Code No: NR222002 **NR**

II B.Tech II Semester Supplementary Examinations,
November/December 2005
MACHINE TOOL ENGINEERING
(Production Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Discuss the nomenclatule of cutting tools as per ASA system.
   (b) Sketch the merchant's circle diagram and discuss the force relations. [8+8]

2. (a) Explain the mechanism of chip formation in metal cutting. What are the conditions favourable to the formation of built-up edge. Explain the mechanism of discontinuous chip formation.
   (b) If Taylor's tool life constants for a given operation are n=0.5 and c=400, what is the percentage increase in tool life when the cutting speed is reduced by half? [10+6]

3. (a) What are accessories for a lathe machine? Explain with relevant sketches.
   (b) It is required to cut 2.0 mm pitch thread on a lathe having a lead screw of 8 TPI. Calcuate the change gears required and show the arrangement. [10+6]

4. (a) What are the diferent Tool holding devices used along with a capstan lathe? Expalin with a neat sketch the knee tool holder?
   (b) How the bars and blanks should be selected for machining on automatic and semiautomic lathes. [8+8]

5. (a) What are the main driving mechanisms used in planer? How belt drive is used for the quick return motion of a planer table.
   (b) A cast Iron plate measuring 300mm×100mm×40mm is to be rough shaped along its wider face. Calculate the machining time taking approach=25mm, over travel=25mm, cutting speed=12m/min, return speed=20m/min, allowance on eitheir side of the plate width=5mm and feed per cycle=1mm. [8+8]

6. (a) List various types of drilling machines and sketch a universal radial drilling machine and explain its working.
   (b) An existing hole of 140 mm dia is to be finish bored to 150 mm dia in a grey cast iron casting to a depth of 300 mm. The operation is to be performed in four passes-two rough and two finish. The depth of cut for rough boring is to be kept as 2mm and that for finishing boring as 0.5 mm. Calculate the machining time required for boring this hole assuming a cutting spped of 80 mpm and a feed of 1 mm for rough work and 0.13 mm for finish boring.[10+6]

7. (a) What are the Indexing or dividing heads? What is their function? With the help of suitable sketch explain the working of universal dividing head.

(b) What are the working principles of milling machines? Give the size and specification details of a universal milling macine, with a sketh.

(c) How do you estimate the machining time required in milling operations? [6+6+4]

8. (a) Explain the principle of centreless grinding? What are its advantages and applications?

(b) What is broaching? How different types of broaches are classified? Discuss the advantages and limitations of this process.

(c) Explain 3-2-1 Locating principle? [6+6+4]

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