Reg. No…….

Name…….

B.TECH DEGREE EXAMINATION, MAY 2014

Eight Semester

Branch: Production Engineering

PE 010 802-NON CONVENTIONAL MACHINING PROCESSES (PE)

MODEL QUESTION PAPER

(Regular-New Scheme 2010)

Time: Three Hours Maximum: 100 Marks

Part A

*Answer **all** questions.*

Each question carries 3 marks.

1. Compare Non Traditional machining with conventional machining processes.
2. Explain any three parameters on working accuracy and metal removal rate in AJM.
3. Write down the process characteristics of Plasma Arc Machining.
4. Write down the applications of powder metallurgy.
5. Define rapid prototyping. Write down the basic five step process employed by rapid prototyping techniques.

(5 x 3 = 15 marks)

Part B

*Answer **all** questions.*

Each question carries 5 marks.

6. Calculate the machining rate and electrode feed rate when iron is electrochemically machined, Using copper electrode and sodium chloride solution (Specific resistance=5 ohm cm). The power supply data of ECM machine used are Supply voltage =18 V D.C, Current = 5000amp. A tool work gap of 0.5 mm (constant) may be used.
7. Sketch schematic representation of ultrasonic machining process.
8. Explain principle of electron beam machining with a neat diagram.
9. Write a note on

   a. Particle size.

b. Particle shape & Particle size distribution.

c. Compressibility & compatibility.

10. With a neat sketch explain the working principle of stereo lithography process.

(5x5 = 25 marks)

Part C

*Answer **all** questions.*

Each question carries 12 marks.

Module I

11. (a). Explain the chemistry of Electro Chemical Machining process.

(b). Write down limitations and application of ECM process.

Or

12. (a). Sketch and explain mechanism of metal removal in Electric Discharge Machining.

(b). Write down machine tool selection & Applications of EDM.

Module II

13. Design a half wave steel concentrator to work at a frequency of 19 K c/s. The transducer has a section of 7.5 X 7.5 cm. Assume velocity of sound in steel C= 5 X 10^6 mm/sec.

Or

14. (a). With a neat diagram explain Abrasive Jet Machining.

(b). Explain advantages, limitations & applications of AJM.

Module III

15. (a). Sketch and explain Laser Beam Machining.

(b). Explain advantages, limitations & applications of LBM.

Or

16. (a). Sketch and explain Ion Beam machining.

(b). Explain advantages, limitations & applications of Ion Beam machining.

Module IV

17. Write a short note on methods of producing metal powders.

Or

18. Write a short note on compaction techniques.

Module V

19. Explain Laser Engineered Net Shaping with a neat sketch.

Or

20. Explain with a neat sketch principle of operation of Fused Deposition Modeling process.

(5x12 = 60 marks)
