Seat No.:	Enrolment No
	GUJARAT TECHNOLOGICAL UNIVERSITY
	M. E SEMESTER – I • EXAMINATION – WINTER • 2014

Date: 03-12-2014

Subject code: 715003N

Subject Name: Advanced Manufacturing Processes 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 mark. **Q.1** (a) Explain characteristics features of modern machining processes that distinguish 07 them between conventional machining processes. (b) Classify modern machining processes on the basis of the type of energy 07 employed. Also, state the mechanism of material removal, transfer media and energy sources used. Write five important variables of AJM process. Draw a sketch and explain the **Q.2 07** (a) effect of three of these variables on MRR. Derive an equation suggested by Shaw to obtain volumetric material removal 07 rate for USM. (consider only hammering mechanism) (b) With the help of neat sketch, explain the mechanism of material removal in 07 EDM. Also illustrate the effect of magnitude of current and frequency on the shape and size of the carters formed during machining. Q.3(a) With the aid of sketches show how external and internal forming can be 07 accomplished by in the electro-magnetic forming process. State the principle of explosive forming process and also explain in detail **07** explosive forming process. OR State and explain various energy sources used in high energy rate forming 07 Q.3 (a) **(b)** Explain the principle and working of electro-hydraulic forming process. 07 **Q.4** Compare LBM and EBM processes in respect of principle of operation, 07 equipment cost, operational ease, accuracy, efficiency, etc. Explain with a neat diagram the principle of ultrasonic welding and also state 07 the advantages and disadvantages for the same. Describe with the help of sketches electromagnetic and electrostatic methods of 0.4 **07** beam focusing in EBM process. Explain with a neat diagram the contour roll forming process. 07 **(b)** Explain with neat sketches vacuum moulding process. Give advantages and **07 Q.5** (a) limitations of vacuum moulding process. **(b)** Explain Ceramic mould casting process. 07 0.5 Explain with the help of a neat sketch the working of evaporative pattern 07 (a) casting process.

(b) Explain squeeze casting process operations with neat sketch.

07