Tutorial - 3

① Sol:-

General tools used in facing, plain turning and step turning:-

- Lathe machine.
- Three-jaw chuck.
- Chuck key/spanner.
- Vernier calipers.
- H.S.S. single point cutting tool.
- Cleaning brush.
- Steel rules.

General tools used in milling process:-

- Base pan hammer.
- Cleaning brush.
- Vernier height gauge and vernier caliper.
- Milling cutter.
- Horizontal milling machine.
- Double ended spanner.
- spirit level.

General tools used in Drilling, broaching, reaming & tapping:-

- Drill bit tool.
- Tapping tool.
- Vernier calipers.
- Pitch gauge.

- Chuck key.
- Tool post key.
- Cleaning brush.
- Drilling machine, Broaching machine, Reaming machine.

⇒ Single point cutting tool:- It is a cutting tool having only one main cutting edge that remains engage with work-piece during machining operation in a single pass.

⇒ Milling tool:- These are cutting tools typically used in milling machines to perform milling operations.

⇒ Drill bit:- Drill bits are cutting tools used to remove material to create holes, almost always of circular cross-section.

⇒ Tapping tools:- Taps and dies are tools used to create screw threads, which is called threading. The process of cutting or forming threads using a tap is called tapping, whereas the process using a die is called threading. Both tools can be used to clean up a thread, which is called chasing.

⇒ Reamer tool:- The rotary cutting tool in reaming is known as a reamer. Like drill bits, reamers also remove material from the workpiece on which they are used. The primary

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purpose of reaming is simply to create smooth walls in an existing hole. Manufacturing companies perform remaining using a milling machine or drill press.

⇒ Broaching tool:- Broaching is a machining process that uses a toothed tool, called a broach, to remove material. The principle of the rotary broach is to approach the work at a small angle. As the tool approaches the pre-drilled hole, it spins synchronously with the part creating a wobble effect that causes the leading cutting edge to rotate in and out of the cut like a cam.

② Ans:-

1) Fig.1 → operations:-

- Plain turning.
- Tapper turning.
- Slotting.
- Threading.
- Boring.
- Facing.
- Camfering.
- Sand blasting.
- Water jet cutting.

Machining tools:-

- Lathe.
- Sand blasting machine.
- Milling machine.
- Water jet cutter.

Cutting tools:-

- Single point cutting tool.
- Boring tool.
- Slotting cutter.
- Threading tool.

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2) Fig.2 → operations:-

- Facing.
- Plain turning.
- Tapper turning.
- Grinding.
- Chamfering.

Machine tools:-

- Lathe.
- Grinding machine.

cutting tools:-

- Single point cutting tool.
- Grinding wheel.

3) Fig.3 → operations:-

- Plain turning.
- Facing.
- Tapper turning.
- Slotting.
- Boring.
- Sand blasting.
- Chamfering.
- Surface contouring.
- Water jet cutting.

Machine tools:-

- Lathe.
- Sand blasting machine.
- Milling machine.
- Water jet cutter.

cutting tools:-

- Single point cutting tool.
- Boring tool.
- Slotteg cutter.

4) Fig.4 → operations:-

- CNC milling.
- Slotting.
- Boring.
- CAD/CAM.

Machine tools:-

- CNC Miller.
- computer.

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5) Fig.5 → operations:-

- Sand blasting.
- Needle will mad using sewing needle machine by using forming process.

Machine tools:-

- Sand blasting machine.

6) Fig.6 → operations:-

- Plain turning.
- Facing.
- Slotting.
- Boring.
- Sand blasting.
- Chamfering.
- Surface contouring.
- Reaming.
- Drilling.

Machine tools:-

- Lathe.
- Sand blasting machine.
- Milling machine.
- Drilling machine.

Cutting tools:-

- Single point cutting tool.
- Boring tool.
- Slotting cutter.
- Reamer

7) Fig.7 → operations:-

- Plain turning.
- Facing.
- Grear hobbing.
- Boring.
- Slotting.
- Champhering.

Machine tools:-

- Lathe.
- Milling cutter.

Cutting tools:-

- Boring tool.
- Slotting cutter.

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8) Fig-8 → operations:-

- Plain turning.
- Facing.
- Slotting.
- Boring.
- Sand blasting.
- Champhering.

Tools:-

- Sand blasting machine.
- Lathe.
- Milling cutter.
- Boring cutter.
- Single point cutting tool.

9) Fig-9 → operations:-

- Threading.
- Taper turning.
- Extrusion.
- Camphering.
- Slotting.

Tools:-

- Lathe (automatic / manual).
- Die extrusion.
- Milling machine.
- Single point cutting tool.

10) Fig-10 → operations:-

- Turning.
- Threading.
- Punching.

Tools:-

- Lathe
- punch.

11) Fig-11 → operations:-

- Milling (pocket).
- Reaming.

Tools:-

- Vertical milling machine.
- Reamer.

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12) Fig.12 → operations:-

- Deep drawing.
- Drilling.
- Extrusion.
- Chamfering.
- Turning.

Tools:-

- Die drawing.
- Drill bit.
- Die Extrusion.
- Lathe.

13) Fig.13 → operations:-

- Drawing.
- Punching.
- Extrusion.
- Chamfering.
- Turning.

Tools:-

- Lathe.
- Die punching.
- Drawing machine.
- Extrution die.

14) Fig.14 → operations:-

- Blanking.
- Milling.
- Drawing.
- Chamfering.

Tools:-

- Vertical milling machine.
- Die blanking.
- Die drawing.

15) Fig.15 → operations:-

- Drilling.
- Boring.
- Reaming.
- Camfering.

Tools:-

- Drill bit.
- Reamer.
- Boring tool.
- Single point cutting tool.

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16) Fig. 16 → operations:-

- Slotting.
- Extrusion.
- Threading.
- Taper turning.
- Chamfering.

Tools:-

- Lathe.
- Milling machine.
- Die extrusion.
- Single point cutting tool.