



Faculty of Management and Social Sciences  
Department of Logistics & Transport  
BSc in International Transportation Management and Logistics  
Course CODE: COM550



Year 3 Semester II

REPEAT EXAMINATION

Production and Operations Management – POMG0368

- This paper consists of EIGHT questions on TWELVE (12) pages.
- Answer FIVE Questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.
- Formulae sheet is attached.

Date: 2023.05.14

Pass mark: 50%

Time: 03 Hours

### Question 01 (Compulsory)

SELECT THE MOST APPROPRIATE ANSWER OUT OF THE GIVEN CHOICES.

1. Business Operations overlap with,
  - (a) Finance, Marketing
  - (b) Finance, Human Resource
  - (c) Marketing, Human Resource
  - (d) Human Resource, Accounting
2. System Operations functions are
  - (a) Decisions concerning capacity, inventory, scheduling, project management and quality assurance
  - (b) Decisions concerning personnel, inventory, scheduling, project management and quality assurance

- (c) Decisions concerning personnel, location, scheduling, project management and quality assurance
  - (d) Decisions concerning personnel, inventory, arrangement of departments, project management and quality assurance
3. Characteristic of a Service operation,
- (a) Low consumer participation
  - (b) Facility site selection dictated by the transportation facilities available
  - (c) Labor intensive
  - (d) Tangible
4. Select the wrong statement regarding the forecasting
- (a) Medium/long range forecasts deal with more comprehensive issues
  - (b) Short-term forecasting usually employs different methodologies than longerterm forecasting
  - (c) Short-term forecasts tend to be more accurate than longer-term forecasts
  - (d) Maturity requires longer forecasts than introduction and growth of a product
5. Forecasting is
- (a) A process of predicting a future event
  - (b) A process of guessing a future event
  - (c) A process of identifying a future event
  - (d) A process of ready for a future event
6. Short range forecast is for
- (a) Purchasing, job scheduling, workforce levels, job assignments, production levels

- (b) Sales and production planning, budgeting
  - (c) New product planning, facility location, research and development
  - (d) workforce levels, facility location
7. Most accurate forecasting is
- (a) Short Term forecasting
  - (b) Medium Term Forecasting
  - (c) Both Short Term and Medium-Term Forecasting
  - (d) Long Term Forecasting
8. Four stages of Product Life Cycle
- (a) Introducing, Entering, Maturity, Decline
  - (b) Introduction, Growth, Maturity, Decline
  - (c) Introducing, Entering, Stable, Decline
  - (d) Introduction, Growth, Competition, Decline
9. The difference between the cost of inputs and the value or price of outputs should be
- (e) Transformation process
  - (f) Value Added
  - (g) Control
  - (h) Feedback
10. Reasons for product and service design
- (a) Be competitive
  - (b) Development of new product
  - (c) Be comparative
  - (d) Change the existing product

11. Sources of ideas for product and service design

- (a) Employees, Marketing, Management Information System
- (b) Employees, Customers, Competitors
- (c) Marketing, Management Information System, Customers
- (d) Competitors, Suppliers, Management information System

12. Process Types are

- (a) Job Shops, Batch, Repetitive, Continuous
- (b) Make to Stock, Make to Assemble, Make to Order
- (c) Job Shops, Intermediate, Repetitive, Continuous
- (d) Make to Stock, Make to Assemble, Make to Order

13. There are several policies which are considered in Aggregate Planning. They are

- (a) Workforce, Subcontracting, Hiring/Layoff
- (b) Subcontracting, Overtime, Inventory
- (c) Facilities, Backorders, Workforce
- (d) Hiring/Layoff, Overtime, Workforce

14. Importance of Capacity Decision

- (a) Impacts ability to make future requirements
- (b) Involves short term commitment
- (c) Affects operating cost
- (d) Increase competitiveness

15. Characteristic of a Job Shop

- (a) Need general-purpose production equipment and employees with a broad range of skills
- (b) Need specialized-purpose production equipment and employees with a broad range of skills

- (c) Need production equipment and employees with a broad range of skills
- (d) Need different types of production equipment and employees with a broad range of skills

16. Effective capacity is;

- (a) the capacity a firm always achieve with given current operating constraints
- (b) the capacity a firm actually achieve with given current operating constraints
- (c) the capacity a firm planned to achieve given current operating constraints
- (d) the capacity a firm expects to achieve given current operating constraints

17. Feature to common all forecasts is

- (a) Always perfect
- (b) Rarely perfect
- (c) Most of the time perfect
- (d) Always wrong

