220

B.E (Mech) - 8

Exam.Code:0939
Sub. Code: 33845

2125

B.E. (Mechanical Engineering)
Third Semester
MEC-305: Manufacturing Processes

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: ***Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Part.***

x-x-x

1 (5 x 2)

a) What is meant by malleability? Give material examples.
b) Write the basic steps in casting?
c) Describe the significance of flux in welding.
d) What is metal spinning?
e) Describe weldability. What factors affect weldability?

Part A

2 a) Explain the major alloying elements used in steel and discuss how each element influences various properties of steel. Provide appropriate examples highlighting their industrial applications. 7

b) Describe the key properties of aluminum alloys that make them suitable for engineering applications. 3

3 a) Explain the extrusion process and differentiate clearly between hot extrusion and cold extrusion. 5

b) Write short notes on nickel-based alloys. Discuss their important properties, advantages and typical engineering applications. 5

4 a) Describe the various manufacturing processes used for producing pipes and tubes. Explain the principles, steps involved and applications. 7

b) Describe how the punch-die combination enables operations such as blanking, piercing and forming. 3

Part B

5 a) Describe the role and importance of molding sand constituent like base sand, clay (binder), moisture, additives etc used to achieve desired molding properties. 6

b) What are the different types of pattern allowances used in casting? Describe any two briefly? 4

6 a) Discuss following welded joints with neat diagram along with their applications
i)butt joint, ii) lap joint, and iii) tee joint, 6

b) Explain the working principles, advantages, limitations and applications of Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) welding processes. 4

7 a) Describe the different methods used for producing metal powders in powder metallurgy. Explain the key steps involved in powder metallurgy: powder production, compaction, and sintering. 6

b) Write short notes on sizing and finishing operations in manufacturing. 4

x-x-x