TED (06)–5041

(REVISION—2006)

Reg. No. .....

Signature .....

FIFTH SEMESTER DIPLOMA EXAMINATION IN TOOL AND DIE ENGINEERING—MARCH, 2013

TOOL DESIGN

[*Time* : 3 hours

(Maximum marks : 75)

PART—A

(Maximum marks : 15)

Marks

I Answer the following questions in one or two sentences :

1. What is a fixture ?
2. Define blanking.
3. What is a primary stop ?
4. What is parting operation in press tool work ?
5. What is meant by deep drawing ?
6. Define bulging operation.
7. Write the purpose of core in moulding.
8. Write any three ejection methods used in injection moulding.
9. Define the term die casting.
10. List the metals that can be cast by cold chamber die casting machine. (10×1½=15)

PART—B

(Maximum marks : 60)

(Answer *one* full question from each unit.)

UNIT—I

II (a) Draw the design of a drill jig which can be used for drilling a hole perpendicular to the axis of the shaft. 6

(b) Sketch and explain the clearances given in punch and die according to the types of cutting. (Blanking and Piercing). 6

OR

III (a) Draw the design of a simple blanking die and write all the general design values related to blanking diameter. 6

(b) Define the term angular clearance in cutting dies. 3

(c) Write the advantages of jigs and fixtures in mass production. 3

Marks

UNIT—II

IV (a) Draw the design of the button type and lever type stock strip stops and give its functions. 6

(b) Write the main functions of a side cutter. 3

(c) Write the function of a stock lifter. 3

OR

V (a) Calculate the maximum punch force necessary to blank and punch a washer of 20 mm inside and 36 mm outside diameter from 2 mm thick sheet, if both punches operate at same time. Take the maximum shear stress as 350 N/mm^2. 6

(b) How a parting punch and cut punch differ in their function ? 3

(c) Distinguish between cutting and non cutting punches. 3

UNIT—III

VI (a) Draw the design of an inverted draw tool and explain. 8

(b) Why U-bending (channel bending) dies are equipped with pressure pads ? 4

OR

VII (a) Calculate the bending force required for a 90° bend to be made from a steel sheet in an air bending type die. The bend length is 300 mm and stock thickness is 3 mm and beam length is 24 mm. Take the ultimate tensile strength of stock material as 400 N/mm^2. 6

(b) Define the spring back in bending. How we can prevent it by different corner setting methods ? 6

UNIT—IV

VIII (a) Draw the design of any three types of ejector blades and give a short note. 9

(b) What is an ejector grid in a mould ? 3

OR

IX (a) Distinguish between the designs of a two plate mould and three plate mould. 6

(b) Explain a feed system in a multi-cavity injection mould. 6

UNIT—V

X (a) Draw the design of a cold chamber die casting machine and explain. 9

(b) What is transfer moulding ? 3

OR

XI (a) Write the advantages of die casting. 6

(b) What are the design considerations of a die casting die ? 6