

## Model Question Paper -1

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### Third Semester B.E. Degree Examination Aerospace Materials and Processes

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module – 1			Marks
<b>Q.1</b>	<b>(a)</b>	Define the following. a) Stiffness b) Resilience modulus c) Secant modulus d) Tangent modulus e) Poisson's ratio	10
	<b>(b)</b>	Explain about the Fatigue and Torsion test with neat diagrams	10
<b>OR</b>			
<b>Q.2</b>	<b>(a)</b>	With a neat sketch explain about the following. a) stress-strain curve for ductile and b) stress-strain curve for brittle materials	10
	<b>(b)</b>	Explain about the Charpy test and Izod test with neat sketch.	10
<b>Module – 2</b>			
<b>Q.3</b>	<b>(a)</b>	Explain about the major classification of Aluminum.	10
	<b>(b)</b>	Describe the fabrication problems for Mg alloys and mention special treatment process.	10
<b>OR</b>			
<b>Q.4</b>	<b>(a)</b>	Classify the application of Aluminum alloy and Magnesium alloys in aircraft construction.	10
	<b>(b)</b>	Explain about the application of aircraft construction Wood, Fabrics, Glues and Plastics.	10
<b>Module – 3</b>			
<b>Q.5</b>	<b>(a)</b>	Explain about the Maraging steels and its applications.	10
	<b>(b)</b>	Explain about the Super alloys and its uses.	10

<b>OR</b>			<b>Marks</b>
<b>Q.6</b>	<b>(a)</b>	Explain about the classification of steels.	10
	<b>(b)</b>		10
<b>Module – 4</b>			
<b>Q.7</b>	<b>(a)</b>	Define the classifications of composite materials	10
	<b>(b)</b>	Explain about the applications of composite materials across various industries.	10
<b>OR</b>			
<b>Q.8</b>	<b>(a)</b>	Classify the detailed descriptions of glass ceramics and cermet's.	10
	<b>(b)</b>	Explain about the Fabrication process composite materials.	10
<b>Module – 5</b>			
<b>Q.9</b>	<b>(a)</b>	Define High temperature materials and its classification.	10
	<b>(b)</b>	Explain about the characterization and properties of High temperature materials.	10
<b>OR</b>			
<b>Q.10</b>	<b>(a)</b>	Explain the Application of High temperature materials in Aerospace field.	10
	<b>(b)</b>	Explain about the Testing methods of High temperature materials.	10

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Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module – 1			Marks	RBTL	CO
<b>Q.1</b>	(a)	Define the following. a) Stress and Strain b) Bulk modulus c) Rigidity modulus d) Elastic modulus	10	L1	C01
	(b)	Explain about the UTM (Tensile test) with neat diagrams	10	L2	C01
<b>OR</b>					
<b>Q.2</b>	(a)	With a neat sketch explain about the following. stress-strain curve for Rubber, Plaster of Paris, Glass, Pure Gold and Steel.	10	L1	C01
	(b)	Explain about the NDT test and its types.	10	L2	C01
<b>Module – 2</b>					
<b>Q.3</b>	(a)	Explain about the major classification of cast aluminum alloy mention its application.	10	L2	C02
	(b)	Define the fabrication problems for Mg alloys and mention special treatment process.	10	L1	C02
<b>OR</b>					
<b>Q.4</b>	(a)	Discuss the application of Titanium alloys in aircraft construction.	10	L2	C02
	(b)	Explain about the application of aircraft construction Wood, Fabrics, Glues and Plastics.	10	L2	C02
<b>Module – 3</b>					
<b>Q.5</b>	(a)	Explain about copper and its alloys with its applications.	10	L2	C02
	(b)	Explain about the Super alloys and its uses.	10	L2	C02

<b>O R</b>			<b>Marks</b>	<b>RBTL</b>	<b>CO</b>
<b>Q.6</b>	<b>(a)</b>	Explain about the classification of steels.	10	L2	C02
	<b>(b)</b>	Explain about the Maraging steels and its applications.	10	L2	C02
<b>Module – 4</b>					
<b>Q.7</b>	<b>(a)</b>	Define the 1) PMC 2) MMC 3) CCC	10	L1	C02
	<b>(b)</b>	Explain about the difference between sandwich construction and laminates.	10	L2	C02
<b>OR</b>					
<b>Q.8</b>	<b>(a)</b>	Classify the detailed descriptions of glass ceramics and cermet's.	10	L1	C02
	<b>(b)</b>	Explain about the Hand lay-up method and Vacuum bag method with neat sketch .	10	L2	C02
<b>Module – 5</b>					
<b>Q.9</b>	<b>(a)</b>	Define High temperature materials and its classification.	10	L1	C03
	<b>(b)</b>	Explain the Thermal shielding protection for reentry launch vehicles.	10	L2	C03
<b>OR</b>					
<b>Q.10</b>	<b>(a)</b>	Explain about the characterization and properties of High temperature materials.	10	L2	C03
	<b>(b)</b>	Explain about the Testing methods of High temperature materials.	10	L2	C03