KUMARAGURU college of technology
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Register Number: ……..

B.E DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2009)

Third Semester

MECHANICAL ENGINEERING

MEC107 : Manufacturing Technology - II

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Chip ratio is defend as the ratio between

   a) chip thickness to uncut thickness
   b) length of uncut material to length of chip
   c) uncut thickness to chip thickness
   d) chip thickness to length of chip

2. Which is the correct relation for cutting speed in the options given below?

   a) $TV^n=C$
   b) $VT^n=C$
   c) $CT^n=V$
   d) $VC^n=T$

3. Capstan and turret lathes are

   a) General purpose lathe
   b) Special purpose lathe
   c) Used for rough work only
   d) Used in tool room for high precision work

4. In mechanical shaper the length of the stroke is increased by

   a) Increase the centre distance of bull gear and crank pin
   b) Increase the length of the arm
   c) Decrease the centre distance of bull gear and crank pin
   d) Decrease the length of the slot in the slotted lever

5. The operation used for enlarging the drilled hole is

   a) Tapping
   b) Boring
   c) Reaming
   d) Trepanning

6. Lap wheel in lapping machine is made up of

   a) Aluminium
   b) Copper
   c) Brass
   d) Cast iron

7. The cutter rotates in the same direction of the travel of work piece is

   a) Up milling
   b) End milling
   c) Climb milling
   d) Face milling

8. Accurate gears are produced by

a) Casting b) Forging

c) Stamping d) Machining

9. Which one of the following energy is not used in non conventional method of machining?

a) Thermoelectric energy b) Chemical energy

c) Mechanical energy d) Wave energy

10. For producing moulding die, the process used is _____.

a) AJM b) EDM

c) LBM d) ECM

PART B (10 x 2 = 20 Marks)

11. List out the types of chip produced during metal cutting.
12. Name any four tool materials.
13. Classify the multi spindle automats.
14. State the significance of clapper block in shaper.
15. How the broaching is classified based on method of operation?
16. Mention the reconditioning methods of grinding wheel.
17. Find out the indexing movement required to mill a hexagonal bolt by direct indexing. The rapid index plate has 24 holes.
18. Categorize the gear finishing methods.
19. Give any four dependency factors of metal removal rate in AJM.
20. List down any two applications of ECM.

PART C (5 x 14 = 70 Marks)

21. a) Discuss the various forces encountered in metal cutting using Merchant's Circle theory and derive them.

(OR)

b) In an orthogonal turning operation, the following data were recorded

Cutting speed = 60 m/min Back rake angle = 13º

Feed = 0.2 mm/rev Cutting force = 25 Kg

Chip Thickness = 0.4 mm Feed force = 10 Kg

Calculate i) Chip reduction co-efficient ii) Shear angle iii) Shear strain iv) Work done in shear v) Work done in friction vi) Power consumption during cutting.

22. a) i) Enumerate in detail about the working principle of open and cross belt drive mechanism used in planer. (10)

ii) Differentiate any four points between capstan and turret lathe. (4)

(OR)

b) Define quick return mechanism also explain the working principle of crank and slotted link mechanism used in shaper with neat sketch.

23. a) i) List out the operations to be performed in drilling machine also describe in detail about any three operations of drilling process with appropriate sketches. (10)

ii) Name the various grinding machines. (4)

(OR)

b) How you are specifying the grinding wheel? Explain it with example

24. a) i) With neat diagram, mark the various elements of milling cutter and detail it. (8)

ii) Draw and discuss the up milling and down milling process (6)

(OR)

b) How the gear wheel is produced in generation process? Explain the principle of gear shaping process with neat sketch.

25. a) With neat line sketch explain the working principle of Abrasive Jet Machining (AJM) also state its applications.

(OR)

b) Elaborate how the Electric Discharge Machining (EDM) can be used for machining purpose with neat sketch?

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