**DEPARTMENT OF MECHANICAL ENGINEERING**

**QUESTION BANK**

**ME2029 - DESIGN OF JIGS, FIXTURES AND PRESS TOOLS**

**UNIT-I**

***(LOCATING AND CLAMPING PRINCIPLES)***

**PART-A**

1. Differentiate between jigs and fixtures
2. What is meant by 3-2-1 principle of location?
3. Define fool proofing.
4. Mention the locating methods.
5. When is diamond-pin used for locations?
6. Write any two requirements of clamping devices.
7. Define jack pin locator.
8. What is the use of dowel pins? Give one example?
9. Sketch a latch clamp
10. State the significance of clamping force in relation to cutting force.
11. Define locating devices.
12. Define clamping devices.
13. Explain the importance of clamping force.
14. Sketch a Bayonet clamp.
15. What is the advantage of swing plate clamp?
16. Sketch a Bayonet clamp.
17. List out some the power clamping.
18. List the standard parts used in jigs and fixtures fabrication.
19. What is the primary function of a linear bushing?
20. Name any two materials commonly used in jigs and fixture and their hardness range.

**PART-B**

1. Explain briefly materials used in jigs and fixtures.
2. Describe the design principles for jigs and fixtures.
3. Explain briefly 3-2-1 location of principle.
4. Explain clearly the principle of location of work piece in jigs and fixtures.
5. What is meant by clamping? Explain the principle involved in the design of clamp?
6. With a neat sketch explain pneumatic and hydraulic clamping.
7. Explain briefly non-conventional clamping.
8. Explain briefly with neat sketch latch and wedge clamping.
9. Explain briefly with neat sketch cylindrical and adjustable locators.
10. What is meant by standard parts? Explain its short notes of standard parts.

**UNIT-II**

***(JIGS AND FIXTURES)***

**PART-A**

1. Define sandwich jig.
2. What is the function of jig bushes?
3. Distinguish between the channel and box jigs.
4. Distinguish between a pot jig and a box jig.
5. Sketch the channel jig.
6. What are the advantages of trunnion jig?
7. Define indexing device.
8. Illustrate the working of an automatic drill jig.
9. How can a lathe fixture be clamped to the lathe?
10. Write the specific requirements of a turning fixture.
11. What are the different types of jigs?
12. What is the function of mandrels in turning fixture?
13. Mention the application of turning fixture.
14. Name any four essential features of a milling fixture.
15. What are boring fixtures? How do you classify them?
16. What are welding fixtures? State the general purpose of a welding fixture.
17. What are various possibilities to operate automatic drill jigs?
18. State the provision made on latch or leaf Jig.
19. When will press fit bushes or fixed bushes be used?
20. What devices are mainly used to assemble modular elements?

**PART-B**

1. Explain any four types of drill bushes with sketch
2. What is a drill jig? What are the requirements of drill jigs?
3. Describe the working of rack and pinion operated drill jig and compare with pneumatic jig.
4. Explain briefly box jig and turnover jig.
5. Sketch and explain air operated drilling jig components.
6. What are factors to be considered while designing milling fixture?
7. Write short notes on inspection and welding fixtures.
8. Explain briefly universal jig and plastic jig.
9. Design and draw a suitable drill jig to drill 4 holes of 5 mm diameter at 70 PCD an φ 60mm thickness mild steel plate.
10. Explain the importance accessories of jig and fixture.