**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**P.O. Box 972-60200 – Meru-Kenya.**

**Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411**

**Fax: 064-30321**

**Website:** [**www.must.ac.ke**](http://www.must.ac.ke) **Email:** **info@mucst.ac.ke**

**University Examinations 2015/2016**

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY

**AFT 3326: FOOD ENGINEERING II**

 **DATE: NOVEMBER 2015 TIME: 2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Define or differentiate the following terms:
2. Wet cleaning and dry cleaning.
3. Sorting and grading.
4. Cavitation and dipole rotation. (6 Marks)
5. Discuss the three advantages and disadvantages of wet cleaning. (3 Marks)
6. Briefly discuss the principle of the following equipment, process or agent used in food processing. For each mention one application:
7. Electrostatic cleaning.
8. Abrasive peeling.
9. Rotary vacuum filter.
10. Roller mills.
11. UV light food processing. (10 Marks)
12. Discuss four different ways to measure temperature in a food processing plant. .(4 Marks)
13. Discuss two techniques employed in moving food products by pneumatic conveying. (2 Marks)
14. What is the power required to crush 120 tonne/h of elements if 75% of the feed pass 50mm screen and 75% of product a 3.2 mm screen. The work index of the elements is 12.74. (3 Marks)
15. Discuss the principle of centrifugal separation as used in food processing. (2 Marks)

**QUESTION TWO (20 MARKS)**

1. Discuss five different methods of drying cleaning. For each method highlight the principle and application. (10 Marks)
2. Discuss the principle of ultrasound as a non-thermal food processing technique. In your discussion list three applications of ultrasound in food processing. (10 Marks)

**QUESTION THREE (20 MARKS)**

1. Calculate ‘g’ in a centrifuge that can spin liquid at 1200 cycles/min at a maximum radius of 8 cm. (5 Marks)
2. Microwave oven is gaining popularity as a food warming appliance. Discuss the mechanism of heating by a microwave oven. In your discussion name three successful applications of microwave food processing. (15 Marks)

**QUESTION FOUR (20 MARKS)**

1. Briefly describe the principle of operation of the following equipment. In your description name one application of each.
2. Bowl centrifuge.
3. Aspiration screens.
4. Ultrasound homogenisers.
5. Buhrstone mill.
6. Tumbler mixers. (15 Marks)
7. A packet of milk is labeled, homogenized milk. Discuss why homogenization of milk is important. Name an equipment that can be used to homogenize milk. (5 Marks)