

Reg. No.....

Name.....

**B.TECH DEGREE EXAMINATION, DECEMBER 2013**

Seventh Semester

Branch: Production Engineering

PE 010 701-TOOL ENGINEERING AND DESIGN (PE)

MODEL QUESTION PAPER

(Regular-New Scheme)

Time: Three Hours

Maximum: 100 Marks

**Part A***Answer all questions.**Each question carries 3 marks.*

1. Sketch and explain locating pins.
2. Write down the classification of milling fixtures.
3. Explain hydraulic and pneumatic mechanism in jigs and fixtures.
4. Explain direct pilots and indirect pilots.
5. Write a short note on spring back.

(5x3 = 15 marks)

**Part B***Answer all questions.**Each question carries 5 marks.*

6. With a neat sketch explain degrees of freedom.
7. Sketch and explain Indexing devices.
8. With a neat diagram explain lathe fixtures.
9. Write a short note on Die clearance.
10. The symmetrical-cup work piece is to be made from cold rolled steel of thick 0.8 mm;  
Shell diameter  $d = 50 \text{ mm}$  ; Radius of bottom corner  $r = 1.6 \text{ mm}$   
Height of cup = 50 mm ; Stock thickness = 0.8 mm  
Yield strength in tension  $\sigma_y = 427 \text{ N / mm}^2$  ; Constant  $c = 0.65$ .

Turn Over

- Calculate : a) Size of blank.                      b) Number of draws  
 c) Drawing pressure.                      d) Blank holding pressure (5x5 = 25 marks)

**Part C**

*Answer all questions.*

*Each question carries 12 marks.*

11. Sketch and explain bridge clamp and quick acting clamps.

*Or*

12. The following data from an orthogonal cutting test is available

Rake angle  $\alpha = 15^\circ$  ; Chip thickness ratio  $\gamma = 0.383$

Uncut chip thickness  $t = 0.5$  mm ; Width of cut  $b = 3$  mm

Yield stress of material in shear =  $280$  N / mm<sup>2</sup>

Average coefficient on friction on tool force =  $0.7$

-Determine Normal and Tangential forces on tool force.

13. Write down different types of drilling jigs. Sketch and explain any two drilling jigs.

*Or*

14. Sketch and explain Boring, Slotting, Broaching fixtures.

15. Explain with neat sketch gas, arc and resistance welding fixtures.

*Or*

16. Explain grinding fixtures with relevant sketches.

17. Write down different types of dies. Sketch and explain compound die and progressive dies.

*Or*

18. Explain briefly with neat sketch

- i. Fixed stripper
- ii. Spring loaded stripper

19. Sketch and explain deep drawing and rod & bar drawing.

*Or*

20. Define drawing operation. With relevant sketch explain tube drawing and wire drawing.

(5x12 = 60 marks)

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