18. One of the Aggregate Planning outputs is

- (e) Total cost of a plan
- (f) Total budget
- (g) Total capacity
- (h) Labor flexibility

19. Product Standardization will not help you to

- (a) Reduce the parts in your inventory
- (b) Reduce the training cost
- (c) Fill the orders from inventory

(d) Do small production runs

20. Process selection depends on

- (a) Forecasting
- (b) Capacity Planning
- (c) Customers
- (d) Suppliers

(01 Marks\*20 = 20 Marks)

### Question 02

- (a) Discuss the difference between the cost of inputs and the value or price of outputs in operations management. (05 Marks)
- (b) Define the term "Value Added" in Operations Management. (06 Marks)
- (c) Identify the three major types of production facilities and describe each of them. (09 Marks)

### Question 03

- (a) New car sales for a dealer in a Company, for the past year are shown in the following table, along with monthly seasonal relatives, which are supplied to the dealer by the regional distributor.

Table 3:1 - Car sales

Month	Unit sold	Seasonal relative
Jan	640	0.80
Feb	648	0.80
Mar	630	0.70
Apr	761	0.94
May	735	0.89
Jun	850	1.00
Jul	765	0.90

Aug	805	1.15
Sep	840	1.20
Oct	828	1.20
Nov	840	1.25
Dec	800	1.25

- i. Does there seem to be trend? (02 Marks)
- ii. Deseasonalize car sales. (05 Marks)
- iii. Forecast sales for the first three months of the next year. (08 Marks)

- (b) A bank manager wants to estimate quarterly relatives for fixed deposit openings, based on the data shown.

Table 3:2 - Fixed Deposits

Year	Quarter			
	1	2	3	4
1	200	250	210	340
2	210	252	212	360
3	215	260	220	358
4	225	272	233	372
5	232	284	240	381

Determine quarter relatives. (05 Marks)

#### Question 04

- (a) Logistics firm operations of last 7 weeks are shown in the table below. Predict the operations of 8<sup>th</sup> and 9<sup>th</sup> weeks by using appropriate forecasting technique. (06 Marks)

Table 4:1 - Operations

Week	Operations
1	405
2	410
3	420
4	415
5	412
6	120
7	124

- (b) A well-known transport agency wants to predict quarterly demand for periods 15 and 16. Use below information to predict the demand. The series consists of both trend and seasonality. (14 Marks)

**Table 4:2 - Demand**

Year	Quarter	Actual Demand
1	1	132
2	2	140
3	3	146
4	4	153
5	1	160
6	2	168



7	3	176
8	4	185

### Question 05

- (a) Identify two types of researches in Operations Management. (03 Marks)
- (b) Identify five reasons for product and service design. (05 Marks)
- (c) Briefly explain two trends in product and service design. (06 Marks)
- (d) Briefly explain two sources of ideas for product and service design. (06 Marks)

### Question 06

- (a) In a job shop, effective capacity is only 50% of design capacity, and actual output is 80% of effective output. What design capacity would be needed to achieve an actual output of eight jobs per week? (04 Marks)
- (b) A producer of felt-tip pens has received a forecast of demand of 30,000 pens for the coming month from its marketing department. Fixed costs of \$25,000 per month are allocated to the felt-tip operation, and variable costs are 37 cents per pen.
- (i) Find the break-even quantity if pens sell for \$1 each. (03 Marks)
- (ii) At what price must pens be sold to obtain a monthly profit of \$15,000, assuming that estimated demand materialises? (04 Marks)
- (c) A small firm intends to increase the capacity of a bottleneck operation by adding a new machine. Two alternatives, A and B, have been identified, and the associated costs and revenues have been estimated. Annual fixed costs would be \$40,000 for A and \$30,000 for B; variable costs per unit would be \$10 for A and \$11 for B; and revenue per unit would be \$15.
- (i) Determine each alternative's break-even point in units. (02 Marks)

(ii) At what volume of output would the two alternatives yield the same profit?

(03 Marks)

(iii) If expected annual demand is 12,000 units, which alternative would yield

the higher profit?

