

MASTER OF PRODUCTION ENGINEERING EXAMINATION 2017

(1st Semester)

ADVANCES IN MANUFACTURING SYSTEMS

Time: Three Hours

Full Marks: 100

Use a separate Answer Script for each part

PART-II (40 Marks)

Answer any TWO questions

6. a) What are the needs for advanced machining processes? What are the various mechanical types of advanced machining processes?

b) State the advantages of Abrasive water Jet Machining (AWJM) process over WJM. Discuss about the working principle of Abrasive Water Jet Machining system with a suitable sketch.

c) Distinguish between AWJM and AJM? (6+10+4)

7. a) State the material removal mechanism in USM.

b) State the functions of components of Tool vibration system in USM with sketch.

c) State the advantages of rotary USM over stationary USM.

d) What are the applications of USM?

e) What are the various types of ultrasonic assisted machining processes? (4+6+3+3+4)

8. a) Discuss on the working principle, process parameters, applications and limitation of Wire cut electric discharge machining with sketch.

b) Discuss on the working principle, process parameters, applications and limitation of Electrochemical discharge machining with sketch. (10+10)

9. a) Distinguish between transferred and non-transferred plasma arc machining system with sketches.

b) What are the process parameters and performance criteria of electron beam machining?

c) Discuss on the working principle of Nd:YAG Laser beam machining system with sketch.

d) What are the applications of laser in manufacturing? (4+4+7+5)

MASTER OF PRODUCTION ENGINEERING 1st SEMESTER EXAMINATION 2017**Subject: Advances In Manufacturing Systems****Time : Three Hours****Use Separate Answer Script for Each Part.****Full Marks: 100****PART I****(60 for Part I)**

Answer Any Three Questions		
1(a)	Identify & explain the critical factors that affect the selection of an Advance Machining Process for a particular operation on a work piece of given material, size and shape.	(4)
(b)	Explain the advantages of a Co-ordinate Measuring Machine (CMM) over other measurement equipments. Enlist the product features / quality parameters that can be evaluated by a CMM.	(9)
(c)	Identify the parameters that control the design of an Automated Product Handling System and explain their respective effects.	(7)
2(a)	Enlist & explain the key parameters of a Laser beam. Discuss the basic mechanisms involved in Laser Beam Welding (LBW).	(8)
(b)	Identify the important process parameters of LBW & explain the effect of two such parameters on depth of penetration and depth to width ratio.	(12)
3(a)	Distinguish between Mechanised & Automated handling of products. Explain the limitations of Automated product handling.	(5)
(b)	What is an AGVS? State its applications in advanced manufacturing systems & also its advantages over other handling equipments. Explain the 'Traffic Control' systems used for AGVS.	(10)
(c)	Discuss how Robots are applied in different product handling applications in Manufacturing Systems.	(5)
4(a)	Draw neat sketch of the scheme of Electro Chemical Grinding (ECG) process and enlist its process parameters. Also explain the mechanism of material removal.	(10)
(b)	Explain with suitable sketches how deburring of an internal cross-hole can be done by Electro-chemical Deburring (ECD) process. Enlist the main process parameters of ECD and explain their effects on Deburring rate.	(10)