

B.E DEGREE EXAMINATIONS: JUNE/JULY 2013

Seventh Semester

MECHANICAL ENGINEERING

MEC133: Design Of Jigs, Fixtures And Press Tools

Time: Three Hours

Maximum Marks: 100

**Answer all the Questions:-
PART A (10 x 1 = 10 Marks)**

1. A ___ guides the cutting tool with a drill bushing
 - a) Jig
 - b) Fixtures
 - c) Jig and Fixture
 - d) None of these
2. ___ degree of freedom is arrested by 'V' locator with stop pin
 - a) 3
 - b) 7
 - c) 8
 - d) None of these
3. ___ Jigs are the most basic types of Jigs
 - a) Template Jigs
 - b) Angle plate jigs
 - c) Boring Jigs
 - d) Box Jigs
4. ___ Jig is a form of Jig that completely encloses the part being machined.
 - a) Box Jig
 - b) Boring Jig
 - c) Channel jig
 - d) Template Jig
5. ___ Fixture consists of locating and damping device.
 - a) Turning
 - b) Facing
 - c) Milling
 - d) Slotting
6. ___ Fixture operation can be classified as facing fixture and slotting fixture.
 - a) Milling
 - b) Welding
 - c) Grinding
 - d) None of these
7. ___ usually follows shaving for smoothing the shaved edges
 - a) Burnishing
 - b) Slitting
 - c) Lancing
 - d) Trimming
8. ___ is the operation through which a metal is cut along a single line, usually a straight line.
 - a) Shearing
 - b) Punching
 - c) Parting
 - d) Piercing
9. ___ is the operation of making an unfinished cut through a limited length only
 - a) Slitting
 - b) Burnishing
 - c) Notching
 - d) Forming

10. ____ is the operation used for removing excess metal, irregular outlines and waved edges.
- a) Trimming
 - b) Notching
 - c) Parting
 - d) Shaving

PART B (10 x 2 = 20 Marks)

- 11. Differentiate Jigs and Fixtures.
- 12. What is meant by referencing?
- 13. What is meant by tumble jig?
- 14. What is meant by channel jig?
- 15. Define welding fixture.
- 16. What is grinding fixture?
- 17. How the presses are classified? Give a few names of each type.
- 18. How are the dies classified?
- 19. What are the main parts of a power press?
- 20. What are the common accessories of die set?

PART C (5 x 14 = 70 Marks)

- 21. a) Briefly explain the clamping principles
(OR)
b) Describe the general rules for designing a jigs or fixtures.
- 22. a) What are the common defects in jig design? Briefly explain.
(OR)
b) Write short notes on the following types of jigs
(i) leaf jig (ii) Template jig (iii) channel jig (iv) indexing jig
- 23. a) Briefly explain the design principles of fixture
(OR)
b) Briefly described the following
(i) Broaching fixture (ii) welding fixture (iii) assembly fixture (iv) fool proofing of jig and fixtures.
- 24. a) Briefly explain the elements of mechanical presses
(OR)
b) Briefly explain with neat sketches of hydraulic press.

25. a) Design a die for 20 x 20 mm, plate with a 5 mm hole in the centre. Stock thickness is 0.5 mm and material in mild steel. take f_s as 120 N/mm^2

(OR)

b) Sketch and design a progressive die to make a steel washer 30 mm outside diameter with 15 mm hole, from 1.6 mm thick steel sheet. The ultimate shear stress of the material is 320 N/mm^2
