Mansoura University
Faculty of Engineering
BME Program
Level 000
2nd Semester 2019-2020

Course Title: Production Technology
Course Code: PDE042
Final Exam (2 Pages)
Due Date: 8 July 2020
Time Allowed: 2 Hr.

Mid term

Attempt all questions. Assume any missed data. Full mark is 20.

a) Describe briefly polystyrene foam casting. [5 Marks]

b) Write the basic types of deformation process. [5 Marks]

c) A 140 mm long 16 mm diameter stainless steel rod is to be reduced in diameter to 14 mm by turning on a lathe in one pass. The spindle rotates at 600 rpm, and the tool is traveling at an axial speed of 250 mm/min. Calculate the cutting speed, material removal rate and the time required for machining the steel rod. [5 Marks].

d) Write the types of welding processes. [5 Marks].

Final term

Attempt all questions. Assume any missed data. Full mark is 50.

Question 1:

a) In casting experiments performed using a certain alloy and type of sand mold, it took 160 sec for a cube-shaped casting to solidify. The cube was 50 mm on a side. (a) Determine the value of the mold constant in Chvorinov's rule. [5 Marks]

b) Write advantages and disadvantages of cold forming. [5 Marks]

c) Determine the angle at which the compound rest would be swiveled for cutting a taper on a workpiece having a length of 200 mm and outside diameter 90 mm. The smallest diameter on the tapered end of the rod should be 60 mm and the required length of the tapered portion is 100 mm. [5 Marks].

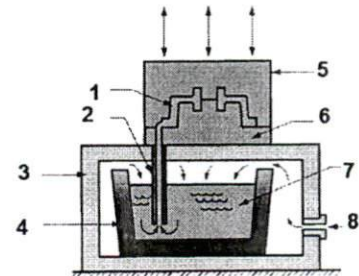d) Define resistance welding process. [5 Marks].

Question 2:

a) A mild steel rod having 50 mm diameter and 500 mm length is to be turned on a lathe. Determine the machining time to reduce the rod to 45 mm in one pass when cutting speed is 30 m/min and a feed of 0.7 mm/rev is used. [5 Marks].

b) Fill the missing parts and write the name of process. [5 Marks]

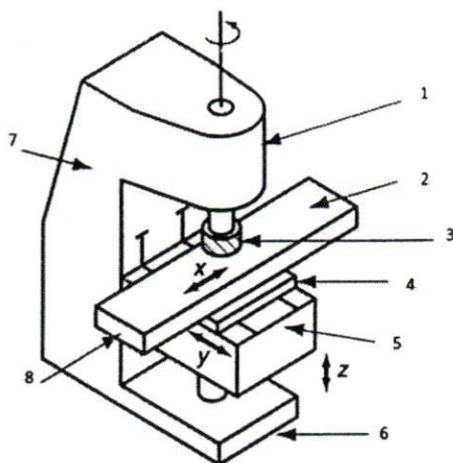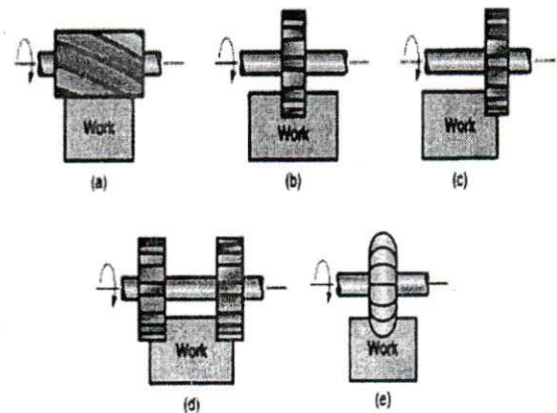c) Define extrusion, rolling, forging and bar drawing. [5 Marks]

d) Define arc welding process. [5 Marks].

Question 3:

a) Write the name of the following process. [5 Marks]

b) Write the name of the machine below and fill missing parts. [5 Mark]

My best wishes to all of you!

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