UNIVERSITY OF JOHANNESBURG

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

DEPARTMENT OF QUALITY AND OPERATIONS MANAGEMENT

PROGRAMME	:	**BACCALALAUREUS TECHNOLOGIAE FOOD TECHNOLOGY**
SUBJECT	:	**FOOD PRODUCTION 4B MAIN EXAMINATION**
CODE	:	**FTN1BP4**
DATE	:	**NOVEMBER 2019**
DURATION	:	**3 HOURS**
TIME	:	**08H30– 11H30**
TOTAL MARKS	:	**100** **WEIGHT : 50%**
EXAMINER(S)	:	**Dr E.I. EDOUN**
(INTERNAL) MODERATOR(S)	:	**MR J. MABIZA**
EXTERNAL MODERATOR(S)	:	
NUMBER OF PAGES	:	**4 PAGES**

INSTRUCTIONS TO CANDIDATES:

- Answer ALL questions.
- This is a closed book assessment.
- Leave margins and spaces between the questions.
- Show all your calculations.
- Unless otherwise indicated, express your answers correct to two (2) decimal places.
- Where appropriate, indicate the units of your answer. (e.g. Hour, R)
- Number your answers clearly.
- Write neatly and legibly
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment.

SECTION 1: OPERATIONS MANAGEMENT

QUESTION 1 **[30]**

CASE STUDY 1: Jaguar regains its reputation

Originally called the Swallow Side Car Company, Jaguar Cars was founded in 1922 and became famous for its luxury and sports cars. In 1990, Jaguar was taken over by Ford and is now a wholly owned subsidiary. At the time of the Ford takeover, Jaguar’s quality performance was something of a paradox. Aesthetically and in terms of on-the-road performance the cars were often highly regarded, especially by a hard core of enthusiasts. Yet even they could not ignore Jaguar’s reputation for making cars which were, in comparison to its rivals, of exceptionally poor reliability. Plagued by under-investment and a conservative technical-led, rather than customer-led, culture, the company’s old plants were struggling to achieve even acceptable levels of conformance quality. At this time, the JD Power survey of customer satisfaction of cars imported to the US ranked only one car (the Yugo) lower than Jaguar.

All this changed through the 1990s. The company invested heavily in training, especially in quality techniques such as statistical process control. Piecework was abolished, as was ‘clocking in’ and a general productivity bonus introduced which encouraged flexible working. Other shop floor initiatives included the introduction of multi skilled teams, total productive maintenance, continuous improvement teams and benchmarking against the best in the business. The success of this quality improvement programme was dramatic. It encouraged Ford to invest in new Jaguar models and also had a significant impact on customer satisfaction. The same surveys that once put Jaguar at the bottom of the league now rank it in the top group of luxury carmakers.

1.1 Critically explain how change can affect productivity in a pure competitive market **(10)**
1.2 Why is the above case important for managerial decision making **(10)**
1.3 How did the changes that Jaguar made to its operations practice affect the quality of its products? **(10)**

QUESTION 2 **[30]**

CASE 2: Birmingham Amusement

Birmingham Amusement Machines was a company which manufactured gaming and video-amusement machines. The company sold its products to an operating company which distributed them to bars, country clubs, casinos and pubs. Both companies were started by Bob Greenwood, an engineer who was fascinated by the design of the early mechanical gaming machines. Largely through innovative design, the company had grown to be one of the four largest in the market with a 30 per cent market share.

Four years ago Bob Greenwood sold out to a large industrial group, but he was retained as chief executive of the manufacturing company. The new owners were happy to let Bob indulge his talent for design, especially since the company had entered the video-amusement market. Video-amusement machines did not pay out cash prizes like gaming machines, but allowed the player time on the machine to play a game. The company manufactured all parts for the gaming machines and assembled them in its factory. However, many of the components for the video-amusement machines were imported and only assembled into the outer casings in the factories.

Recently, the owners became dissatisfied with the company's performance. The market for its goods was still growing, but the company's profitability had failed to match expectations. The owners decided to install a new chief executive and to fire Bob, who was predictably upset at being replaced:

'It's always been the combination of high technology and fashion that's fascinated me about this industry. You have to be first in the field with every advance in technology, especially now video amusements are a big part of our business, but you also have to keep an eye out for the fashionable trends. On average, we've brought out a new product every four months, for the last five years. You can't run a company like this by putting an accountant as its boss – you need an innovator.' In fact the owners had installed an accountant to be the head of the company. On his first day, the new boss made a tour of the plant, after which he called the manufacturing manager into his office and began to criticize what he had seen of the production set-up: 'It seems to me that the whole plant is totally disorganized. There are part-finished goods everywhere, and no one seems to know exactly what they're going to do next. I found some parts of the plant clearly overworked, and other parts with nothing to do. I am sure, with a bit of tighter management, you could get your unit production costs down dramatically.'

The production manager was defensive. 'Of course I'd like to get my unit costs down, and of course I could rearrange the whole plant to make it more efficient. The trouble is, the design department are getting me to change products every few months, so I never really have time to let the production system settle down. At the same time, marketing are wanting me to give them instant delivery on new products, almost as soon as I have the drawings from the design office, and they insist on quality being of the highest standard at all times.'

The new boss called in the marketing manager to explain these demands placed on the production system. The marketing manager was equally forthright. 'I couldn't care less about his unit costs. It's not low cost which sells these machines. Look at it this way: in a heavy gambling club one of these machines can pay for itself in less than three months. Under those circumstances, nobody in this industry is competing on price. It's not totally unimportant, but plus or minus 10 per cent isn't going to make much difference to our sales. What sells machines is a new product on the books every few months or so and almost instant delivery – many of the club owners buy on impulse – and an unimpeachable reputation for the highest product reliability.' After listening to the testimony of his managers, the new boss was a lot less certain on how he should proceed to reshape the business.

2.1 Critically substantiate on the contributions made by the three sets of people in the organisation **(12)**

2.2 In your own opinion, what would be the prospective priority objectives of the below listed individuals?

(a) Production manager **(06)**

(b) Marketing manager **(06)**

(c) The new boss **(06)**

SECTION 2: PROJECT MANAGEMENT

QUESTION 3 **[40]**

The below is a given project that needs to be assessed with the further below questions:

ACTIVITY	IMMEDIATE PREDECESSOR	OPTIMISTIC TIME
A	-	6
B	-	8
C	A, B	5
D	B	4
E	C	7
F	C, D	3
G	D	6
H	E, F, G	5

3.1 Draw the network diagram **(10)**

3.2 For each activity indicate (using a table) the earliest start time, earliest finish, the latest start time, the latest finish, and slack time for each **(16)**

3.3 Which activities are on the critical path? **(10)**

3.4 What is estimated expected project completion time? **(04)**

[TOTAL 100 MARKS]

END OF ASSESSMENT