**UNIT I GAS AND ARC WELDING PROCESSES**

**PART-A**

1 Define welding process.

2 What are the reasons welding largely used in field of engineering

3 Define arc welding process.

4 State merits and demerits of welding.

5 Classify the welding process.

6 State that gas welding process.

7 Classify the flames of oxy-acetylene.

8 Define flux and main functions.

9 State arc welding process and types.

10 Define shielded metal arc welding (SMAW).

11 Define electrode and its types.

12 Define submerged arc welding.

13 What are the advantages of submerged arc welding process?

14 State tungsten inert gas welding (TIG).

15 Define metal inert gas welding (MIG).

16 Define plasma arc welding (PAW).

17 Write the disadvantages of plasma arc welding.

18 State the electroslag welding (ESW).

19 State the flux cored arc welding (FCAW).

20 Define filler.

**PART-B&C**

1 Define welding and classification of welding and allied processes with neat sketch .

2 Explain gas welding process and their equipments, advantages, disadvantages and applications.

3 Explain arc welding process and their equipments, advantages, disadvantages and applications.

4 Explain the carbon welding technique with a neat sketch, also mention the applications.

5 Briefly explain Shielded Metal Arc Welding (SMAW) with a neat sketch.

6 Explain construction and working principle of submerged arc welding , also give advantages and disadvantages.

7 Explain the working of Tungsten Inert Gas Welding (TIG) and their components.

8 Briefly explain the working principle of Metal Inert Gas Welding and their components with a neat sketch.

9 Explain the construction and working of Plasma Arc Welding(PAW) , their merits and demerits.

10 Draw a neat sketch and explain the working of Electro slag and Electro gas welding.

11 With a neat sketch explain the construction and working of Carbon Arc welding

12 List the components of Electro Gas Welding with a brief explanation. BT4 Analyzing

13 What are all the welding parameters of Flux Cored Arc welding? Explain them.

14 Explain about the Oxyacetylene Gas Welding process and also its advantages.

**UNIT II RESISTANCE WELDING PROCESSES**

**PART-A**

1 Define resistance welding.

2 List down the various types of resistance welding.

3 Write down the various process parameters of resistance welding.

4 What are the advantages of resistance welding?

5 List down the demerits of resistance welding.

6 Write down the application of resistance welding.

7 State spot welding or resistance spot welding (RSW).

8 Classify spot welder.

9 Define resistance seam welding or seam welding.

10 List down the applications of spot welding.

11 Write down the advantages and disadvantages of seam welding.

12 List out the applications of resistance seam welding.

13 State the resistance projection welding (RPW).

14 List out the advantages and disadvantages of flash butt welding.

15 State percussion welding.

16 List out the advantages and disadvantages of percussion welding.

17 Define high frequency resistance welding.

18 State stud welding.

19 Write down the various metal joining process.

20 Write formula for heat generation in resistance welding.

**PART-B&C**

1 Briefly explain the construction and working of Resistance Welding process.

2 Explain the working of Resistance Spot Welding (RSW) and their advantages and limitations.

3 Explain the steps involved in Resistance Seam Welding and its types.

4 Write short notes on process parameters of Resistance Welding.

5 Describe the construction and working of Resistance Projection Welding with their advantages and limitations.

6 With a neat sketch explain the construction and working of Resistance Butt Welding with their advantages and limitations.

7 Describe the construction and working of Flash Butt Welding with a neat sketch

8 Write short notes on Upset Butt Welding and draw a neat sketch.

9 Briefly explain the construction and working of Percussion Welding.

10 With a neat sketch explain the construction and working of Stud Welding.

11 Describe the construction and working of Low frequency Resistance Welding with a neat sketch.

12 What are the different types of spot welders used in Resistance Spot Welding? Explain them briefly.

13 What are the steps involved in Electric Resistance Welding(ERW) of tubes.

14 Describe the construction and working of High frequency Resistance Welding with a neat sketch.

**UNIT III SOLID STATE WELDING PROCESSES**

**PART-A**

1 Define solid state welding.

2 Write down the types of solid state welding.

3 State the advantages of solid state welding

4 State that cold welding.

5 Write down the applications of cold pressure welding.

6 Define diffusion welding.

7 Write the various stages of mechanism of diffusion bonding.

8 Write the advantages of diffusion welding.

9 State that explosion welding.

10 List down the applications of explosive welding.

11 List the demerits of explosive welding.

12 List out the advantages of ultrasonic welding.

13 List the limitations of ultrasonic welding.

14 State friction welding.

15 Write the various types of friction welding.

16 List out the advantages of friction welding.

17 Write the limitations of friction welding.

18 State forge welding.

19 Define roll welding.

20 State the hot pressure welding

**PART-B&C**

1 Explain the principle of Solid State Welding process and briefly explain any one type with a neat sketch.

2 Write short notes on Cold Welding process with a neat sketch.

3 Describe the working principle of Diffusion Welding process , and give its advantages, disadvantages .

4 Write the advantages, disadvantages, applications and working principle of Explosive Welding.

5 Explain the working of Ultrasonic Welding and their equipments in detail.

6 Write short notes on Friction Welding with a neat sketch.

7 Describe the working principle of Forge Welding with a neat sketch.

8 Write down the process parameters involved in Diffusion Welding and explain them in details.

9 Explain the types of Friction Welding and its process parameters.

10 What is the working principle of Roll Welding? Explain with a neat sketch. Also mention the advantages and disadvantages.