(04 Marks)

### Question 07

For the set of tasks given below, do the following:

- (a) Develop the precedence diagram. (02 Marks)
- (b) Determine the minimum and maximum cycle times in seconds for a desired output of 500 units in a 7-hour day. Why might a manager use a cycle time of 50 seconds? (02 Marks)
- (c) Determine the minimum number of workstations for output of 500 units per day. (03 Marks)
- (d) Balance the line using the largest positional weight heuristic. Break ties with the most following tasks heuristic. Use a cycle time of 50 seconds. (10 Marks)
- (e) Calculate the percentage idle time for the line. (03 Marks)

**Table 7:1 - Task Time**

Task	Task Time (Seconds)	Immediate Predecessors
A	45	-
B	11	A
C	9	B
D	50	-
E	26	D
F	11	E
G	12	C
H	10	C

I	9	F, G, H
J	10	I
	<b>193</b>	

### Question 08

SummerFun, Inc., produces a variety of recreation and leisure products. The production manager has developed an aggregate forecast:

Month	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Forecast	50	44	55	60	50	40	51	350

Use the following information to develop aggregate plans.

Regular Production cost - Rs. 80 per unit

Overtime cost - Rs. 120 per Unit

Regular capacity - 40 units per month

Overtime capacity - 8 units per month

Subcontracting cost - Rs. 140 per Unit

Holding cost - Rs. 10 per unit per month

Subcontracting capacity - 12 units per month

Back-order cost - Rs. 20 per Unit

Beginning Inventory - 0 units

Develop the aggregate plan using a combination of backlogs, subcontracting, and inventory to handle variations in demand. (20 Marks)

-----END OF THE QUESTION PAPER-----

## Formula Sheet

### Simple Moving Average

$$F_{t+1} = \frac{D_t + D_{t-1} + \dots + D_{t-n+1}}{n}$$

$D_t$  : actual demand in period  $t$

$n$  : number of periods in the average

### 1. Weighted Moving Average

$$T_{t+1} = W_1 D_1 + W_2 D_{t-1} + \dots + W_n D_{t-n+1}$$

### 2. Exponential Smoothing

$$F_t = F_{t-1} + \alpha(A_{t-1} - F_{t-1})$$

$F_t$  = new forecast

$F_{t-1}$  = previous forecast

$\alpha$  = smoothing (or weighting) constant ( $0 \leq \alpha \leq 1$ )

### 4. Trend Projections

$$y = a + bx$$

$y$  = computed value of the variable to be predicted

$a$  = y-axis intercept

$b$  = slope of the regression line

$x$  = the independent variable

$$b = \frac{\sum xy - n\bar{x}\bar{y}}{\sum x^2 - n\bar{x}^2} \quad a = \bar{y} - b\bar{x}$$

### 5. Exponential Smoothing with Trend Adjustment

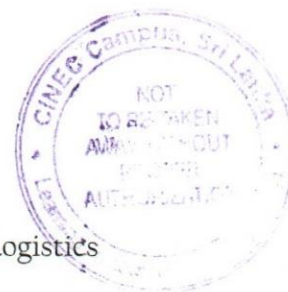
$$F_t = \alpha (A_{t-1}) + (1-\alpha) (F_{t-1} + T_{t-1})$$

$$T_t = \beta (F_t - F_{t-1}) + (1-\beta) T_{t-1}$$

$$FIT_t = F_t + T_t$$



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Year 3 Semester II  
 REPEAT EXAMINATION  
 Econometrics – ECON0321

- This paper consists of EIGHT questions on NINE (09) pages.
- Answer FIVE Questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.
- Statistical tables and formulae sheets will be given

Date: 2023.05.14

Pass mark: 50%

Time: 03 Hours

**Question 01 (Compulsory)**

There was a study to estimate the difference of weight between the two products produced by two companies. Information provided as follow,

	Company 1	Company 2
Average weight	60.1Kg	54.1Kg
Standard deviation	2.2Kg	2.3Kg
Sample size	100	81

- I. Estimate the difference of average weight between two products produced by the two companies at 95% confidence. (10 Marks)
- II. If the selected samples from both of above companies are 10 and 15 respectively, estimate the difference (10 Marks)

### Question 02

Four companies which produce food item say that their products are equal in quality. You need to test this statement and collected data with regard to vitamin content. Information is provided by the following table. Construct one way ANOVA and test the statement. (20 Marks)

Company A (Mg)	Company B (Mg)	Company C (Mg)	Company D (Mg)
10	8	10	13
14	10	11	14
13	9	12	10
12	3	12	11
12	8	14	12

### Question 03

the following SPSS output obtained by a researcher data on Price of X, Price of Y and Quantity demanded of product X.

