Sixth Semester B.Tech Degree Examination

MODEL QUESTION PAPER

(2013 Scheme)

13.606.2 Mechanical Working Methods (MPU) - Elective-II

Time: 3 Hours   Max Marks: 100

Answer **all** questions from **PART (A)** and **any one Full question** out of two from **each** of the **Module** in **PART (B)**

PART (A)

1. What is Engineering Stress and Engineering Strain?
2. What is True Stress and True Strain?
3. Obtain the expression for the Average Flow Stress
4. What is Ring Rolling?
5. What is Thread Rolling?
6. What is the parameter "Extrusion Ratio"
7. How do you determine the optimum Die angle in Direct Extrusion?
8. What is Flash less Forging or precision forging operation
9. What are the differences between Blanking and Piercing operations
10. Explain the term "Spring back defect" in press brake bending operation.

(10x2=20 marks)

PART (B)

Module-1

11.a) Compare Hot Working with Cold Working   **(10)**

   b) With neat sketches explain the various Heat Treatment Furnaces
      classified according to the type of Work Environment   **(10)**

OR

12.a) Draw the idealized Flow curves   **(5)**

   b)Obtain the Relation connecting Engineering Strain and True Strain **(5)**

   c) Explain the Factors affecting Plastic Deformation like
       (i)Temperature (ii)Friction and Lubrication
      (iii) Rate of Deformation   **(10)**

Module-II

13.   A 300 mm wide strip 25 mm thick is fed through a rolling mill With two powered rolls each of radius 250 mm .The work Thickness is to be reduced to 22 mm in one pass at a Roll speed of 50 rev/min. The work material has a Flow curve defined by K=275 MPa and n=0.15, and the coefficient of friction between The rolls and the work is assumed to be 0.12. Determine if the Friction is sufficient to permit the rolling operation to be accomplished. If so Calculate the Roll Force, Torque, and Power required in Kilo watts for Ideal Flat Rolling Operation.   **(20)**

OR

14.a)Draw the Roll pass sequence for Rolling a bar or Rod of 12.5mm diameter from a Square Billet of side 100 mm   **(10)**

   b) Draw a Neat sketch of the setup of Mannesmann Roll mill for producing Seamless Tubing and also explain the Roll Piercing Operation.   **(10)**

Module-III

15.a) With a Neat Sketch Explain the Terminologies used in the Design of Drop Forging Dies   **(10)**

   b) With a neat sketch explain the Wire Drawing Die Design   **(10)**

OR

16.a) Analyze the Direct and Indirect Extrusion Process and Deduce The Formulae use to estimate the Ram Force, Ram Pressure And Power required in such processes   **(12)**

   b) A cylindrical work piece is subjected to a cold upset forging operation .The starting work piece is 75 mm in height and 50 mm in diameter .It is reduced in the operation to a height of 36 mm. The work material has a flow curve defined by K= 350 Mpa and n=0.17.Assume a coefficient of friction of 0.1.Determine the force required at the final height of 36 mm only.   **(8)**

Module-IV

17.a) A round disk of 150 mm diameter is to be blanked from a strip Of 3.2 mm , half hard cold rolled steel whose shear strength is 310 Mpa. Estimate the Blanking force(Cutting Force) required in Tons   **(10)**

   b) Compare progressive Die with Compound Die   **(10)**

OR

18.a) With neat sketches explain the various press Bending Methods with the Dies used.   **(12)**

   b) Draw a simple drawing Die and Explain the operation that will produce cup as an end product   **(8)**