SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY :: PUTTUR

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QUESTION BANK

Subject with Code: Advanced Welding Processes (19ME0340) **Course & Branch: B. Tech – ME**
Year/ Sem: IV-B. Tech & I-Sem **Regulation: R19**

UNIT I

1.	(a)	How do you classify welding process?	**L2**	**CO1**	**6M**
	(b)	What is the common fuel gases used in the gas welding process? Describe briefly.	**L1**	**CO1**	**6M**
2.	(a)	Explain the production of acetylene gas.	**L2**	**CO1**	**6M**
	(b)	Draw the Oxy-Acetylene welding setup and equipment. Discuss the importance of it.	**L2**	**CO1**	**6M**
3.		Explain the types of flames produced in gas welding with neat sketches.	**L2**	**CO1**	**12M**
4.	(a)	What are the gas welding techniques?	**L1**	**CO1**	**6M**
	(b)	Give the applications of gas welding.	**L1**	**CO1**	**6M**
5.		Explain oxy-fuel gas cutting with neat sketch of gas cutting torch and give the applications.	**L2**	**CO1**	**12M**
6.		With neat sketch explain SMAW (Shielded metal arc welding) and operation.	**L2**	**CO1**	**12M**
7.	(a)	What are the different types of electrode motions and positions in SMAW welding?	**L1**	**CO1**	**6M**
	(b)	Give the applications of SMAW.	**L3**	**CO1**	**6M**
8.	(a)	Classify the arc welding consumables.	**L1**	**CO1**	**6M**
	(b)	What are the main purposes of electrode coatings?	**L1**	**CO1**	**6M**
9.		How can you classify heavily coated low carbon arc welding electrodes? Explain its importance.	**L2**	**CO1**	**12M**
10.	(a)	Describe the procedure for coding the electrode for SMAW/MMAW of low and medium alloy steel.	**L1**	**CO1**	**6M**
	(b)	Explain the meanings of **E55RB2L23Fe** as per BIS specification for SMAW.	**L3**	**CO1**	**6M**

UNIT II

1.		Discuss the working principle of plasma arc welding and give the advantages, disadvantages of the process.	**L2**	**CO2**	**12M**
2.		Discuss the process variables in SAW	**L2**	**CO2**	**12M**
3.	(a)	What are the advantages of SAW?	**L1**	**CO2**	**6M**
	(b)	List the disadvantages and applications of SAW.	**L4**	**CO2**	**6M**
4.	(a)	What are the applications of PAW?	**L1**	**CO2**	**6M**
	(b)	What are the types of fluxes and their compounding?	**L3**	**CO2**	**6M**
5.		Draw the TIG welding setup and discuss the process.	**L2**	**CO2**	**6M**
6.	(a)	Explain the addition of filler metal in TIG welding.	**L2**	**CO2**	**6M**
	(b)	What are the metals that can be welded by TIG and give the area of application?	**L1**	**CO2**	**12M**
7.	(a)	List the advantages and disadvantages of GTAW.	**L1**	**CO2**	**6M**
	(b)	What are the variants in GTAW and explain hot wire GTAW?	**L2**	**CO2**	**6M**
8.	(a)	Discuss MIG welding setup and process with neat sketch.	**L2**	**CO2**	**6M**
	(b)	Mention the area of application and advantages of MIG welding.	**L3**	**CO2**	**6M**
9.		Discuss about shielding gases used in GTAW and its effects on weld bead shape.	**L2**	**CO2**	**12M**
10.	(a)	List the different forces that affect the mode of metal transfer in arc welding and describe their role in brief.	**L4**	**CO2**	**6M**
	(b)	Classify the modes of metal transfer in arc welding and describe their characteristics and use in position.	**L2**	**CO2**	**6M**

