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**Question Paper Code : 47248**

M.E./M.Tech. DEGREE EXAMINATION, JANUARY 2018  
First Semester  
Manufacturing Engineering  
MF 5101 – ADVANCED IN MANUFACTURING TECHNOLOGY  
(Regulations 2017)

Time : Three Hours

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Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. How pulsation in water jet machining is minimized ?
2. Enlist the factors which affect the material removal rate in EEM.
3. Define Planarization.
4. What is meant by Single-Point Diamond Turning (SPDT) ?
5. Differentiate between cold and hot isostatic pressing.
6. Write the equation to find the porosity of the fine powder.
7. What is the topographic image of atomic force microscope ?
8. How does chemical etching work ?
9. What is meant by reactive sputtering ?
10. Define stepper and scanner in lithography process.

PART – B

(5×13=65 Marks)

11. a) Explain the principle, process capability and mechanism of material removal in plasma arc machining.

(OR)

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- b) i) Explain the factors which controls MRR in Elastic Emission Machining. (5)  
ii) Compare the chemical machining and electrochemical machining. (8)



12. a) Explain the principle and mechanism of ELID process with a neat diagram. State its limitations.

(OR)

- b) Derive the equation to find the tangential and radial stresses in high speed grinding wheels.

13. a) Explain the powder rolling process with a neat schematic. Discuss the steps involved in it.

(OR)

- b) Explain the Shot Peen Forming and Laser Peen Forming with neat diagrams.

14. a) Explain the effect of the following parameters on micromachining of parts.

i) Cutting edge radius

(4)

ii) Feed rate

(3)

iii) Axial depths of cut

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(3)

iv) Spindle speed.

(3)

(OR)

- b) Discuss about the major process parameters involved in LIGA process. State the role of AI in LIGA process.

15. a) Explain the effect of layer thickness, orientation and hatch spacing on stereo lithography process.

(OR)

- b) Compare the advantages, disadvantages and limitations of fuel CVD, PVD and plasma spraying.

### PART - C

(1×15=15 Marks)

16. a) A new car is designed incorporating new technology. Suggest how rapid prototyping could be applied for the development of the product. What are the steps followed? Discuss the factors considered.

(OR)

- b) Define aspheric surface. Explain the following with respect to aspherical surface :

i) Maximum sag height.

(5)

ii) Vertex radius and local radius.

(5)

iii) Down-turned and up-turned edge.

(5)