#### Descriptive Statistics

	Mean	Std. Deviation	N
QDX	148.50	13.243	10
Price of the Y	61.50	9.009	10
Price of the X	192.80	16.552	10

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.986 <sup>a</sup>	.973	.965	2.474	1.885

#### Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	31.832	13.893		2.291	.056
Price of Y	.869	.269	.591	3.228	.014
Price of X	.328	.146	.410	2.240	.040

a. Dependent Variable: QDx

Interpret the above results with appropriate hypothesis

(20 Marks)

#### Question 04

Following results obtained on weight of a person and his or her age and gender. ( 1 coded for Male while 0 coded for Female)

Model	Coefficients				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-1687.115	813.844		-2.073	.051
Age	118.670	20.959	.765	5.662	.000
Gender	166.279	74.573	.301	2.230	.037

a. Dependent Variable: Weight

- I. Write appropriate hypothesis and test (10 Marks)
- II. Write and interpret the equation (05 Marks)
- III. What is the purpose of use dummy variable regression (05 Marks)

#### Question 05

You are given following SPSS output on results comparison of productivity of employees after the specific training program. Write appropriate hypothesis and test it and write your recommendations (20 Marks)

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Productivity before	52.6000	10	21.17756	6.69693
Productivity after	59.9000	10	17.94095	5.67343

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 Productivity before & Productivity after	10	.957	.000

### Question 06

the following data relate to the monthly promotion expenditure obtained by 6 of a companies and monthly sales (in Rs 1000's)

Table 6.1: Weekly Sales of the Company

Salesmen	A	B	C	D	E	F
Promotion Expenditure (Xi)	2	3	4	4	5	6
Weekly sales (Yi)	50	60	60	80	90	80

Construct the ANOVA table

(20 Marks)

### Question 07

Interpret following model coefficients.

- $\ln \text{GDP} = 0.5 + 0.25 \ln \text{Inflation} + 0.75 \ln \text{Foreign Direct Investment}$ .
- $\ln \text{Qdx} = 0.2 - 1.75 \ln \text{Px} + 0.25 \text{Consumer Income}$
- $\text{Number of Passengers} = 0.33 + 20 \text{Income} - 10 \text{ticket Price}$ .
- $\text{GDP} = 0.25 + 0.75 \text{Exports} - 0.45 \text{Inflation}$

(20 Marks)



**Question 08**

Write short notes on 05 (five) of followings.

- a. Methodology of Econometrics
- b. Types of Data
- c. Polynomial Regression Model
- d. Ordinary Least Squared Method
- e. Sampling Distribution
- f. Assumptions of OLS method

(5\*5 Marks)

-----END OF THE QUESTION PAPER-----



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Year 3 Semester II

REPEAT EXAMINATION

Project Management – PMGT0364

- This paper consists of EIGHT questions on TEN (10) pages.
- Answer FIVE Questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.
- Formulae sheet and Standard Normal table attached.

Date: 2023.05.12

Pass mark: 50%

Time: 03 Hours

### Question 01 (Compulsory)

Project management aids the companies in developing and improving their supply chains. Select the most appropriate answer for the following related to the supply chain project management.

1. Which of the project management life cycle requires the maximum time to complete?
  - a) Conceptualization
  - b) Planning
  - c) Execution
  - d) Estimation
2. Project Manager must ensure that it develops appropriate trade off/s as
  - a) Time, cost, and performance
  - b) Time, value, and performance
  - c) Men, Materials and Machines
  - d) Money, Cost and Return on Investment

3. A portfolio can best be defined as:
- a group of projects and programs carried out within an organization.
  - a group of programs carried out under the sponsorship of an organization.
  - a group of projects carried out under the sponsorship of an organization.
  - a range of products and services offered by an organization.
4. What is a visual representation of a project's planned activities against a calendar called?
- A Gantt chart
  - A critical path network
  - A product flow diagram
  - A Pareto chart
5. Which of the following is not part of the definition of a project?
- Repetitive activities
  - Constraints
  - Consumption of resources
  - A well defined objective
6. Which from the following statement(s) is/are not true?
- Projects have defined objectives.
  - Programs have a larger scope than projects.
  - The projects and programs in a portfolio must be directly related.
- I only
  - II only
  - III only
  - II and III only
7. Projects management is divided in \_\_\_\_\_ process groups.
- 4
  - 5
  - 7
  - 9
8. From the following which is the best example for a project?
- Processing insurance claim

