1st Semester Regular Examination 2016-17
PRODUCTION TECHNOLOGY
BRANCH: MECHANICAL ENGINEERING(SYSTEM DESIGN,THERMAL POWER ENGINEERING, PEOM,TPE,TFE,DD,TE,PE,MSD,ME,MD,MSDD,HPE,HPTE,CAD/CAM)
Time: 3 Hours
Max Marks: 100
Q.CODE: Y964
Answer Question No.1 which is compulsory and any FOUR from the rest.
The figures in the right hand margin indicate marks.

Q1   Answer the following questions: *Short answer type*   **(2 x 10)**

   a) Explain the major factors affecting the pouring action of molten metal into mould cavity.

   b) What is the purpose of an inoculants?

   c) Discuss the need for cleaning the surfaces to be welded.

   d) Differentiate flash and upset welding.

   e) What is difference between direct and indirect extrusion process?

   f) What is tubular extrusion?

   g) What do you mean by MEMS devices?

   h) State the important of MEMS technology.

   i) What is yield stress and how it related to plasticity?

   j) What do you mean by yield criteria?

Q2 a) Define fluidity and why is it important? Describe in detail the influence of different characteristics of molten metal on fluidity and test of fluidity. **(10)**

   b) An aluminium cube of 120mm side has to be cast along a cylindrical riser of height equal to its diameter. The riser is not insulated on any surface. If the volume shrinkage of aluminium during solidification is 6 percent. Calculate: **(10)**

      (i)   Shrinkage volume of cube on solidification.

      (ii)   Minimum size of the riser so that it can provide the shrinkage volume.

Q3 a) Explain different casting defects and the remedial action to eliminate these defects. **(10)**

   b) Describe with neat diagram the electro slag and electro gas welding process with its specific applications. **(10)**

Q4 a) Explain in detail the weld thermal cycle in the heat affected zone of welding and different factors affecting weld thermal cycle. **(10)**

   b) Describe with neat diagram the plasma arc welding process. **(10)**

      In a resistance welding process, the applied voltage is 5 V. determine the rate of heat generation per unit area with 25 bridges /cm^2 each bridge having a

radius of 0.1mm. The resistivity of material is given to be 2x10^{-5} ohm-cm.

Q5 **a)** Explain in detail the different types of extrusion dies and their applications. **(10)**

   b) Explain briefly with diagram the hydrostatic and impact extrusion processes with specific applications. **(10)**

Q6 **a)** Describe in detail the chronological development of MEMs and its applications. **(10)**

   b) Explain in detail the steps of manufacturing the MEMS products. **(10)**

Q7 **a)** Describe the Tresca and Von Mises criterian of yielding of ductile material. **(10)**

   b) Derive the stress strain relation for plastic deformation of three dimensional object. **(10)**