UNIT -4

MULTI POINT CUTTING AND ABRASIVE MACHINING

Important questions

(2 marks & 16 marks)

PART-A

1. What is the gear finishing process?

Finishing processes applied to hardened gears include grinding, lapping and honing. Gear burnishing is used to remove or reduce the burrs along with improving the surface finish. The action of burnishing dies on tooth profile allows the improvement in finish without altering the tooth profile.

2. What is multi point cutting tool?

A multi-point cutting tool has two or more cutting edges that are simultaneously in contact with the work material as opposed to a single-point cutting tool which only has one active edge at any given time.

3. Gear manufacturing process?

Gears can be manufactured by a variety of processes, including casting, forging, extrusion, powder metallurgy, and blanking. As a general rule, however, machining is applied to achieve the final dimensions, shape and surface finish in the gear.

4. What is type of milling machine?

Milling machines come in various types with a variety of functions based on certain standard specifications. Some of the most commonly used machines are the following: column, turret, C-frame, horizontal, bed type, planer-style, and tracer controlled.

5. What is a gear hobbing?

Gear Hobbing is the process of generating gear teeth by means of a rotating cutter referred to as a hob .A hob resembles a worm gear it has a number of flutes also referred to as a gash around its periphery, parallel to the axis, to form cutting edges.

6. What is roller-burnishing process?

Roller burnishing is a chipless smoothing and compression process for metallic surfaces achieved by rolling elements. To understand what happens during this finishing process and to be able to use the full range of advantages, a basic knowledge about the requirements, impacts and possibilities is helpful.

7. What is abrasive process?

The process involves a gradual removal of material from a workpiece additionally incorporating high-pressure equipment. Common abrasive processes are Grinding, Honing, Sanding, Polishing, Buffing, Lapping, abrasive waterjetting, Sand Blasting and Glass Blasting.

8. Define grinding ratio

Grinding ratio is defined as the volume of material removed from the work per unit volume of wheel wear. It is related with Young's modulus, the elastic failure energy and the visco-elastic properties of bond.

9. What are the types of broaching machine?

1 Horizontal broaching machine

2 Vertical broaching machine

3 Surface broaching machine

4 Continuous broaching machine

10. What is honing ?

Honing is a cutting process with bonded grain and is used to improve the form, dimensional precision, and surface quality of a workpiece under constant surface contact with the tool. In general, honing is applied after precision machining (e.g., grinding)

PART-B

1. Describe the gear milling and hobbling with neat sketch

2. Explain the types grinding process with suitable sketch

3. Explain the types of operation with neat sketch.

4. Explain the centerless grinding process with neat sketch.

5. The performance of a grinding wheel depends upon type of abrasive, grain Size, grade, structure and bonding material. Discuss the effect of each