- b) Producing automobiles
  - c) Writing an exam paper
  - d) All the above
9. Kerzner's Model stage two produces many achievements. Which of the following is not among them?
- a) Development of project life cycles
  - b) Common method to an organization
  - c) Formulation of an accompanied by training
  - d) Top management commitment
10. The cause of change that cannot be managed by project management is:
- a) Technological uncertainty
  - b) Innovation
  - c) Change in environment.
  - d) Increased clients' knowledge
11. What among the following is an element of Organization Project Management Maturity Model by PMI?
- a) Improvement
  - b) Culture
  - c) Methodology
  - d) Common language
12. Which of the following activities is not considered a project?
- a) Developing a new software program
  - b) Designing a space station
  - c) Developing a new advertising program
  - d) Production of automobile tires
13. Which of the following cannot be considered an extended product of life insurance?
- a) Brand image
  - b) Ease of doing business
  - c) Terms of the insurance policy
  - d) Availability to contact

14. Which of the following cannot be used to adopt the singular methodology in an organization?
- a) Lean Processing
  - b) Six Sigma
  - c) Transactional Processing
  - d) Just in Time management
15. Which of the following collaborations is best suited to name the transaction in the Toyota Production System, between the company and its suppliers?
- a) Coordination
  - b) Cognitive
  - c) Collaboration
  - d) Transactional
16. Which of the following does not influence the changes in process-centered management of an organization?
- a) Flexibility
  - b) Globalization
  - c) Extended products
  - d) Collaborations
17. Which of the following is an external factor driving supply chain change?
- a) PESTLE
  - b) Collaborations
  - c) Extended products
  - d) Flexibility
18. Which of the following is not a driver related to globalization related supply chain change?
- a) Rationalization
  - b) New sources
  - c) New markets
  - d) Nationalization
19. Which one of the following is captured in the Work Breakdown Structure (WBS)?
- a) Lifecycle phase
  - b) Logical order of tasks
  - c) Scope of the project
  - d) Project costs

20. Which one of the following statements is true?

- a) A decrease in the project time is likely to increase project quality.
- b) An increase in project scope is likely to increase project costs.
- c) An increase in the project quality requirements is likely to decrease project cost.
- d) A decrease in the project cost is likely to decrease project time.

(20 Marks)

### Question 02

Project management aids the companies in developing and improving their supply chains. A soap manufacturer has decided to make their operations more robust by developing zero-waste production in their production plant. The initiative will take over a year to be fully implemented in the manufacturing plant and will be completed in multiple phases. Thus, the soap manufacturer has decided to initiate the project from the 1<sup>st</sup> of June 2023. The project has an allocated budget of Rs. 3 000 000 and is expected to be completed in one year.

- (i) Name 4 factors that drive a supply chain towards change.  
(04 Marks)
- (ii) What internal drivers of change in a supply chain would be affected by the soap manufacturer's decision to change its production process? Name at least 2 drivers.  
(02 Marks)
- (iii) Develop a suitable project priority matrix for the above project.  
(06 Marks)
- (iv) What are the benefits of using project management in this initiative?  
(04 Marks)
- (v) Name 2 instances where a 'scope creep' would occur in this endeavor.  
(04 Marks)

### Question 03

The HR department of Zion Corporation needs to organize a company-wide employee empowerment program. The HR manager has decided to head this project with 9 other team members from the HR department. The empowerment program is scheduled to be held on the final weekend of May with a budget no more than Rs. 500 000 for most of the employees.

- (i) Develop an appropriate objective for this project.

- (ii) Identify the maximum number of communication channels this project team would have. (04 Marks)
- (iii) Name 3 major deliverables this project could have. (02 Marks)
- (iv) Name 3 stakeholders of this project. (06 Marks)
- (v) Name 3 characteristics the HR manager needs to have as the project manager of this project. (03 Marks)
- (vi) Name 2 measurements the Zion Corporation can use in assessing the success of this project. (03 Marks)
- (02 Marks)

#### Question 04

A network diagram is a logical sequence of the activities needed to be carried out in completing a project.

- (i) Name 2 differences a network diagram has compared to a Work Breakdown Structure (WBS). (04 Marks)
- (ii) Table 4.00 depicts the activities of a new product development project conducted by APEX Group of Companies.
- a) Draw network diagram for the project. (05 Marks)
- b) Identify the critical path and the project duration for the new project development. (08 Marks)
- c) If the completion of activity D gets delayed by 2 days due to unavoidable resource delay, will there be any changes in the progress of the project? (03 Marks)

Table 4.00: New product development project activities

Activity ID	Duration (Days)	Predecessor
A	1	-
B	6	A
C	4	A
D	1	A
E	3	A
F	6	B, C
G	4	D, E
H	9	F, G