11 Draw a neat sketch and describe the Hot Pressure Welding.

12 Explain the working of Wedge Reed Ultrasonic Welding system in detail.

13 Write down the process parameters involved in Ultrasonic Welding and explain them in details.

14 Discuss the working principle of Cold Pressure Welding process with a neat sketch.

**UNIT IV OTHER WELDING PROCESSES**

**PART-A**

1 Define thermit welding.

2 Give chemical reaction in thermit welding.

3 Define pressure and non pressure thermit welding.

4 What are the limitations of thermit welding?

5 Define electron beam welding. 6 Mention the advantages of ebw.

7 Define under water welding.

8 Write down the advantages of wet under water welding.

9 Mention the limitation of wet under water welding.

10 What are the advantages of dry under water welding?

11 Write down abbreviation of LASER.

12 Write down the principle of LBM.

13 Mention the applictions of LBM.

14 Define atomic hydrogen welding.

15 Mention the advantages of atomic hydrogen welding.

16 Define friction stir welding.

17 Write down various steps in FSW

18 What are the stages in welding cycle?

19 What are the various welding method used for aerospace industry?

20 Write down the advantages of narrow gap welding

**PART-B&C**

1 Describe the principle of Thermit Welding and explain its types.

2 Explain about Atomic Hydrogen Welding with a neat sketch.

3 What is the working principle of Electron Beam Welding, explain it with a neat sketch. Also mention the advantages, disadvantages and applications.

4 Explain the construction and working of Laser Beam Welding with a neat sketch.

5 Draw a neat sketch and explain Friction Stir Welding(FSW) and the steps involved.

6 Explain Dry Underwater Welding with a neat sketch.

7 Explain the welding automation in nuclear reactor. Draw a neat sketch.

8 Write short notes on welding automation in aerospace industry.

9 Discuss briefly about the various process parameters in Friction Stir Welding(FSW).

10 Explain Wet Underwater Welding with a neat sketch. Give its advantages and disadvantages.

11 Describe all the structural features in Friction Stir Welding.

12 Describe Robot Welding System with a neat sketch.

13 Discuss briefly about the various process parameters in Atomic Hydrogen Welding.

14 Write short notes on welding automation in surface transport vehicle.

**UNIT V DESIGN OF WELD JOINTS, WELDABILITY AND TESTING OF WELDMENTS**

**PART-A**

1 Define weld joint and its types.

2 Define lab joint and butt joint.

3 Define eccentric loaded welded joint.

4 State that destruction test.

5 List out the benefits of destruction testing.

6 List out the various type of destruction testing.

7 Define bend test.

8 State that hardness test.

9 List out the various types of hardness testing.

10 State non destructive testing.

11 Classify non destructive testing.

12 Define liquid penetrate testing and magnetic particle testing.

13 List out the merits and demerits of liquid penetrant testing.

14 State radiographic testing.

15 List out the disadvantages of radiographic testing.

16 List out the welding defects.

17 Define weldability.

18 Write down the demerits of magnetic particle testing.

19 State the limitations of ultrasonic testing.

20 Classify the butt joint.

**PART-B&C**

1 Explain the types of welded joints with a neat sketch.

2 What are the factors considered for welding design.

3 Draw neat sketches and explain the welding symbols and sectional representation and form of weld.

4 A plate 75mm wide and 12.5 mm thick is joint with another plate by a single transverse weld and double parallel fillet weld as shown in fig. The maximum tensile and shear stresses are 70 MPA and 56 MPa respectively. Find the length of each parallel fillet weld if the joint is subjected to both static and fatigue loading.

5 Discuss the weldabilty and general guidelines to weld stainless steel and aluminum materials.

6 A 50 mm diameter solid shaft is welded to a flat plate as shown in fig. If the size of the weld is 15mm, find the maximum normal and shear stress in the weld.

7 A plate of 50mm width, carrying a load of 12000kg is to be welded by 4 equal fillets to another plate as shown in fig. Find the necessary size of the fillet.

8 A welded lap joint as shown in fig. connects by 6.4mm fillets two 75 x 10mm plates which are in tension allowing a stress of 11kg/mm2 in the end fillets and 8.8kg/mm2 in the diagonal fillets, it is required to find if the joint is suitable. The working stress in the plate is 12.8kg/mm2.

9 Enumerate the principle of performing magnetic particle inspection on weld

joints also list down the advantages and disadvantages.

10 Explain the different types of destructive testing with neat sketch .

11 For the structure shown in fig. determine the two fillet weld lengths L1 and L2. Assume working stress in shear in fillet weld as 800kg/cm2 and size of the fillet as 20mm.

12 A circular plate and a rectangular plate have been welded as shown in fig. Find the greatest twisting moment that can be resisted by the fillet weld. Assume permissible shear stress in the weld as 1040kg/cm2.

13 Discuss the liquid penetrant testing and eddy current testing with suitable sketch.

14 Explain the working of ultrasonic testing and radio graphic testing with suitable sketch.