

**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@must.ac.ke**](mailto:info@must.ac.ke)

**University Examinations 2015/2016**

FOURTH YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF COMMERCE,

**BFB 3459: TECHNOLOGY AND INNOVATION IN ENTREPRENEURSHIP**

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

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

**QUESTION ONE (30 MARKS)**

**CASE STUDY: WHEN ARE ADVANCED TECHNOLOGIES APPROPRIATE FOR SMEs**

The world is now passing through an exciting stage of technological progress. It is demonstrating an unprecedented potential, ranging from computer that think like human beings to nuclear fusion plants that produces electricity from ubiquitous substances extracted from sea water and recombinant DNA or genetic engineering leading to the birth of an entirely new industry in bio-technology that goes up to DNA biochips. Nano-technology, ICT and even Micro Electro Mechanical Systems (MEMs) are also very lucrative technological opportunities at the moment. These emerging technologies, though very disruptive, are beginning to facilitate new product development in many different industries. Now not a day goes by without news of some seeming breakthrough in these areas of science technology.

Advanced technologies have brought about changes in the manner of enterprise production. The mechanical engineering industry has been strongly revivified by the age of electronics to mechatronics, which now conditions the entire industrial system. The transition from mechanical engineering to mechatronics is reflected by in-depth modification of the product, which is produced by this branch.

Instead of offering machines it now delivers workshops or system of machines. The product-complex, which the mechatronics industry provides, is an assembly of four types of elements, these are: a system/or informatics for control, management and monitoring of the whole complex; an assembly of machining centres consisting of machine tools with a wide range of tools and able to work on parts with different characteristics; a system for conveying the parts from the entrance of the workshop, from machining centres to machining centres and thence to the exit from the workshop; and, an assembly of handling units for loading and unloading that is to say the interfaces between the conveying system and to machining centres and to the entry, exit or intermediate storage areas.

These machines are numerically controlled machine tools (NCMT). They act when they receive their instructions from computer, which programme and monitor their work. These machines have opened up a new manner of production system. This remarkable trend in production process has not occurred without affecting the industry worldwide. It has caused a considerable impact on the organization of enterprise. The developing countries are affected by this trend in two ways, both as users and as producers and mainly in terms of managing the technologies. Since these are faster and more accurate, any enterprise should be willing to purchase them. But it is more likely that the enterprises in most of the developing countries may find themselves unable to purchase the electronic know-how locally in its effort to proceed from mechanics to mechatronics.

**Required**

1. Comprehensively explain the meaning of the term technology (5 Marks)
2. Explaining the meaning of the term appropriate technology, show how a NCMT may not

be appropriate to small enterprises in Kenya? (10 Marks)

1. Describe the various costs associated with imported technologies (10 Marks)
2. Describe any **FIVE** dimensions of a business that innovations should target to improve (5 Marks)

**QUESTION TWO (20 MARKS)**

1. According to Jeans (1999) technology encompasses techniques, knowledge, tools and organization. Explain what this means? (12 Marks)
2. Discuss eight limitations faced by small and medium business organizations in Kenya today

in managing technology and technological innovations. Use illustrations. (8 Marks)

**QUESTION THREE (20 MARKS)**

1. Explain the meaning of the following technology related terms
2. Technical change (2 Marks)
3. Technical progress (2 Marks)
4. Industrialization (2 Marks)
5. Technology divide (2 Marks)
6. Innovation ware (2 Marks)
7. Using examples, describe any five methods in which technology diffuses to the society

(10 Marks)

**QUESTION FOUR (20 MARKS)**

1. Describe any four steps Kenya can take to ensure the country catches up with the desired global technology levels (4 Marks)
2. Describe the possible reasons for the minimal impact on technology development in Kenya

(10 Marks)

1. Show how technology forecasting activities can be integrated into business operations (6 Marks)

**QUESTION FIVE (20 MARKS)**

1. Describe any seven strategies of enhancing diffusion among smaller enterprises in Kenya.

Use illustrations. (16 Marks)

1. Describe the process of innovation (4 Marks)