### Question 05

- (a) Time and cost estimations in project planning are highly influenced by the experience of the project planners.
- (i) Name 2 other factors that could influence the quality of the time and cost estimations.  
(02 Marks)
  - (ii) Name 2 costs that occur in a supply chain project in contrast with a conventional short-term project.  
(02 Marks)
  - (iii) Briefly explain the importance of rolling wave planning in supply chain projects.  
(04 Marks)
- (b) PERT simulations are used in assessing the critical path deviation for a project. Table 5.00 depicts the project network information for a construction project expected to be completed in 18 weeks.
- (i) Draw the network diagram for the construction project.  
(02 Marks)
  - (ii) Calculate the mean and variance times for each of the activities.  
(04 Marks)
  - (iii) Calculate the probability of the project getting completed in the scheduled time of 18 weeks.  
(06 Marks)

Table 5.00: Time estimations of the construction project



Activity	Predecessor	Estimated Time Duration in Weeks		
		Optimistic	Most Likely	Pessimistic
A	-	1	1	7
B	-	1	4	7
C	-	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D, E	3	6	15

### Question 06

SKZ company has a few product developments under their corporation. However, with the recent economic developments, SKZ has decided to develop their own low-cost furniture brand to be introduced to its potential customers as a new product. This project was assigned a project team of 10 members with relevant expertise. They now have the task of developing a risk management plan for this project. The project team identified economic, technological, socio-cultural, environmental and project management risk categories to affect the project in its progression.

- (i) Name at least 4 relevant risks associated with this project. (*Hint: If necessary, you can use the above risk categories in developing risks associated*).  
(04 Marks)
- (ii) Develop a risk assessment matrix by clearly indicating the probability, and impact justification for each risk.  
(08 Marks)
- (iii) Develop a contingency plan by clearly indicating the risk response and the contingency action for each abovementioned risk.  
(08 Marks)

### Question 07

- (a) Organizations use project management in developing the supply chains by assessing their strengths and weaknesses collectively.
  - (i) Name the stages of a supply chain project which are different from a conventional project.  
(04 Marks)

- (ii) Name the 2 factors that would affect the process centered management of a supply chain.  
(02 Marks)
- (iii) Briefly discuss the importance of internal collaborations and multi-company partnerships in process centered management in supply chain development projects.  
(05 Marks)
- (b) Organizations use project priority systems to schedule the limited resources available within an organization.
- (i) Name 2 constraints an organization may face when scheduling project activities.  
(02 Marks)
- (ii) Name 3 reasons for a project to reduce its time duration.  
(03 Marks)
- (iii) Briefly explain how resource smoothing can aid in a time constraint project.  
(04 Marks)

### Question 08

- (i) Why is it a myth to consider supply chains as cost centers of an organization? Briefly explain your answer.  
(05 Marks)
- (ii) "Cost of a risk event increases exponentially towards the end of the project's life cycle". Do you agree with this statement? Justify your answer.  
(05 Marks)
- (iii) "Cost reduction attempts in supply chains must be focused on the root cause identification". Do you agree with this statement? Justify your answer. Use appropriate examples where necessary.  
(05 Marks)
- (iv) Why is flexibility as a driver of change in the development of the supply chains an imperative specification? Briefly explain your answer.  
(05 Marks)

*Attachments if any (such as formulas and case studies etc.)*

$$1. \quad t_e = \frac{a+4m+b}{6}$$

$$\sigma_{t_e}^2 = \left(\frac{b-a}{6}\right)^2$$

$$Z = \frac{T_s - T_E}{\sqrt{\sum \sigma_{t_e}^2}}$$

$t_e$  - expected time

$\sigma_{t_e}^2$  - Variance of the time

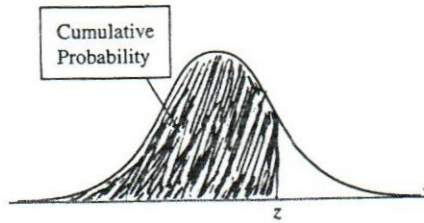
Z - Probability (of meeting scheduled duration) found in statistical Table

$T_s$  - Scheduled project duration

$T_E$  - Critical path duration

2. Standard normal tables (Attached to the email)

-----END OF THE QUESTION PAPER-----



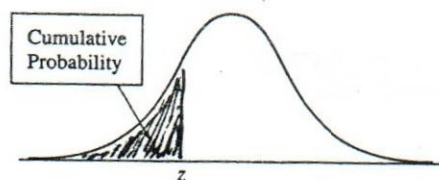
Cumulative probability for  $z$  is the area under the standard normal curve to the left of  $z$

