



## FACULTY OF BUSINESS

### FINAL EXAMINATION

Student ID (in Figures) : 

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Student ID (in Words) : \_\_\_\_\_  
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Course Code & Name : **MGT5104 OPERATIONS MANAGEMENT AND DECISION SCIENCE(ODL)**  
 Trimester & Year : May – August 2021  
 Lecturer/Examiner : Suhada Ishak /Dr Smitha  
 Duration : 3 hours

#### INSTRUCTIONS TO CANDIDATES

1. This question paper consists of 2 parts:
  - PART A (30 marks) : TWO (2) Short Answer Questions. Answer ALL of the questions. Answers are to be written in the Answer Booklet provided.**
  - PART B (70 marks) : TWO (2) Case Study Questions. Answer ALL of the questions. Answers are to be written in the Answer Booklet provided.**
2. Candidates are not allowed to bring any unauthorized materials except writing equipment into the Examination Hall. Electronic dictionaries are strictly prohibited.
3. This question paper must be submitted along with all used and/or unused rough papers and/or graph paper (if any). Candidates are NOT allowed to take any examination materials out of the examination hall.
4. Only ballpoint pens are allowed to be used in answering the questions, with the exception of multiple choice questions, where 2B pencils are to be used.

**WARNING:** The University Examination Board (UEB) of BERJAYA University College regards cheating as a most serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from BERJAYA University College.

**Total Number of pages = 5 (Including the cover page)**

**PART A : TWO (2) SHORT ANSWER QUESTIONS (30 MARKS)**

**Instructions : Answer ALL questions. Answer to be written in the Answer Sheet provided.**

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**Question 1**

Nouman Supply Company sells and delivers office supplies to companies, schools, and agencies within a 50-km radius of its warehouse. The office supply business is competitive, and the ability to deliver orders promptly is a big factor in getting new customers and maintaining old ones. The manager of the company wants to be certain that enough drivers and vehicles are available to deliver orders promptly and that they have adequate inventory in stock. Therefore, the manager wants to be able to forecast the demand for deliveries during the next month. Listed below are the records of previous delivered orders from January to October.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Orders	120	90	100	75	110	50	75	130	110	90

- Using 3-month moving average, compute the monthly demand forecast for the above data. (7 marks)
- Forecast the orders for November and December by using method (a) (2 marks)

**[Total: 9 marks]**

**Question 2**

The following ANOVA summary table is for a multiple regression model with two independent variables:

Source	Degree of freedom	Sum of Squares	Mean Squares	F
Regression	2	30		
Error	10	120		
Total	12	150		

- Determine the regression mean square (*MSR*) and the mean square error (*MSE*). (4 marks)
- Compute the overall  $F_{STAT}$  test statistics. (3 marks)
- Identify whether there is a significant relationship between  $Y$  and the two independent variable at 0.05 level of significance. (7 marks)
- Compute the coefficient of multiple regression,  $r^2$  and interpret the meaning. (3 marks)
- Calculate the adjusted  $r^2$ . (4 marks)

**END OF PART A**

**[Total: 21 marks]**

**PART B : TWO (2) CASE STUDY QUESTIONS (70 MARKS)**

**Instructions : Answer ALL questions. Answer to be written in the Answer Sheet provided.**

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**Celebrity Cruises: Operations Management at Sea**

On any given day, Celebrity Cruises, Inc. has tens of thousands of passengers at sea on more than a dozen spectacular ships, spanning 7 continents and 75 countries. With this level of capital investment along with the responsibility for the happiness and safety of so many passengers, excellence in operations is required. To make it all work, the 10 operations management decisions must be executed flawlessly. From product design (which encompasses the ship's layout, the food, and 300 destinations), to scheduling, supply chain, inventory, personnel, maintenance, and the processes that hold them together, OM is critical.

Cruise lines require precise scheduling of ships, with down to-the-minute docking and departure times. In addition to ship and port scheduling, some 2,000 plus crew members must be scheduled. And there are many schedule variations. Entertainers may arrive and leave at each port, while officers may have a schedule of 10 weeks on and 10 weeks off. Other crew members have on board commitments varying from 4 to 9 months.

