B.E/B.Tech END SEMESTER EXAMINATION NOVEMBER/DECEMBER 2013

MECHANICAL ENGINEERING

FIFTH SEMESTER- R2008

ME9304 MODERN MACHINING PROCESS

Time: 3 Hours **Max: 100 Marks**

Answer All Questions

PART – A (10 x 2 =20 Marks)

1. State the advantages of modern machining processes over conventional machining processes.
2. As a mechanical engineer what modern machining processes will you suggest for machining glass? Justify your answer
3. List down the applications of ultrasonic machining.
4. Briefly explain the working principle of ice jet machining.
5. Draw the typical heat affected zone of a component machined by EDM process.
6. State the desirable properties of the wires used in wire cut EDM process.
7. State the typical tolerance level which can be achieved in Cut-and-peel and Photoresist maskant methods.
8. In Electro chemical grinding is the machinability decided by the hardness of the workpiece material alone?
9. List down some of the applications of LBM.
10. Differentiate between transferred and non transferred plasma arc machining.

PART – B (5 x 16 =80 Marks)

11. (a) Discuss on the physical parameters, shape that can be machined, process capability and economic consideration of the different modern machining process. **(16)**

12. (a)Discuss the effects of the following parameters on the rate of material removal and surface finish obtainable
    (i) Amplitude and frequency of vibration
    (ii) Abrasive grit size
    (iii) Concentration of slurry **(16)**

(OR)

(b). Write the differences (in table form) between AJM,WJM and AWJM process (working principles, applications and merits of the process) **(16)**

13. (a) (i) Explain the principle of working of wire cut EDM process with a sketch **(10)**

(ii) What are the advantages and disadvantages of the wire cut EDM process **(6)**

(OR)

(b) (i) Explain the principle of working of EDM process with sketch **(8)**

(ii) Explain the following (a) Resistance-capacitance type generator

(b) Rotary impulse type generator **(8)**

14. (a) What are the functions of an electrolyte used in ECM? What factors needed to be considered while selecting it? Discuss the advantages and limitations of some electrolytes. **(16)**

(OR)

(b) With help of neat diagram explain the working principle of electrochemical grinding. Mention its advantages, disadvantages and applications **(16)**

15. (a) Compare electron beam machining and ion beam machining based on experimental setup, working principle, advantages, limitations and applications. **(16)**

(OR)

(b) (i) With neat diagram explain the principle of plasma arc machining. State its advantages, limitations and application. **(8)**

(ii) With neat diagram explain the principle of Laser beam machining. State its advantages, limitations and application. **(8)**