



COLLEGE OF ENGINEERING & TECHNOLOGY

Department : Electrical & Computer Control Engineering

Lecturer : Dr. Walid A. M. Ghoneim

Course : Microprocessor Based Process Control

Course Code: EE 413

Time : 2 hours

Date : 17 / 1 / 2016

Marks: 40

Final Exam

Answer all the following questions

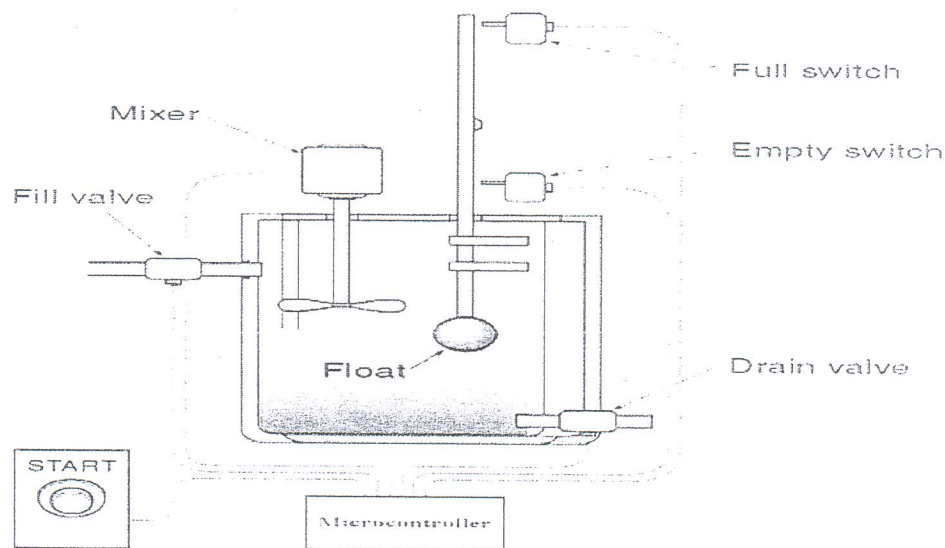
(Q1) (20 marks)

ILO (A4,5,8,12,15,27,31. B.1,2,3,7,19. C2,3)

1- The mixer shown in figure operates in the following sequence:

Normal Operating Conditions:

- A Push-button starts the process, a second one stops it at its end and a third one for emergency stop
- The fill valve is opened till tank is filled to a level of 130 cm.
- Once the tank is filled, the mixer motor operates for 3 minutes, then stops for 2 minutes, then operates for 3 more minutes and then stops.
- The drain valve is opened till the level reaches 30 cm.
- The process is repeated.



Extreme Cases that require prompt action:

Case 1: LEVEL LOW: if the level reaches 20 cm or less, immediately open the fill valve, close the drain valve, stop the mixer and switch ON a YELLOW LAMP and a sound alarm.

Case 2: LEVEL HIGH: if the level reaches 150 cm or more, immediately close the fill valve, open the drain valve, stop the mixer and switch ON a RED LAMP and a sound alarm.

Case 3: EMERGENCY SHUTDOWN: if the ESD button is pressed, immediately close both valves, stop the mixer and switch ON BOTH LAMPS and a sound alarm.

Members of course Examination Committee:	Signature:	Date:
Lecturer: Dr. Walid Ghoneim	<i>[Signature]</i>	12/1/2016
Course Coordinator: Dr. Ahmed El-Jhenawi	<i>[Signature]</i>	12/1/2016
Head of Department: Prof. Hamdy Ashour	<i>[Signature]</i>	12/1/2016

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