

MANIPAL (A constituent unit of MAHE, Manipal)

# VII SEMESTER B.TECH (IP ENGG.) END SEMESTER EXAMINATIONS NOVEMBER 2018

# SUBJECT: TOOL ENGINEERING AND DESIGN [MME 4111]

## **REVISED CREDIT SYSTEM**

#### Time: 3 Hours

MAX. MARKS: 50

### Instructions to Candidates:

- ✤ Answer ALL the questions.
- Missing data may be suitably assumed.

1A.	Sketch normal rake system and orthogonal rake system of single point cutting tool indicating all the angles with sectional views, wherever necessary.	04
1B.	Derive an expression for the cross section of a single point cutting tools with strength consideration.	04
1C.	Write a short note on abrasive wear.	02
2A.	With neat sketches explain three types of chips produced during metal machining. Explain the reasons for such chips.	04
2B.	Design a flat form tool to produce a V groove for inclined angle $2\beta$ =60° and depth of groove=30mm. Assume diameter of work piece=100mm. Take rake angle=15° and clearance angle=10°.	04
2C	Write a short note on tool life.	02
3A.	Determine the centre of pressure of the component shown in FIGUREQ3A.	04
3B.	A steel rectangular component 20 x 60 mm size is to be made from a 2 mm thick sheet. Sketch Scrap strip layout. Also determine the percentage of stock used.	04
3C.	What are factors affecting drawing operation?	02
4A.	Design and draw a jig for producing one M-16 holes at the component shown in the FIGUREQ4A.	04
4B.	What are the different types of forming dies? Explain any two.	04
4C.	How to reduce the cutting force requirements in blanking and piercing operations.	02
5A.	Design a pull type round broach to finish broach the internal hole of a mild steel component shown in FIGUREQ5A. The final broached diameter of the internal hole should be equal to 36mm and the length of broaching is 49mm.Calculate the total length of the broach.	04
5B.	What are the purpose and advantages of jigs and fixtures	04
5C.	Write a short note on drill bushes	02





FIGURE (Q3A)

FIGURE (Q4A)



FIGURE (Q5A)