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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Seventh Semester

ME16009 – WELDING TECHNOLOGY*(Mechanical Engineering)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

		CO	RBT
1.	Differentiate between “Autogeneous” and “homogeneous” welding processes?	1	U
2.	What is meant by DCRP in arc welding and list down its significances?	1	U
3.	What is the difference between “flash” and “upset” welding?	2	U
4.	Define Resistance welding process? For what kind of production resistance welding is mainly employed?	2	AP
5.	What is meant by solid state welding and list down its advantages?	3	U
6.	List down the process variables that affect the performance of friction welding?	3	AP
7.	What is meant by “Thermit” and list down its applications?	4	U
8.	How the Underwater welding can be classified and list down their limitations?	4	U
9.	List down the various types of weld joints and draw the weld symbol for any two types of weld joints?	5	U
10.	Differentiate between destructive and nondestructive types of weldments?	5	U

PART B - (5 X16 = 80 Marks)

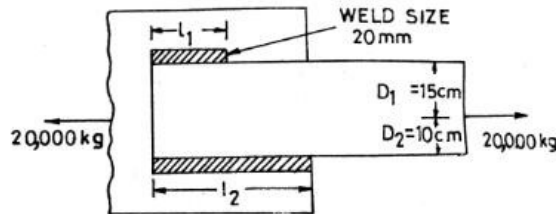
11. (a) (i) Name the welding process in which the arc is beneath (under) the flux blanket and not visible? Explain with a neat sketch. **(8)** **1** **AP**
- (ii) Name the welding processes meant for welding aluminium and stainless steel and in which the electrode is in the form of a small wire and continuously fed during welding? Explain the process variables involved in the process. **(8)** **1** **AP**

(OR)

- (b) (i) What is the difference between “Transferred Arc” and “Non Transferred Arc” Plasma arc welding? Briefly explain anyone with a neat sketch. **(8) 1 U**
- (ii) Name and explain the welding process suitable for welding thicker plates in vertical direction in a single pass. **(8) 1 AP**
12. (a) (i) Explain the welding process used in automobile production lines for welding the car door panels? **(8) 2 AP**
- (ii) Select a suitable welding process for producing continuous leak proof joints in pipes and sheet metal containers and explain the process with a simple sketch. **(8) 2 AP**
- (OR)**
- (b) (i) Explain in detail the projection and percussion welding? **(8) 2 U**
- (ii) Describe the construction and working of High frequency Resistance Welding with a neat sketch. Also list down its advantages. **(8) 2 U**
13. (a) (i) Write short notes on Cold Welding process with a neat sketch. **(8) 3 AP**
- (ii) What is “Diffusion Bonding” and Write down the process parameters involved in Diffusion Welding and explain them in details. **(8) 3 U**
- (OR)**
- (b) (i) Explain the working of Ultrasonic Welding with a simple sketch and down the process parameters involved in Ultrasonic Welding. **(8) 3 U**
- (ii) With a neat sketch, describe the Hot Pressure Welding and list down its applications. **(8) 3 U**
14. (a) (i) Explain the welding process that is primarily used for repairing the rails? **(8) 4 AP**
- (ii) Name the welding process that uses high velocity beam of electrons to weld the reactive materials. **(8) 4 U**

(OR)

- (b) (i) Draw a neat sketch and explain the Friction Stir welding (FSW) process and also the steps involved. (8) 4 U
- (ii) Write short notes on welding automation and justify the need for automation in welding. (8) 4 AP
15. (a) (i) For the structure shown in fig. determine the two fillet weld lengths L_1 and L_2 . Assume working stress in shear in fillet weld as 800kg/cm^2 and size of the fillet as 20mm (8) 5 AP



- (ii) What are the problems encountered while welding non ferrous alloys with manual metal arc welding and suggest the suitable welding process for welding aluminium and copper alloys. (8) 5 AP
- (OR)**
- (b) (i) Explain any two types of destructive testing with a simple sketch. (8) 5 U
- (ii) Explain the principle of performing magnetic particle inspection on weld joints also list down the advantages and disadvantages. (8) 5 U