



Kafrelsheikh University
Mechanical Engineering Department

DATE: 12- 01-2020 TIME ALLOWED: 3 HOUR

FINAL EXAM

هندسة الإنتاج 1

Answer as brief as possible.

Question One

(25 Marks)

- a) What are general aspects of machining technology?
- b) Discuss the importance of hexapod in machining applications?
- c) Classify different types of machine tools used for traditional machining technology?
- d) Discuss cutting force and its components in turning operation.
- e) Discuss the relationship between hardness and toughness of tool materials.
- f) Degree of Automation and Production Capacity.
- g) Discuss the concept of the velocity in drilling tools.
- h) Discuss cutting parameters in the milling operations.

Question Two

(25 Marks)

- a) Illustrate the main terms of twist drills.
- b) Discuss the main types of thread milling operations.
- c) Explain the following thread grinding methods: a) single-rib traverse grinding, b) multi rib traverse grinding, c) multi rib plunge grinding, and d) skip-rib traverse grinding.
- d) Explain the main classifications of basic bulk forming processes.
- e) Discuss flashless forging.
- f) Explain the difference between direct and indirect extrusion.
- g) Mention the advantages and disadvantages of cold working.
- h) Compare between the turret and capstan lathes?

Question Three

(25 Marks)

a) Calculate suitable gear trains for the following cases:

- a. 2.5 mm pitch on a 6 mm lead screw
- b. 11 tpi on a 4 tpi lead screw
- c. 7 threads in 10 mm on 6 mm lead screw

b) Draw the tool layout for cutting of the following workpieces on a turret lathe.

