

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 172003

Date: 24/11/2011

Subject Name: Manufacturing Technology II

Time: 10.30 am-01.00 pm

Total marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Draw NEAT schematic diagrams wherever necessary. Shabbily drawn diagrams may not be appreciated.

- Q.1 (a)** 1. Briefly describe with neat schematic diagrams the loose piece pattern and skeleton pattern used in a casting process. **04**
2. Define the following terms in relation to the molding sand: **03**
- (i) Permeability
 - (ii) Green strength
 - (iii) Dry strength
- (b)** 1. Explain constant current and constant voltage characteristic of welding power source. **04**
2. What is called an “arc-blow” in an arc welding process? Mention the factors responsible for arc blow. Also mention the precautionary steps to be taken to minimize the arc blow. **03**
- Q.2 (a)** 1. Briefly illustrate the process parameters of Ultrasonic machining process to affect the material removal rate and surface finish. **04**
2. What is the need of flushing system in Electro-Discharge Machining (EDM)? Explain with schematic diagrams the different flushing systems of EDM process. **03**
- (b)** 1. Explain the working principle of Electro-Chemical Machining (ECM). What are the different applications of ECM process? **05**
2. What is called a stray cutting (or over spray) in Abrasive Jet Machining (AJM)? How can it be overcome? **02**

OR

- (b)** 1. Describe the functions of an electrode-coating used in an arc welding process. **05**
2. Differentiate between mobile arc and immobile arc in context of an arc welding process. **02**

- Q.3 (a)** 1. Draw and explain fringe patterns generated on a flat surface and a concave surface using optical flat. **03**
2. Explain a method to check the squareness of a given component. **04**
- (b)** Draw the location system provided by the following toolings:
1. Three jaw chuck **02**
2. Four jaw chuck **02**
3. Arbor of a milling machining **03**

OR

- Q.3 (a)** 1. Explain whether the following statements are true or false with one line justification. **02**
- (i) Sinebar is not used for squareness measurement.
- (ii) Autocollimator is used for small angular measurement.
2. Explain the procedure to find out the roundness error of a cylindrical component. **05**
- (b)** 1. What is called mechanical control in workpiece control? Explain with suitable example/s. **03**
2. Explain briefly centerline control for a cylindrical shaped workpiece. **04**

- Q.4 (a)** 1. Differentiate between forward extrusion and backward extrusion. **02**
2. Differentiate between deep drawing and punching operation. **02**
3. Illustrate the merits and demerits of reverse redrawing operation over simple redrawing. **03**
- (b)** 1. Differentiate the location system provided by the short cylinder and long cylinder with neat schematic diagrams. **04**
2. Write down the design requirements of a sine bar. **03**

OR

- Q.4 (a)** Explain the following terms:
1. Ironing in deep drawing operation **02**
2. Blank holder in deep drawing operation **02**
3. Two stage progressive die **03**
- (b)** 1. Show the significance of non-traditional machining processes over conventional machining processes. **02**
2. Define workpiece control and describe the factors affecting it. **05**

- Q.5 (a)** Mention the functions of the following:
1. What are the different ways available to trap slag in a gating system of a casting process? Explain briefly. **04**
 2. Explain the merits and demerits of precision investment casting process. **03**
- (b)** Evaluate the following statements:
1. Ultrasonic machining is the safest machining process amongst all non-traditional machining processes. **02**
 2. Larger sized abrasive particles remove more material in Abrasive Jet machining. **02**
 3. Although the locators are placed on proper surface, poor dimensional control can result. **03**

OR

- Q.5 (a)**
1. Explain the effect of nozzle tip distance on material removal for Abrasive Jet machining. **03**
 2. Explain the Submerge Arc welding process with neat schematic diagrams. **04**
- (b)**
1. What is the use of a Sinebar? Explain the working of Sinebar with suitable example. **04**
 2. Write the functions of the following: **03**
 - (i) Pouring basin
 - (ii) Riser
 - (iii) Chill
