

**College of Engineering, Pune.**  
**End Semester Examination**  
**(PE-210) - Production Processes and Metrology**

Programme : S. Y. B. Tech.

Semester : II

Duration : 03 Hrs.

Branch : Instrumentation & Control

Year : 2011-12

Max. Marks : 50

Date : 12/5/2012

**Instructions:-**

1. All Questions are compulsory.
2. Draw neat sketches wherever required.
3. Assume necessary data if required.
4. Figures to right indicate full marks.
5. Use of non programmable calculator is allowed.

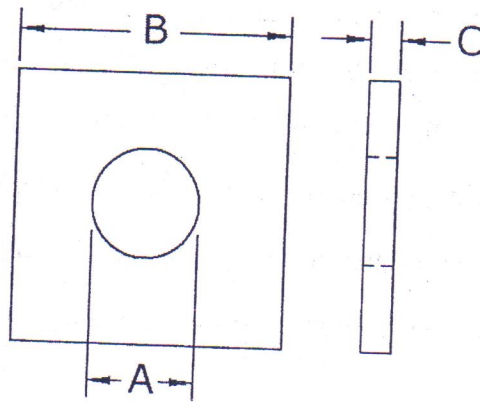
- Q.1 Attempt any five of the following. (5\*2=10 Marks)
- |   |  |   |
|---|--|---|
| a | What is Electroplating? Enumerate its applications.                            | 2 |
| b | Discuss Grade and Structure for grinding wheel?                                | 2 |
| c | What is the importance of clearance in punch and die design for a press?       | 2 |
| d | Set the dividing head to mill 28 teeth on a spur gear bank by simple indexing. | 2 |
| e | What are the limitations of taper turning by form tool?                        | 2 |
| f | Explain contouring control system for Numerical Control (NC) machine?          | 2 |
- Q.2
- |   |  |   |
|---|--|---|
| a | A shaft is to be turned and then facing operations is carried out on one of its face. Find the time required for total operation in minutes if shaft of diameter 80 mm and length 200 mm. Cutting speed for turning operations is 22 meters/min and for facing operation 16 meters/min. longitudinal feed is 1 mm/rev, & cross feed is 0.5 mm/rev. Assume only one cut is taken for turning and facing operation. Ignore the time required to change and set the tool. | 4 |
| b | Write short note on elements of NC machine.  | 3 |
| c | What are the characteristics of end standard?  | 3 |
- OR
- |   |   |   |
|---|---|---|
| c | Explain the advantages of capstan and turret lathe over the engine lathe. | 3 |
|---|---|---|
- Q.3
- |   |   |   |
|---|---|---|
| a | Explain Flash Butt, Spot and Projection welding with neat sketches. | 5 |
|---|---|---|

- b Sketch and explain Radial Drilling Machine. Also explain its different types. 5

OR

- b i) What are industrial applications of robots? 2  
ii) Sketch work volume for different configurations of Robot. 3

- Q.4 a i) What are compound and combination dies? 2  
ii) A square sheet metal part as shown in figure below needs to be produced by press working from a work sheet. Calculate the blanking and punching forces required to shear the part. Diameter of hole (A) = 20 mm, length of square plate (B) = 50 mm, C = thickness of plate = 2 mm and shear stress of material is  $400 \text{ N/mm}^2$ . 3



- b Explain external cylindrical centre type grinding machine with a sketch. 5

OR

- b iii) What is Abbe's alignment principle? 2  
iv) Write short note on soldering and brazing. 3

- Q.5 a Discuss the working, applications, advantages and limitations of electro-Discharge Machining (EDM). 5

- b Sketch and explain pawl mechanism used in shaper machine. 5

OR

- b With a sketch, explain the use of sine bar to measure the taper angle of a specimen. 5

