USN | | | | | | | | | | |

10ME/AU35

Third Semester B.E. Degree Examination, June/July 2014
Manufacturing Process – I

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. With a neat flow diagram, explain the steps involved in metal casting process. Also write the advantages and limitations and applications of metal casting process. **(12 Marks)**

b. What are pattern allowances? Classify and write a note on draft allowance and distortion allowance with figures. **(08 Marks)**

2 a. Name the base sands used in metal casting and briefly discuss the requirement of base sand. **(10 Marks)**

b. With a neat sketch, explain the working principle of Jolt & Squeeze moulding machine. **(10 Marks)**

3 a. Briefly explain the characteristic features of FURAN and ALKYDE type no bake moulding processes. **(10 Marks)**

b. Name the centrifugal casting methods. With neat sketches explain the working of vertical and horizontal type true centrifugal casting processes. **(10 Marks)**

4 a. With a neat sketch explain the working principle of coreless induction furnace. **(10 Marks)**

b. With a neat sketch explain the working principle of 3-phase electric arc furnace. **(10 Marks)**

PART – B

5 a. With a neat sketch explain the principle of Laser welding process. Mention its advantages, limitations and applications. **(10 Marks)**

b. With a neat sketch explain the thermit welding process. Write the advantages and limitations. **(10 Marks)**

6 a. With a neat sketch explain the working principle of oxy-acetylene gas welding. Also write the flame characteristics. **(12 Marks)**

b. Explain Tungsten inert gas arc welding process with figure. Mention its advantages. **(08 Marks)**

7 Write short notes on the following :

a. HAZ in welding

b. Shrinkage and residual stresses in welding

c. Welding defects and remedies

d. Electrodes **(20 Marks)**

8 a. Distinguish between soldering and brazing. Also discuss briefly the furnace brazing process with figure. **(10 Marks)**

b. With neat sketches, explain the following types of non-destructive methods of inspection of casting and welding:

(i) Eddy current testing (ii) Acoustic emission monitoring. **(10 Marks)**

* * * * *