



## Machines of Metal Cutting & Forming

### Question 1

(25 Marks)

- 1 - What is the fundamental knowledge required to successful design of machine tool?
- 2 - List the methods used to enhance the productivity levels.
- 3 - Classify the machine tools according to their specialization and according to their level of accuracy.
- 4 - Explain the deference between open and close machine tool structures.
- 5 - What are the advantages of using cast iron (CI) in machine tool structures?

### Question 2

(20 Marks)

- 6 - List the features should be provided in machine tool guideways.
- 7 - Using block diagram, classify of machine tool guideways and draw the different types of guideways.
- 8 - Draw the different arrangement of spindle bearing used in high-speed machine tools.
- 9 - Explain the difference between the pick-off gears and gearbox.

### Question 3

(20 Marks)

- 10 - With the help of sketches, explain the operating principle of water jet machining (WJM).
- 11 - Describe the characteristics of the fluid used as jet in WJM.
- 12 - With a schematic diagram, briefly explain the operating principle of WEDM.
- 13 - Why is deionized water used as a dielectric in WEDM?

بالتوفيق والنجاح