

GANPAT UNIVERSITY
M. TECH SEM-I (AMS) CBCS REGULAR EXAMINATION NOV-DEC 2017
3ME103 ADVANCED MANUFACTURING PROCESS-I

MAX. TIME: 3 HRS

MAX. MARKS: 60

- Instructions:** (1) This Question paper has two sections. Attempt each section in separate answer book.
 (2) Figures on right indicate marks.
 (3) Be precise and to the point in answering the descriptive questions.
 (4) Assume suitable data if necessary.

Section: I

- Q.1** [10]
 [A] Draw the schematic diagram and discuss the role of subsystem used in water jet machining. (5)
 [B] Draw the schematic diagram and explain the working principle of laser machining with its important characteristics, advantages, limitations and fields of applications. (5)

OR

- Q.1** [10]
 [A] Draw schematic diagram of abrasive jet machining and derive the equation for Material removal rate for ductile and brittle materials in an abrasive jet machining. (5)
 [B] With neat sketch explain the process principle of electro discharge machining for Single discharge condition. Also draw the waveforms of relaxation power generator in EDM process with its all notations. (5)

- Q.2** [10]
 [A] What is the six point location principle? Explain it with the help of suitable sketches. (5)
 [B] Explain cryogenic machining and micro machining process with neat sketch. What is the importance of it in manufacturing? (5)

OR

- Q.2** [10]
 [A] List the various types of locating devices used for both Jigs and Fixture and Explain any three of them with neat sketch. (5)
 [B] What is the effect of temperature in metal forming process? Explain how mechanical properties vary with temperature in carbon steel. (5)

- Q.3** [10]
Attempt Any Two:
 [A] State various thread manufacturing methods. Explain any two of them briefly. (5)
 [B] With suitable assumption derive the condition for material removal rate for brittle Material machined by ultrasonic machining. Material removal rate can be express as: $5.9 R^{1/2} Y_0^{r/2} (\sigma/H) f$ (mm/second). (5)
 Where R : Radius of grit, σ = Stress,
 H : Hardness, f= Frequency, Y_0 : Amplitude of vibration
 [C] Write a short note: Explosive forming (5)

