SE - sem-IV - old - Mechanical 10/12/15

PP-II

QP Code : 1439

(3 Hours) [Total Marks: 100]

N.B.:

1. Question No. **1** is **compulsory**.
2. Attempt any **four** from remaining **six** questions.
3. **All** questions carry **equal** marks.
4. Missing data can be **suitably** assumed.

1. Attempt any four:- 20
   a) What are 'jigs and fixture'? Explain.
   b) What is the function of a chip breaker?
   c) On what factors do the tool life depends.
   d) Write a note on HSS as a cutting tool material.
   e) Explain briefly the thread and gear rolling.
   f) Write a note on hot working metal.

2. a) What is meant by angular location? Explain it for locating connecting rod for machining. 10
   b) What is meant by 'fool proofing as applicable to jig and fixture? How it can be achieved? 10

3. a) Explain briefly the regions of heat generation in metal cutting. 10
   b) Discuss in brief the relationship between the mechanical properties of work material and machineability. 10

4. a) During the orthogonal machining (turning) operation of C- 40 steel, the following data were obtained: 10
   Chip thickness ratio = 0.45
   Width of cut = 2.5 mm
   Feed = 0.25 mm/rev.
   Tangential cut force = 1130 N
   Feed thrust force = 295 N
   Cutting speed = 2.5 m/ s
   Rake angle = + 10^0
   Calculate (i) force of shear at shear plane. (ii) Kinetic coefficient of friction at the chip tool interface.
   b) Name and explain different cutting tool material. 10

5. a) Name different types of rolling mills and explain any two of them. 10
   b) Explain with sketch progressive die. With advantages and limitations. 10

6. a) Name different methods of gear finishing and explain briefly any two of them. 10
   b) Write stapes of designing form tool by graphical method. 10
   Design and draw a circular form tool having
   I. Maximum radius = 55 mm
   II. Minimum radius = 35 mm
   III. Rake and relief angle 15^0 and 10^0 respectively.

7. Attempt any four:- 20
   a) Write a note on defects in sheet metal rolling process.
   b) Explain 3-2-1 principal of location.
   c) What are the characteristics of an ideal cutting tool material?
   d) What are the characteristics of cutting fluid?
   e) Write a short note on deep drawing process.
   f) Explain briefly open die forging.

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