Exam Date & Time: 02-May-2024 (02:30 PM - 05:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

VI SEMESTER B.TECH INDUSTRIAL AND PRODUCTION ENGG. END SEMESTER EXAMINATIONS, APRIL-MAY 2024

TOOL ENGINEERING AND DESIGN [MME 3254]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

1) Sketch the tool angles for normal rake system and orthogonal rake system. (4)

A)

B) Explain with sketch, chip formation mechanism for ductile and brittle materials. (4)

C) Differentiate between orthogonal cutting and oblique cutting. (2)

2) Explain with sketch, tool wear mechanism. (4)

A)

B) Design a circular form tool and flat form tool using graphical method. Select suitable rake and relief angle. (4)

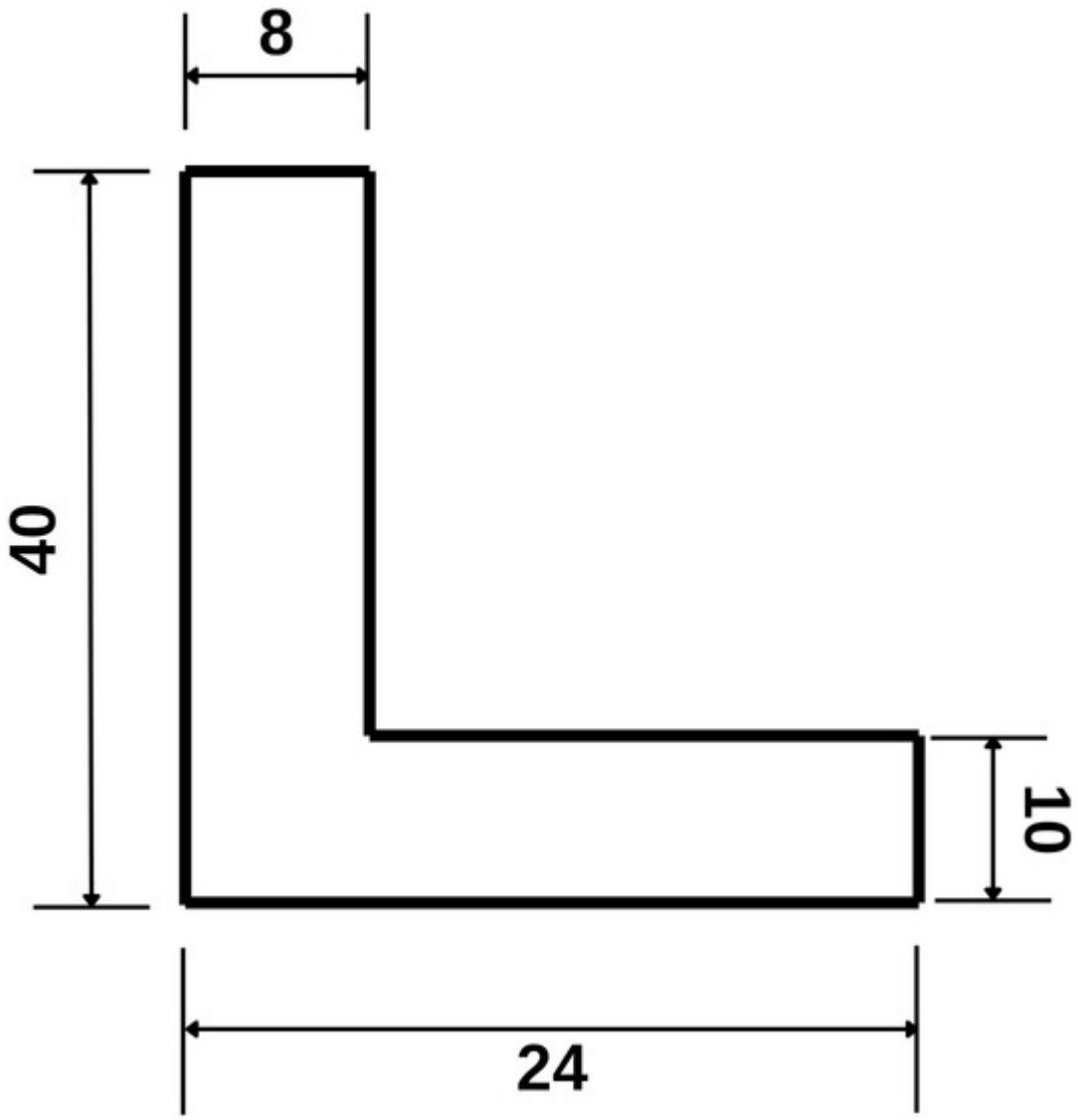
C) What are the essential properties of cutting tool materials? (2)

3) Design parallel step type in-built chip breaker and clamped type chip breaker. (4)

A)

B) (4)

Determine centre of pressure for the component as shown in the figure



C) A mild steel component 50 x 70 mm rectangle is to be made from a 3 mm thick sheet. Sketch Scrap strip layout. Also determine the percentage of stock used. (2)

4) What are the design considerations for clamping, locating and supporting system? (4)

A)

B) Sketch and Explain methods of reducing cutting forces (4)

C) What are the advantages and disadvantages of broaching? (2)

5) What are the characteristics and defects in sheet metal forming operations? (4)

A)

B) Sketch and explain deep drawing and rubber forming operations. (4)

C) What are the defects in drawing operations? (2)

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