**TABLE A Standard Normal Cumulative Probabilities (continued)**

$z$	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

$z$	.00
3.5	.999767
4.0	.9999683
4.5	.9999966
5.0	.999999713

## APPENDIX A



Cumulative probability for  $z$  is the area under the standard normal curve to the left of  $z$

**TABLE A Standard Normal Cumulative Probabilities**

$z$	.00		$z$	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-5.0	.000000287		-3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
-4.5	.00000340		-3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
-4.0	.0000317		-3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
-3.5	.000233		-3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
			-3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
			-2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
			-2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
			-2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
			-2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
			-2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
			-2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
			-2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
			-2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
			-2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
			-2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
			-1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
			-1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
			-1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
			-1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
			-1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
			-1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
			-1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
			-1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
			-1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
			-1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
			-0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
			-0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
			-0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
			-0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
			-0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
			-0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
			-0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
			-0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
			-0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
			-0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

Library.



Faculty of Management and Social Sciences  
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Year 3 Semester II

REPEAT EXAMINATION

Operational Research – ORSH0372

- This paper consists of EIGHT questions on FOUR (04) pages.
- Answer FIVE Questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2023.05.11

Pass mark: 50%

Time: 03 Hours

**Question 01 and Question 02 are based on the description given below.**

G-flock is a cloth manufacturer who employs three inputs: man-hours, machine- hours and cloth materials to manufacture two types of dresses.

- Type A dress makes a profit of Rs. 160/- per dress and type B makes Rs. 180/- per dress.
- The manufacturer has enough man-hours to manufacture 50 dresses of type A or 20 dresses of type B per day while the machine-hours he possesses suffice only for 36 dresses of type A or for 24 dresses of type B.
- Cloth material available per day is limited but sufficient enough for 30 dresses of either type.

**Question 01: Compulsory**

Formulate the above problem as a Linear Programming Problem

(20 Marks)

### Question 02

Solve the Linear Programming model built in Question 01 using graphical method.

(20 Marks)

### Question 03

A firm produces three products A, B and C each of which passes through three departments: Fabrication, Finishing and packaging. Each unit of product A requires 3, 4, and 2; a unit of product B requires 5, 4 and 4; while each unit of product C requires 2, 4 and 5 hrs respectively in the three departments. Daily capacity of three departments is as follows.

- Fabrication Department - 60hrs
- Finishing Department - 72hrs
- Packaging Department - 100hrs

The unit contribution of product A, B and C are Rs.5/=, Rs. 10/= and Rs. 8/=.

- (a) Formulate this as an LP model (05 Marks)
- (b) Find the optimum solution using Simplex method. (15 Marks)

### Question 04

Using Two-Phase method, find the optimal solution to the LP model given below.

$$\text{Minimise } Z = 40X_1 + 24X_2$$

Subject to

$$20X_1 + 50X_2 \geq 4800$$

$$80X_1 + 50X_2 \geq 7200$$

$$X_1, X_2 \geq 0$$

(20 Marks)

### Question 05

Find the dual of the LP model (primal problem) given below.

$$\text{Minimize } Z = 6X_1 + 4X_2$$

Subject to the constraints

$$4X_1 + X_2 \geq 2$$

$$3X_1 + 2X_2 \geq 3$$

$$X_1 + 5X_2 \geq 1$$

$$X_1, X_2 \geq 0$$

Solve the primal problem using Dual Simplex criteria and hence obtain the solution of the dual problem. (20 Marks)

### Question 06

Consider the unit transportation cost in transporting goods from LogiPlus warehouse which has three factories to four warehouses.

	W1	W2	W3	W4	Supply
F1	1	2	4	4	6
F2	4	3	2	0	8
F3	0	2	2	1	10
Demand	4	5	8	7	

- Find the initial transportation schedule using North West Corner method (05 Marks)
- Find the optimal transportation schedule using any appropriate method (12 Marks)
- Find the optimal transportation cost. (03 Marks)

### Question 07

A company manufactures 30 items per day. The sale of these items depends upon demand which has the following distribution;

Sales (Units)	Probability
27	0.10
28	0.15
29	0.20
30	0.35
31	0.15
32	0.05

Consider the followings

- Unit profit is Rs.10.00
- Any unsold product is to be disposed off at a loss of Rs. 15.00 per unit
- There is a penalty of Rs. 5.00 per unit if the demand is not met.