With \$400 million invested in a ship and more than 5,000 lives involved in a cruise, detailed processes to ensure maintenance and reliability are vital. The modern ship is a technological marvel with hundreds of electronic monitors operating 24/7 to track everything from ship speed and location, to sea depth, to shipboard power demand and cabin temperature.

Celebrity's ship layout, destinations, and routing are adjusted to meet seasonal demands and the expectations of its premium market segment. With destinations from Alaska to Europe to Asia, crews are recruited worldwide, with as many as 70 nationalities represented. Instilling a quality culture requires an aggressive quality service orientation and, of course, meticulous cleanliness and attention to detail. Processes for food preparation, laundry, quality, and maintenance are complete and detailed.

A cruise ship, as a moving city, requires a comprehensive and precise supply chain that replenishes everything from food to fuel to soap and water. Land-based buyers support Celebrity's annual food and beverage purchases that exceed \$110 million. Included in these expenditures are weekly shipments of 6 to 10 containers from the Miami headquarters destined for ships in European ports. An on board staff organizes inventories to support this massive operation. The logistics effort includes hedging the weekly use of 24,000 gallons of fuel per ship with purchases 6 years into the future. Reliable global supply chains have been developed that deliver the required inventory on a tight time frame. These crucial shipboard systems typically represent the best of operations management. Such is the case at Celebrity Cruises.

*Source: Heizer, J. Render, B. (2016), Operations Management, Flexible Version, 11th edition, Pearson.*

**Question 1**

Analyse how the 10 Operations Management decisions are implemented at Celebrity Cruises, Inc.

(20 marks)

**Question 2**

Evaluate how hotel operations at Celebrity Cruises, Inc. are different from those at a land-based hotel.

(15 marks)

## Logistics Operations

ABC Ltd. is the country's largest manufacturer of spun yarn with well-established market. ABC Ltd. has good reputation for quality and service. Their marketing department identified that the potential for global market is expanding rapidly and hence the company undertook exercise for expansion of the capacity for export market.

The company formed team of Marketing and Materials department to study the global logistics possibilities. After extensive study, the team came up with a report on global logistics and submitted that global logistics is essentially same as domestic due to following similarities:

- The conceptual logistics framework of linking supply sources, plants, warehouses and customers is the same.
- Both systems involve managing the movement and storage of products.
- Information is critical to effective provision of customer service, management of inventory, vendor product and cost control.
- The functional processes of inventory management, warehousing, order processing, carrier selection, procurement, and vendor payment are required for both.
- Economic and safety regulations exist for transportation.

The company had very economical and reliable transportation system in existence. For exports as well they decided to evaluate capabilities of their existing transporter and entrusted them with the job of transport till port. For customs formalities they engaged a good CHA after proper cost evaluation and entered into contract for freight with shipping company agent.

The response for company's export was very good and the company could get as many as 15 customers within first two months and reached to a level of USD 250,000 per month by the end of first half of the year. Based on this response the export volumes were expected to grow to a level of USD 400,000 per month by the end of the year. When the review was made at the end of the year, company found that export volumes had in fact come down to the level of USD 120,000 which was much lower than it had reached in the first half of the year.

The managing committee had an emergency meeting to discuss this and the export manager was entrusted with the task of identifying the reasons for this decline. Mr. Ganesh decided to visit the customers for getting the first hand information. When he discussed the matter with the customers, the feedback on the quality and price were good but the customers were very upset on the logistic services due to delayed shipments, frequent changes in shipping schedules, improper documentation, improper identifications, package sizes, losses due to transit damages etc.

After coming back, the export manager checked the dispatch schedules and found that production and ex-works schedules were all proper. Then he studied the logistics systems and found that the logistics cost was very high and all the logistics people were de motivated due to overwork and were complaining of total lack of co-ordination and the system had become totally disorganized.

*Source: Stevenson, W.J. (2017) Operations Management, 13th Edition, McGraw Hill.*

### Question 1

Analyse the problems experienced by ABC Ltd and discuss the main cause of these problems.

(20 marks)

**Question 2**

Evaluate the logistics model should the company go for to ensure proper operations.

(15 marks)

**END OF EXAM PAPER**