

**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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**University Examinations 2015/2016**

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

**BFB 3433 : TECHNOLOGY & INNOVATION IN ENTREPRENEURSHIP**

**DATE: AUGUST, 2016 TIME: HOURS**



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

**QUESTION ONE (30 MARKS)**

**Case Study**

**General Electric (GE) turned to students for design ideas, they came up with some user-friendly health-care concepts for Africa as follows:**

**(1)** The Akuaba radio bracelet would allow instant communication among patient, midwife, and clinics**.(2)** A field microscope would analyze water for parasites, and shoot out a red flag that doubles as a larva trap. **(3)** A foetal ultrasound belt with built-in sensors would reduce the training required for technicians. **(4)** A flower like dispenser would allow villagers to chose a dye for insect repellant in their mosquito netting. **(5)** A non-invasive scanner would detect malaria by looking through the skin of a patient’s hand GE Healthcare sells $15 billion a year worth of big X-ray machines, CAT scans, and ultrasound testing equipment. The health-care division of General Electric (**GE**) usually differentiates its products by getting better and faster readings from its instruments “feeds and speeds” as Lou Lenzi , the general manager of global design at GE Healthcare, puts it.

Bu to compete today, GE needs to focus on the human side of the equation, from ergonomics to emotions. And it needs to do that for cultures all around the world. For insight and inspiration, GE Healthcare recently turned to the undergraduate students of the Art Center College of Design in Pasadena, Calif, one of the world’s top design schools. Consumer-product companies have long sponsored classes at Art Center, but this marked the first time GE Healthcare turned to students for ideas.

**The Research**

Art Center fielded three teams of eight students. GE Healthcare asked them to address the challenge of expanding health care into rural Africa in 2016. The teams were composed of students majoring in design, transportation, and the environment. All spent the fall semester on the project, and on Dec.7, Art Center’s “Super Thursday,” they joined other students by BMW, Honda (**HMC**), and Nestle ( **NSRGY)** to present their designs.

**The prototypes**

An ultrasound device would wrap like a blanket around a woman’s belly. The design would reduce the training required for technicians. Current machines depend on a skilled technician to guide a probe over the abdomen. The multiple imaging sensors woven into the blanket mean it would simply have to be correctly placed, a big advantage in countries where technicians are in short supply.

A non-invasive malaria scanner would detect disease by looking through the skin of a patient’s hand. Malaria is currently diagnosed with a needle prick and a blood test. That scares some patients away and can delay treatment until results come back from labs. The scanner would be painted in earthly African colours.

Personalized mosquito netting would be dyed with coloured insect repellant. Rates of malaria can drop as much as 80% in villages that use bed nets. Allowing people to personalize them might increase their willingness to use the nets.

A radio bracelet would alert a midwife when a pregnant patient is in trouble. Modelled on West African jewellery and decorated with indentations that resemble ritual scarification, it would be called Akuaba, a word associated with fertility in West Africa.

A dirigible would transport mothers-to-be with complication from remote regions to an acute-care hospital. The idea won praise for addressing a major problem in developing countries, the lack of infrastructure.

Companies typically pay $100,000 to sponsor a semester-long Art Centre course. For its money, GE got a fresh perspective. Many of the projects stretched the imagination-floating clinics powered by river currents, probes that test for parasites in water and shoot our red warning flags. That was the point. The students encouraged GE Healthcare to reconsider the possibilities.

1. Explain the five main characteristics that are likely to make the products be easily adopted. (5 Marks)
2. Discuss the risks associated with each of the products that were developed by the students. (5 Marks)
3. Highlight some of the issues the students considered when they proposed the ideas for Africa. (8 Marks)
4. As a student in Kenya, comment on the appropriateness of the technologies.(5 Marks)
5. What challenges would the company face while transferring the technologies?(7 Marks)

**QUESTION TWO (20 MARKS)**

a) Davila et al (2006) noted; Companies cannot grow through cost reduction and re-engineering alone…..innovation is the key element in providing aggressive top line growth and for increasing bottom line results” Discuss. (10 Marks)

b) Evaluate the role of public and private sector (both international and national) in technology development, using illustrations. (10 Marks)

**QUESTION THREE (20 MARKS)**

Meru University of Science and Technology would like to integrate market consideration into technology forecasting process as a major goal to determine what advances in technology will result in increased sales, enhanced profits and delighted customers in their production unit.

1. Propose and describe to the institution any two technology forecasting techniques to apply. (8 Marks)
2. Elaborate on the importance of technological forecasting. (6 Marks)
3. Explain any three dimensions of innovations that Meru University of Science and Technology can emphasize on to achieve the desired results. (6 Marks)

**QUESTION FOUR (20 MARKS)**

a) Explain the following concepts as used in technology and innovation.

1. Technology Management (3 Marks)
2. Technology Cluster (3 Marks)
3. Technology Gap (3 Marks)

b) Differentiate between the following terms;

1. Technology Transfer and Diffusion (3 Marks)
2. Technology Commercialization and Globalization. (3 Marks)

c) Comprehensively define the term technology. (5 Marks)

**QUESTION FIVE (20 MARKS)**

a) Critically discuss the impact of technology and innovation on economic impact of a developing country. (10 Marks)

b) Using illustrations, show how e-technology can assist Kenya in achieving the vision 2030.

(10 Marks)