Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2016

Subject Code:172003 **Date:10/05/2016**

Subject Name:Manufacturing Technology - II

Time:02:30 PM to 05:00 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 diagrams. Diagrams with inferior quality may not be awarded credit.**

Q.1 **(a)** Evaluate the following statement. **07**
Interferometry is not only used for flatness measurement of small surfaces, but also used for calibration of slip gauges. Support your answer with the help of suitable diagrams.

(b) How can the following requirements of angular measurement be fulfilled? Explain the working principle and instrument used for the following requirements to support your answer. **07**

1. Very small angular measurement of the order of few minutes or seconds over long distance of 2 to 3 meter.
2. Large angular measurement up to 45^0 over a small distance of few centimetres.

Q.2 **(a)** With the help of neat schematic diagrams describe the following applications. Also explain the process parameters responsible to control the machining process in each case. **07**

1. Deburring operation on gear teeth using ECM technique
2. Drilling a hole using ECM technique

(b) Which materials are suitable to be machined with Water Jet Machining (WJM)? How does the high pressure water obtain in WJM process? Briefly describe the process parameters of WJM. **07**

OR

(b) Explain with neat diagrams the factors responsible for producing error in measurement. **07**

Q.3 **(a)** Explain with the help of suitable example that the dimensional control should be given preference over geometric control while achieving workpiece control. **07**

(b) Explain the following terms in relation to the casting process. **07**
Loose piece pattern; Permeability of molding sand; Chaplets

OR

Q.3 **(a)** Evaluate the following statements. **07**

1. Effectiveness of LASER beam machining depends upon the wavelength of beam, surface finish of workpiece and presence of oxide layer on workpiece.
2. EDM cannot be the last machining process on the workpiece.

(b) Draw the location system of a cube, long cylinder and short cylinder to restrict six degrees of freedom. Also mention the role played by the clamping force for each shape mentioned here to restrict the motion completely. **07**

Q.4 **(a)** Differentiate between punching and piercing operation. What is called progressive die set and combination die set for making washers from sheet metal? Draw suitable diagrams to support your answer. **07**

(b) Describe the casting yield, pressurized gating system and non-pressurized gating system for casting process. **07**

OR

Q.4 **(a)** What is the difference between hot working and cold working process? Compare relative merits and demerits of these processes with critical reasoning. Give suitable examples of hot working and cold working processes. **07**

(b) Evaluate the following statements. **07**

1. Flatness of the surface is decided by the straightness of the fringes as well as the spacing between them (i.e. number of fringes) when the surface is observed under optical flat.
2. When workpiece control is lost, the most expensive tooling and equipment are useless.

Q.5 **(a)** What are the functions of flux coating on welding rod when a consumable electrode is used for welding process? **07**

(b) Justify that the power, amplitude of vibration, abrasive size and frequency of vibration are the major process parameters to control Ultrasonic machining process. **07**

OR

Q.5 **(a)** With the help of neat schematic diagram explain the working principle of sigma comparator to measure the small linear displacements. **07**

(b) Explain the difference between constant current and constant voltage power source of welding process. Support your answer with the help of V-I characteristic of welding power source. **07**

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