UNIT III

1.	(a)	Outline the desired characteristics of a welding power source.	**L2**	**CO3**	**6M**
	(b)	Explain the general characteristics of a transformer.	**L2**	**CO3**	**6M**
2.		Discuss the role of static volt- ampere characteristics of a welding power source. Sketch and describe different types of static V-I characteristics and the need for them.	**L2**	**CO3**	**12M**
3.		Write short notes on (i) Transformer-rectifier (ii) Motor generator set.	**L2**	**CO3**	**12M**
4.	(a)	What are the different methods of controlling current in a welding transformer? Discuss in brief.	**L2**	**CO3**	**6M**
	(b)	Define duty cycle of a welding power source and explain its role in the selection of a power source.	**L2**	**CO3**	**6M**
5.	(a)	Demonstrate the output V-I characteristics of welding generator and use of pulsed currents.	**L2**	**CO3**	**6M**
	(b)	If the maximum output current from a welding power source of 100% duty cycle is 350A, determine the rated current at 75% duty cycle?.	**L4**	**CO3**	**6M**
6.		Discuss the safety aspects of LASER welding.	**L2**	**CO3**	**12M**
7.		Describe the LASER beam welding process with neat sketch.	**L2**	**CO4**	**12M**
8.		Illustrate the process variables in LASER beam welding.	**L2**	**CO4**	**12M**
9.		With neat sketch explain the weld joint design for laser welding of sheet metal.	**L2**	**CO4**	**12M**
10.	(a)	List the advantages and disadvantages of LASER beam welding.	**L2**	**CO4**	**6M**
	(b)	What are the applications of LASER beam welding?	**L1**	**CO4**	**6M**

UNIT IV

1.		Classify the sold state welding process and explain friction welding with neat sketch.	**L2**	**CO5**	**12M**
2.		Discuss about the friction welding process variables.	**L2**	**CO5**	**12M**
3.	(a)	With neat sketch explain joint designs in friction welding.	**L2**	**CO5**	**6M**
	(b)	List the applications of friction welding process.	**L3**	**CO5**	**6M**
4.		List the variants of friction welding. Explain with neat sketch inertia welding process.	**L2**	**CO5**	**12M**
5.	(a)	Discuss the working principle of friction stir welding.	**L2**	**CO5**	**6M**
	(b)	What are the advantages and limitations of friction stir welding?	**L1**	**CO5**	**6M**
6.	(a)	Describe the process of explosion welding and explain its principle of operation.	**L2**	**CO5**	**6M**
	(b)	What are the elements used in explosive welding? Write short note of it.	**L1**	**CO5**	**6M**
7.		Explain the process variables and its effects in explosive welding.	**L2**	**CO5**	**12M**
8.	(a)	What are the application areas of explosive welding?	**L1**	**CO5**	**6M**
	(b)	List the advantages and disadvantages of explosive welding.	**L2**	**CO5**	**6M**
9.	(a)	Describe about the diffusion welding process.	**L1**	**CO5**	**6M**
	(b)	What are the methods of diffusion welding and explain?	**L1**	**CO5**	**6M**
10		Define adhesive bonding and nature of adhesive joints. With neat sketch write short notes of joint designs in adhesive bonding.	**L1**	**CO5**	**12M**

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UNIT V

1.		Describe the brazing process and explain the steps used in brazed joint.	**L1**	**CO6**	**12M**
2.		What are the different brazing processes used in industries? Explain any two of them.	**L3**	**CO6**	**12M**
3.		Enumerate different soldering methods and describe in detail any two of them.	**L2**	**CO6**	**12M**
4.	(a)	List the advantages and disadvantages of adhesive bonding.	**L2**	**CO6**	**6M**
	(b)	What are the applications of adhesive bonding?	**L1**	**CO6**	**6M**
5.	(a)	Write short notes on seam welding and projection welding process with neat sketch.	**L2**	**CO6**	**6M**
	(b)	With neat sketch describe the flash butt welding process.	**L3**	**CO6**	**6M**
6.		With suitable diagram explain the ultrasonic welding process.	**L2**	**CO6**	**12M**
7.	(a)	Write short note on process variables of ultrasonic welding.	**L2**	**CO6**	**6M**
	(b)	What are the advantages, disadvantages and applications of ultrasonic welding?	**L1**	**CO6**	**6M**
8.	(a)	How you classify thermal cutting process?	**L2**	**CO6**	**6M**
	(b)	Explain oxy fuel gas cutting with a neat sketch.	**L2**	**CO6**	**6M**
9.		Enumerate the effect of flame cutting speed and gas pressure on kerf and drag.	**L3**	**CO6**	**12M**
10.	(a)	List the applications of thermal cutting process.	**L2**	**CO6**	**6M**
	(b)	What is the safety precautions used in plasma arc cutting process?	**L1**	**CO6**	**6M**