SOUTH EASTERN KENYA UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF COMMERCE/PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

DOM 401: MANUFACTURING OPERATIONS

DATE: 10TH APRIL, 2018   TIME: 4.00-6.00PM

INSTRUCTIONS

ATTEMPT QUESTION **ONE** AND ANY OTHER **TWO** QUESTIONS

TIME ALLOWED IS TWO HOURS

QUESTION ONE (30 MARKS)

CASE STUDY: KEMSA

Kenya Medical Supply Agency's Supply Chain Centre has begun to operates 24 hours 7 days a week. This came to effect after a team from the organization visited its clients and other leaders in the industry to identify the challenges that the clients were facing and what could be done. The Centre is a massive facility that houses strong warehousing systems whose modern infrastructure enhances fast order processing such as racking, air conditioning, CCTVs, cold-chain storage capabilities, quality assurance laboratories and adequate modern mechanical handling equipment. The Authority has nine (9) regional warehouses across the country. It has also made investments in information communications technology (ICT) to improve its operational efficiencies and all business processes

and functions are now fully automated and integrated on an enterprise resource planning (ERP) platform.

The medical supplies are distributed from the KEMSA's Supply Chain Centre to the door steps of each of the public facilities and testing sites. Presently, KEMSA serves 371 hospitals, 4,415 rural health facilities and 5,047 sites that offer rapid testing across Kenya.

Unlike before, the counties now pool the orders received from health facilities and share them with KEMSA online and pay for their medical commodities on a 'demand-driven' supply system. The online portal allows the county health teams to chat with KEMSA staff and to keep track of their orders in real-time. The portal has reduced significantly challenges related to manual ordering processes, creating operational efficiency and cost effectiveness. Also, public health facilities have the option of placing orders for supplies instantly via e-mobile by dialing *651#   KEMSA has the requisite transport system in place which includes outsourced transport, courier service and own fleet. This ensures timely dispatch of all commodities ordered by health facilities from any corner of the country. The counties receive their supply within four working days, down from a month.

According to KEMSA's CEO, the new business model is "self-sustaining, has reduced the need for government support, and it is working well in all the 47 counties. Besides, the funds realized from sale of medical commodities to county health facilities are used to replenish stocks. The ERP platform provides timely and accurate supply chain data that helps forecasting, inventory replenishment, and quantification.

Ultimately, the new model's enhanced operations have increased demand for medical supplies from the counties by more than 50%. These gains will certainly change the lives of the people served by public health services all over the country.

QUESTIONS

a) Identify and discuss the competitive priority (ies) being pursued by KEMSA and the

operational benefits   (9Mks)

b) Identify and discuss any principles of lean operations that are being applied at KEMSA (5Mks)

c) What is operational efficiency and what actions has KEMSA taken to ensure efficiency and

effectiveness? (9Mks)

d) Identify and discuss the key objectives of KEMSAS' operations (4Mks)

e) What are KEMSAS' order winners (3Mks)

QUESTION TWO (20 MARKS)

a) Using clear example clearly differentiate between order winners and order qualifiers (5Mks)

b) Describe the following terms using relevant examples (2 Mks eachTOTAL10 Mks)

    i)   Focused factory

    ii)   Value engineering

    iii)   Group technology

    iv)   Capacity balancing techniques

    v)   BPR

c) What are industry wearable's and how are they being used in the manufacturing industry (5 Mks)

QUESTION THREE (20 MARKS)

a) Using clear examples identify and discuss five objectives of lean manufacturing systems

(10Mks)

b)   The following data represent a sample of days water consumption (in millions of liters) and the highest temperature (in degrees Fahrenheit) for certain days.

WATER USAGE	219	56	107	129	68	184	150	112
TEMPERATURE	103	39	77	78	50	96	90	75

REQUIRED

Using the least squares method

   i)   Obtain the trend/regression line   (5 Mks)

   ii)   Determine the correlation coefficient and the coefficient of determination   (5 Mks)

QUESTION FOUR (20 MARKS)

a) Using Simba Cement as an example discuss the following production strategies (4Mks each

Total 20 Mks)

     i.   Chase strategy
     ii.   Level strategy
    iii.   Subcontracting
    iv.   Resource sharing
     v.   Variable working hours

QUESTION FIVE (20 MARKS)

a) State and discuss FIVE benefits of production scheduling   (10 Mks)

b) (i)Prepare the BOM/Product tree structure for the following information   (6 Mks)

Product X is made of 2 units of Y and 3 of Z. Y is made of 1 unit of A and 2

       units of B. Z is made of 2 units of A and 4 units of C. Lead time for X is one

       week; Y is 2 weeks; Z is 3 weeks; A 2 weeks; B one week and C 3 weeks.

   ii)   If 100 units of X are needed in week 10, develop MRP showing when each item

          Should be ordered and in what quantity.   (4Marks)