Register Number……

B.E., DEGREE EXAMINATIONS: NOV/DEC 2012

Third Semester

MEC107: MANUFACTURING TECHNOLOGY-II

(Common to Mechanical Engineering and Automobile Engineering)

Time: Three Hours **Maximum Marks: 100**

Answer All Questions:-

PART A (10 x 1 = 10 Marks)

1. The process of _____, if the cutting force is very large, by the development of fatigue cracks under chatter conditions.

   A) Plastic deformation B) Gradual wear

   C) Mechanical breakage D) None of the above

2. In mechanism of metal cutting, shear plane is actually a narrow zone of order of about _____.

   A) 0.0025mm B) 0.025mm C) 0.25mm D) 2.5mm

3. The apron mechanism is used for transforming _____ motion of feed rod and the lead screw into feed motion of the carriage.

   A) Linear motion B) Translation motion

   C) Rotary motion D) Sliding motion

4. In the work holding devices, the work revolves with the _____ which is mounted between the centers.

   A) Mandrels B) Chucks C) Face plate D) Angle plate

5. In drill tool nomenclature, _____ is the angle between the face and the line parallel to the drill axis.

   A) Point angle B) Helix angle C) Spiral angle D) Rack angle

6. In Resinoid bond, the mixture is rolled to the desired shape and baked at a temperature of _____ for a few hours.

   A) $110^{o}c - 150^{o}c$ B) $160^{o}c - 200^{o}c$ C) $210^{o}c - 250^{o}c$ D) $260^{o}c - 300^{o}c$

7. In work holding devices which one of the following has a headstock and a tailstock?

   A) Milling fixture B) Indexing head C) Universal vise D) Swivel wise

8. _____ is used for generating worm gears.

   A) Gear hobbing B) Gear planning C) Gear shaping D) None of the above

9. In ultrasonic machining process _____ is used to convert the applied electrical energy at low frequency to high frequency.

   A) Ultrasonic transducer B) Transducer cone

   C) Both A & B D) Ultrasonic oscillator

10. In laser beam machining, which one of the following is the lasing materials?

A) Liquids B) Gases C) Vapor D) Solids

PART B (10x2=20 Marks)

11. Distinguish between orthogonal and oblique cutting?
12. What are the functions of cutting fluids?
13. What is the main difference between live center and dead center?
14. Write down the formula for calculating number of strokes and passes required in a shaper?
15. Calculate the tap dill size to cut an internal thread for bolt of outside diameter 10mm, pitch 1.5mm and depth of the thread 0.61 pitch.
16. Define the term glazing?
17. What are the advantages of gear hobbing process?
18. Write down the rule for gear ratio in differential indexing.
19. What type of operations can be performed in abrasive jet machining?
20. What is the principle of operation of wire-cut EDM process?

PART C (5x14=70 Marks)

21. a) (i) Using Merchant's circle diagram, derive the expression for estimating the cutting force during machining. Mention the assumptions made. (7)

(ii) What is the measure of metal removing process machinability? What are the factors that affect it? (7)

(OR)

b) (i) Describe an expression for the determination of shear angle in orthogonal metal cutting. (8)

(ii) What are the different types of chips? How are they formed? (6)

22. a) What are the types of quick return mechanisms used in shaper? Explain any two with the help of a neat sketch?

(OR)

b) With the aid of a neat sketch explain the following?

(i) Double hosing planer.

(ii) Open and cross belt drive

23. a) (i) List out the types of drilling operations and explain any five with help of sketch in details (7)

(ii) What are the three types of vertical broaching machine and explain any two with a neat sketch? (7)

(OR)

b) (i) Explain the designation of grinding wheel? (7)

(ii) What is meant by reconditioning of grinding wheels and explain it types? (7)

24. a) Classification of cutters and explain the different types of cutter according to the type of operation.

(OR)

b) Explain the following with the neat sketches.

(i) Gear shaping process

(ii) Gear planning process

(iii) Gear hobbing process

25. a) (i) With a neat sketch explain the principle, construction and working of ultrasonic machining process? (10)

(ii) Compare the ultrasonic machining with the abrasive machining? (4)

(OR)

b) (i) Explain the principle, construction and working of a laser beam machining with a neat sketch? (10)

(ii) Explain the types of lasing materials? (4)

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