[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
(2066)

16035(J) J-16

B. Tech 4th Semester Examination

Manufacturing Technology-I (NS)

ME-222

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt any one question from each the section of A, B, C and D. Section E is compulsory.

SECTION - A

1. What are the principle ingredients of molding sand ? Why sand testing is important. Describe briefly the essential test required to evaluate molding sand properties. Describe the various types of pattern allowances in sand casting process. What are the types of cores used in sand mold casting? (20)

2. What is gating ratio? Write the main functions of a riser. What are the various elements of gating system? Describe the different methods of cleaning and finishing of castings. What is meant by fettling? How soundness of casting is tested? (20)

SECTION - B

3. What is the typical situations in which continuous casting and precision investment casting processes are used? Differentiate between permanent mold and die casting process. Why are most die castings not made out of high strength materials? How will you compare a cold- chamber die casting process with that of a hot-chamber die casting process? (20)

4. What are the advantages and disadvantages of hot working over cold working of metals. What are the differences in roll-pass sequences for billets and rounds? Explain the main forging operations. Distinguish between drop-forging and press forging with reference to the process and products obtained. (20)

[P.T.O.]

SECTION - C

5. Explain the principle of extrusion process. Show the process of forward and backward extrusion by schematic sketches. Distinguish between wire drawing and tube drawing with sketches. What is stretch forming? Where this process is used? Differentiate between coining and embossing operations. (20)

6. Explain the Submerged arc welding process with the help of neat sketch. List the principal advantages of arc welding over gas welding process. Name any two limitations of the gas shielded tungsten arc welding. What are Causes and remedies of major welding defects? (20)

SECTION - D

7. What is the principal of thermit welding? What are the specific applications of thermit welding? How open atmosphere around the workpiece affects the weld obtained by electron beam welding process? What are the different parameters which affect the friction welding process? What filler metals are generally used in brazing? (20)

8. What is machine tool? Give the constructional features of shaper. How shaper is different from planner in operation. Explain the working principle and operations of turret lathe. (20)

SECTION - E (Compulsory)

Attempt all the following questions:

9. (i) Differentiate between molding sand and facing sand.
   (ii) Describe two defects which are likely to be caused in sand casting because of higher pouring temperatures.
   (iii) Explain why the sprue should be tapered.
   (iv) What is meant by core prints? Why cores are baked?
   (v) Write the two factors that justify the economy in production of metal forming processes.
   (vi) Why is the strength of rolled part considered better than a cast piece?
   (vii) Why is the neutral flame extensively used in oxy-acetylene welding?
   (viii) How is an arc obtained in arc welding? What is Arc stability?
   (ix) Differentiate between brazing and soldering from the point of view of the applications and strength of the joint obtained.
   (x) Write the specifications of milling machine. (2×10=20)