methods of producing parts made of plastic. How can coloured plastic parts be manufactured?

(c) Write short notes of the following :

  (i) 3-2-1 principle of location

  (ii) Jig and fixture

5. Attempt any two parts of the following :   2x10=20

  (a) Write short notes of the following :

   (i) Centrifugal casting

   (ii) Casting defects

  (b) Describe various kinds of patterns in use, What are the allowances provided, when making a pattern?

  (c) What do you mean by charging cupola? Explain different zone and reaction involved in cupola, with the help of a neat sketch.

—x—

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NME-402

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 140409

Roll No.

B.Tech. (Semester-IV)

SPL. THEORY EXAMINATION, 2014-15

MANUFACTURING SCIENCE-I

Time : 3 Hours]   *[Total Marks : 100*

Note: (1) Attempt all questions.

(2) They carry marks shown against each.

1. Attempt any four parts of the following :   4x5=20

  (a) What is the role of mass-manufacturing in raising the standard of living?

  (b) What are the major classifications of basic manufacturing processes?

  (c) Why material's selection is important in manufacturing?

  (d) Differentiate between hot working and cold working.

(e) Derive the expression for pressure distribution in forging of a rectangular block under sliding friction condition.

(f) Describe common rolling defects. Also give remedies.

2. Attempt any two parts of the following : 2x10=20

(a) Answer the following :

    (i) Write a note on rolling defects indicating their causes and remedies.

    (ii) Calculate the bite angle when rolling 15 mm thick plates using rolls of 400 mm diameter.

(b) A strip with a cross-section 150 mm x 45 mm is being rolled with 20% reduction of area using 450 mm diameter rolls. Find the angle subtended by the deformation zone at the roll centre, find strip thickness and the location of the neutral plane. Assume coefficient of friction to be 0.1.

(c) Describe the criteria commonly used for plastic deformation. State these criteria and show that according to Tresca's criterion, critical shear stress is $\sigma y/2$, where σy is the tensile yield stress of the material.

3. Attempt any two parts of the following : 2x10=20

(a) Describe in detail how stresses are classified. Elaborate any one type of stress with neat sketch.

(b) How does compound die differ from a progressive die? Give a neat sketch; describe constructional feature and working of a compound die.

(c) Describe :

    (i) The process of "Air bending" and V-bending. What is meant by "spring back" and how is it compensated?

    (ii) What precautions are necessary in bending a tube? How is the initial length required for making a bent tube component worked out? What kind of defects can occur while bending a tube?

4. Attempt any two parts of the following : 2x10=20

(a) How are powder - metallurgy components manufactured ? Discuss various steps involved.

(b) Describe :

    (i) The explosive forming method.

    (ii) What is difference between thermoplastics and thermosetting plastics? Describe three common