

Sample Test Paper - I

Course Name : Diploma in Production Tech/ Production Engg.

Course Code : PG/PT

Semester : Sixth

Subject Title : Tool Design

Marks : 25

17615

Time: 1 Hour

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1. Attempt any THREE

9 Marks

- a) What is tool? What are its basic two types
- b) State any six properties of tool material
- c) Why cutting fluid is used?
- d) State any four factors on which tool life depends.

Q2. Attempt any TWO

8 Marks

- a) What are different types of chips? Describe any one in brief
- b) Draw a neat labeled sketch of single point cutting tool.
- c) Differentiate orthogonal cutting with oblique cutting (At least 4 points each)

Q3. Attempt any ONE

8 Marks

- a) What are different types of cutting tool materials? Describe any three materials for its advantages and applications.
- b) What is tool wear? What are its types? Explain with sketch any two types of tool wear.

Sample Test Paper - II

Course Name : Diploma in Production Tech/ Production Engg.

Course Code : PG/PT

Semester : Sixth

Subject Title : Tool Design

Marks : 25

17615

Time: 1 Hour

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1. Attempt any THREE

9 Marks

- a) What is press tool? List its basic three types
- b) What is the function of fly wheel in case of mechanical press?
- c) What are different press operations performed on press? Describe any one in brief
- d) List different types of strippers. Draw a neat sketch of any one type of stripper

Q2. Attempt any TWO

8 Marks

- a) What is spring back? How it can be overcome?
- b) What is bending? What are its types? Draw sketch of any one type
- c) Draw a neat sketch of compound die and name its different parts. State any two applications also.

Q3. Attempt any ONE

8 Marks

- a) What is progressive die? Describe the principle of progressive die with neat sketch. Write any two applications of it.
- b) What is drawing? What are different types of drawing dies? Describe push through die with neat sketch.

Sample Question Paper

Course Name : Diploma in Production Tech/ Production Engg.

Course Code : PG/PT

Semester : Sixth

Subject Title : Tool Design

Marks : 100

17615

Time: 3 Hour

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1. A Attempt any THREE

12 Marks

- a) What is orthogonal cutting? Describe with neat sketch
- b) What are different tool materials? Describe any tool material with its application
- c) What is an OBI press? Describe the function of flywheel in it.
- d) What is spring back? How it can be overcome?

Q1. B Attempt any ONE

06 Marks

- a) Differentiate between orthogonal cutting and oblique cutting. (At least six point each)
- b) With neat sketch describe following in case of forging die
 - i) Draft,
 - ii) Fillet,
 - iii) Corner radii

Q2. Attempt any FOUR

16 Marks

- a) What are different types of chips? Describe continuous chip with sketch.
- b) Draw the neat sketch of any one stripper and explain its function
- c) Why cutting fluid is used? Describe in brief
- d) What is material utilization factor? Describe with suitable example
- e) What is extrusion? Describe backward extrusion with neat sketch.

Q3. Attempt any TWO

16 Marks

- a) The following data relate to an orthogonal turning process
Chip thickness = 0.62mm
Feed = 0.2mm/rev
Rake angle = 15°
Calculate - Cutting ratio, chip reduction coefficient, and shear angle
- b) What is bending process? What are different types of bending dies? Describe Channel bending with neat sketch
- c) What are different methods of punch mounting? Draw sketches of any two and describe in detail

Q4. A Attempt any THREE**12 Marks**

- Define forging. Write principle of closed die forging with neat sketch.
- State at least four different types of cutting fluids and give its applications
- Calculate the bending force for channel bending using following data
Thickness of blank = 3.2mm
Bending length = 900mm
Die radius = punch radius = 9.5mm
Ultimate tensile strength of material = 400N/mm²
Use $K = 0.67$ for channel bending
- What is the function of misfeed detector? Describe its mechanism with suitable sketch.

Q4. B Attempt any ONE**06 Marks**

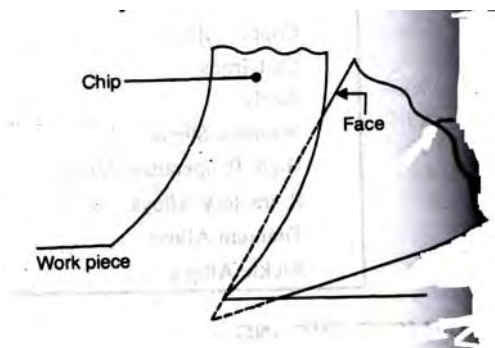
- What is tool life? State the tool life equation and write the factors on which it depends.
- What is spanning phenomenon in case of bending dies? How it can be avoided? Describe with sketch.

Q5. Attempt any FOUR**16 Marks**

- Draw a neat sketch of nomenclature of single point cutting tool. State importance of nose of tool
- The useful tool life of HSS tool machining mild steel at 18m/min is 3 hours. Calculate the tool life when the tool operates at 24m/min. assume tool life exponential $n = 0.125$
- State advantages and limitations of compound die
- How metal flow takes place during drawing? Describe with sketch.
- What are different types of cutting fluids? Write applications of any two.
- State the factors on which bending pressure depends. Write the formula for calculation of bending pressure and describe the terms in it.

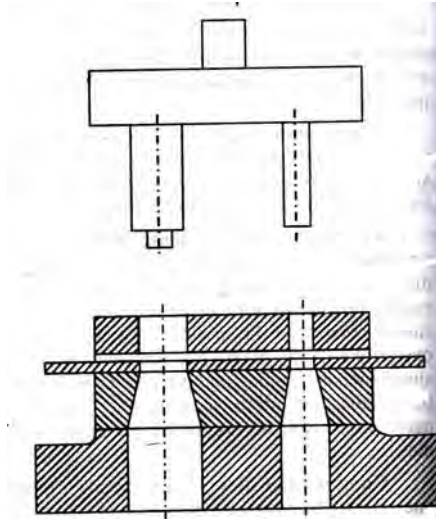
Q6. Attempt any TWO**16 Marks**

- Observe following figures carefully and answer the following



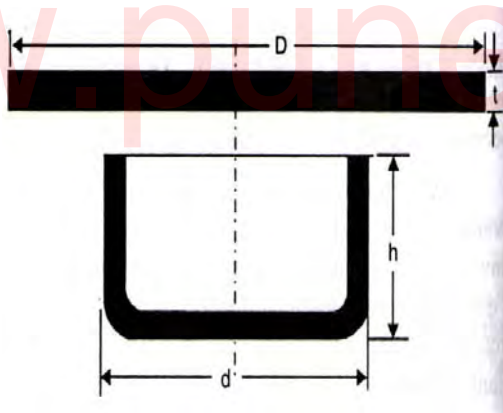
- Identify the type and location of tool wear shown in figure above
- State the reasons for such wear in brief
- Write the effects of such wear on tool and work piece
- Write the remedies to reduce such wear

b) Figure shown is one of the die assembly observe it carefully and answer the following



- i. Identify the type of die and redraw the figure by giving the names of its parts
- ii. Describe the working principle of die.
- iii. Write the applications of such die at least two

c) The figure given below shows a cup to be drawn



- i. Calculate the diameter of blank from it.
- ii. Calculate the percentage reduction
- iii. Calculate no of draws
- iv. Radius on punch and die.

For this use following data

- a) Shell diameter $d = 50\text{mm}$
- b) Radius of bottom inner corner of shell $r = 1.6\text{mm}$
- c) Height of cup $h = 50\text{mm}$

Do not consider trimming of blank