Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

CPMF 6305

Fifth Semester (Special) Examination – 2013

MANUFACTURING SCIENCE - I

BRANCH : MECH

QUESTION CODE : D313

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following queations : 2×10

   (a) Write the importance of binder in moulding sand.

   (b) What is core venting ?

   (c) Define "gate ratio".

   (d) What do you mean by weldability ?

   (e) Differentiate flash and upset welding.

   (f) Why is tungsten the preferred material for non-consumable electrodes ?

   (g) What is the difference between wire and rod ?

   (h) Define "deep drawing process".

   (i) What is tubular extrusion ?

   (j) Why annealing is required in cold working process ?

2. (a) Discuss in detail the various pattern allowances. 5

   (b) Calculate the permeability number of a sand specimen if it takes 1 min 15 sec to pass 2000 cubic cm. of air at a pressure of 6 g/cm^2, through the standard sample. 5

3. (a) Briefly explain the steps involve in shell moulding process. 5

(b) Explain with neat diagram the centrifugal casting process. 5

4. Explain with neat diagram the working of both forward and backward extrusion process Give the example of components produced by these processes. 10

5. (a) What are : weld zone, Fusion Zone, weld metal zone and heat affected zone ? 4

(b) The voltage–arc length characteristic of a DC arc is given by $V = (20 + 40L)$ volts. Where L is arc length in cm. The static volt-ampere characteristic of the power source is approximated by a straight line with no load voltage of 80 V and a short circuit current of 1000 A. Determine the optimum arc length and the corresponding arc power. 6

6. (a) Describe different type rolling mills with their relative merits and demerits. 5

(b) Explain different methods for cleaning the forging. 5

7. (a) Briefly explain the explosive forming process with their applications. 5

(b) Determine the die and punch sizes for blanking a circular disc of 20 mm diameter from a steel sheet whose thickness is 1,5mm and shear strength of the steel sheet is 294 Mpa. 5

8. Write short notes on any **four** of the following: 2.5×4

(a) Casting defects

(b) Power metallurgy process

(c) Machine forging

(d) Brazing

(e) Plasma arc welding.