(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID :	**Roll No.**

B.TECH.

Theory Examination (Semester-VI) 2015-16

TOOL ENGINEERING

Time : 3 Hours *Max. Marks : 100*

Section-A

1. **Attempt all the questions.** $(2\times10 = 20)$

(a) List out the tool design objective.

(b) What are the common procedures carried out during the design of cutting tools.

(c) State the difference between jig and fixture.

(d) Define spring back.

(e) What is the function of a tenon?

(f) List out the classification of tool steels.

(g) What are the advantages of Compound Dies over Progressive Dies?

(h) List out the types of drill jigs available.

(1) P.T.O.

(i) State the difference between up milling and down milling.

(j) What is continuous chip and discontinuous chip?

Section-B

2. **Attempt Any FIVE Questions** (10×5=50)

(a) With a neat sketch explain the basic elements of tool geometry of single point cutting tool.

(b) In an orthogonal cutting operation, the cutting velocity is 30 m/min and the chip velocity is 15 m/min. If the rake angle of the tool is 10°, calculate the shear angle and shear velocity.

(c) Explain progressive die with a neat sketch.

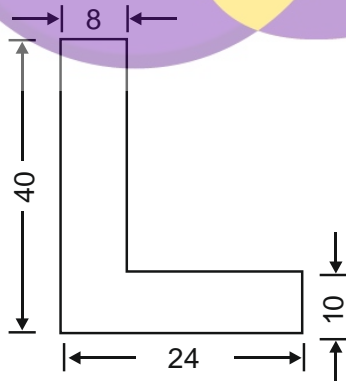(d) What is center of pressure? Find center of pressure of the object shown in fig-1.

Fig.-1

(e) Describe with the aid of suitable sketches explain 3-2-1 Location Principle with respect to design of Jigs and fixtures.

(f) With a neat sketch, explain milling fixture.

(g) With a neat sketch, explain blow moulding process.

(h) Write a short note on:

    i. Plug gage.

    ii. Go-not-Go gages.

Section-C

Attempt Any TWO Questions. $(15 \times 2 = 30)$

3. Considering the design of a milling cutter, explain how will you design the following elements:

(a) Diameter of the cutter

(b) Circular pitch

(c) Number of teeth in the cutter and calculate the number of teeth for milling cutter l0 cmin diameter for coarse pitch and fine pitch.

4. Design and draw two views of a progressive die for producing the component shown in fig.2.The sheet metal is of 2mm thick-

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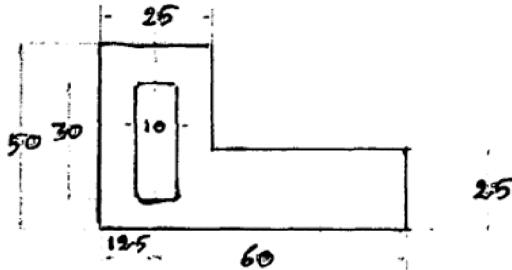ness and made of ColdRolled Steel of Ultimate Strength 580 N/mm².

Fig.-2

(a) Determine the press tonnage and the various stations required.

(b) Design all the parts of the die.

(c) Draw two fully dimensioned views of the die in engaged position.

5. Write a short note on any THREE of the following:

(a) Vise Fixtures

(b) Milling Fixtures

(c) Boring Fixture

(d) Broaching Fixtures

(e) Lathe Fixtures and

(f) Grinding Fixtures