4	a	AMEB05.08	Explain principles of welding, brazing and soldering processes	Remember
	b	AMEB05.05	Solve problems and find methods to rectify casting defects.	Remember
5	a	AMEB0 .09	Demonstrate use of welding equipment for various industrial applications.	Understand
	b	AMEB05.09	Demonstrate use of welding equipment for various industrial applications.	Understand
6	a	AMEB05.13	Compare destructive and non-destructive testing techniques.	Understand
	b	AMEB0 .11	Explain design of welded joints, residual stresses, distortion and control	Understand
7	a	AMEB05.15	Understand the concepts to Additive manufacturing	Understand
	b	AMEB05.14	Understand the affect of heat input in welds.	Remember
8	a	AMEB05.15	Understand the concepts to Additive manufacturing	Remember
	b	AMEB05.14	Understand the affect of heat input in welds.	Remember
9	a	AMEB05.16	Understand the importance of sheet metal forming, bending, and deep drawing.	Remember
	b	AMEB05.17	Compare extrusion and forging processes to identify advantages and limitations.	Understand
10	a	AMEB05.15	Understand the concepts to Additive manufacturing	Understand
	b	AMEB05.15	Understand the concepts to Additive manufacturing	Remember

Signature of Course Coordinator **HOD, ME**

G. Aravind Reddy, Assistant professor, ME