Unit-III

S.No		Questions	BT	CO	
Part – A (Short Answer Questions)					
1		Explain the various ways in which a riveted joint may fail.	L1	CO3	
2		Discuss about the bolts of uniform strength.	L2	CO3	
3		Enumerate the different types of riveted joints	L2	CO3	
4		What do you understand by the term riveted joint? Explain the necessity of such joint.	L2	CO3	
5		Explain the caulking and fullering.	L1	CO3	
6		What do you mean by efficiency of riveted joint?	L1	CO3	
7		What are the reasons of replacing the riveted joints by welded joints in modern equipment?	L2	CO3	
8		Distinguish the riveted and the bolted joints?	L2	CO3	
9		List advantages of bolted joints over welded joints.	L2	CO3	
10		Define the term throat area of the weld	L1	CO3	
Part – B (Long Answer Questions)					
11		A Steam boiler is to be designed for a working pressure of 2.5 N/mm^2 with its inside diameter of 1.6 m. Give the design calculation for the longitudinal and circumferential joints for the following working stresses for steel plates and rivet: In tension = 75 MPa : In shear = 60 MPa : in crushing = 125 MPa	L3	CO3	
12	a)	Define the terms pitch, back pitch, diagonal pitch, and margin.	L2	CO3	
	b)	Design a double riveted butt joint with two cover plates for the longitudinal seam of a boiler shell 1.5 m in diameter subjected to a steam pressure of 0.95 N/mm^2. Assume joint efficiency as 75%, allowable tensile stress in the plate 90MPa, compressive stress 140 MPa and shear stress in the rivet is 56 MPa.	L3	CO3	
13	a)	How the strength of transverse fillet weld is evaluated?	L1	CO3	
	b)	A double riveted lab joint is made between 15 mm thick plates. The rivet diameter and pitch are 25 mm and 75 mm respectively. If the ultimate stresses are 400 MPa in tension, 320 MPa in shear and 640 MPa in crushing, find the minimum force per pitch which will rupture the joint. If the above joint is subjected to a load such that the factor of safety is 4, find out the actual stresses developed in the plates and the rivets.	L3	CO3	
14	a)	How the strength of parallel fillet weld is evaluated?	L5	CO3	
	b)	Find the efficiency of the following riveted joints: 1. Single riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 50 mm. 2. Double riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 65 mm. Assume. Permissible tensile stress in plate = 120 MPa Permissible shearing stress rivets = 90 MPa Permissible crushing stress in rivets = 180MPa	L3	CO3	
15	a)	Advantages and disadvantages of welded joints over riveted joints.	L2	CO3	
	b)	A double riveted double cover butt joint in plates 20 mm thick is made with 25 mm diameter rivets at 100 mm pitch. The permissible stresses are tensile stress = 120 MPa; shear stress =100 MPa: Crushing stress = 150 MPa. Find the efficiency of joint , taking the strength of the rivet in double shear as twice than that of single shear.	L3	CO3	
16	a)	What do you understand by the term welded joint? How it differs from welded joint?	L2	CO3	
	b)	Two plates of 7 mm thick are connected by a triple lap joint of zig-zag pattern. Calculate the rivet diameter, rivet pitch and distance between rows of rivets for the joint. Also state the mode of failure of the joint. The safe working stresses are as follows ; tensile stress = 90 MPa ; shear stress = 60 MPa and Crushing stress = 120 MPa.	L3	CO3	