- Using the following random numbers estimate total profit/loss for the company for the next 10 days; 10, 99, 65, 99, 95, 01, 79, 11, 16, 20
- If the company decides to produce 29 items per day, what is the advantage or disadvantage to the company?

(20 Marks)

### Question 08

A company wants to produce three products A, B and C. the unit profit on these products are Rs. 4/-, Rs. 6/- and Rs. 2/- respectively. These products require two types of resources, namely man-hours and raw materials. The following Linear Programming model is formulated to determine the optimal product mix, by considering all the technological coefficients and by letting  $X_1$ ,  $X_2$  and  $X_3$  to be the amounts produced from products A, B and C.

$$\text{Maximize } Z = 4X_1 + 6X_2 + 2X_3$$

$$\text{Subject to: } X_1 + X_2 + 2X_3 \leq 3 \text{ (man hours)}$$

$$X_1 + 4X_2 + 7X_3 \leq 9 \text{ (raw materials)}$$

$$X_1, X_2, X_3 \geq 0$$

Table 1.02: Optimum Tableau of LP model

Basic	Z	$X_1$	$X_2$	$X_3$	$S_1$	$S_2$	Right Hand Side
Z	1	0	0	$28/3$	$2/3$	$2/3$	16
$X_1$	0	1	0	$1/3$	$-1/3$	$-1/3$	1
$X_2$	0	0	1	$5/3$	$1/3$	$1/3$	2

- Suppose the availability of raw materials are reduced by 5 units. How does this affect the current optimal schedule and the optimal profit? Explain and justify your answer. (10 Marks)
- If the profit of product A is reduced by 2 units, how does this affect the current optimal schedule and the optimal profit? Explain and justify your answer. (10 Marks)

-----END OF THE QUESTION PAPER-----



Faculty of Management and Social Sciences  
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 Course CODE: COM550

Year 3 Semester II

REPEAT EXAMINATION

Port Planning – PLUT0250

- This paper consists of EIGHT questions on TWO (02) pages.
- Answer FIVE Questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2023.05.08

Pass mark: 50%

Time: 03 Hours

### Question 01 (Compulsory)

“ECT & WCT are going to be the First Semi Automated Container Terminal in South Asia respectively”

- Name & describe salient features of Colombo Port Expansion Project / Colombo South Port? (6 Marks)
- List Container Terminal Facilities for ECT? (6 Marks)
- Name the four generations of Ship to Shore Gantry Crane including how many containers across a ship can be handled by each STS Crane? (4 Marks)
- What are the four types of spreader attachments that can be fixed in to Ship to Shore Gantry cranes to discharge & load more container at once? (4 Marks)

### Question 02

- Name different semi & fully automated quay transfer equipments? (2 Marks)
- Name different semi & fully automated storage/stacking equipments? (4 Marks)
- Give examples for Fully and Semi Automated Container Terminals in the world? (6 Marks)
- What is the vision of the Sri Lanka Ports Authority? (1 Mark)
- What is the mission of the Sri Lanka Ports Authority? (1 Mark)
- What are the aspirations of the Sri Lanka Ports Authority? (6 Marks)

### Question 03

- List Global/International Container Terminal Operators? (5 Marks)
- What is BOT / PPP? (5 Marks)

- c) SLPA partner with private sector to build Ports & Terminals under BOT/PPP.  
Name the Partners? (5 Marks)
- d) What are the competitive container ports for the Port of Colombo? (5 Marks)

#### Question 04

- a) What is the rationale behind building a new port in the south of Sri Lanka -  
Hambantota? (5 Marks)
- b) What are the current facilities available in the Port of Hambantota?  
(10 Marks)
- c) What kind of business that can be attracted and develop in the Port of  
Hambantota? (5 Marks)

#### Question 05

List & describe current port challenges to be addressed by Port Planners under

- a) Providing Navigational Services? (7 Marks)
- b) Providing Cargo Handling Terminals Facilities? (7 Marks)
- c) Value Added Logistic Facilities? (6 Marks)

#### Question 06

Select one of the following and discuss the opportunities and threats that can have to Sri Lankan Ports with regard to future port & port facility planning?

- a) Indian Sagarmala concept
- b) Sethusamudram ship canal project
- c) Kra Canal project
- d) APSEZ - Adani Port Special Economic Zone port projects
- e) Tuas Port Singapore (20 Marks)

#### Question 07

a) If you are appointed as a Project Design Engineer for a RO-RO terminal building project:

- (i) Draw a RO-RO terminal plan that can berth three ships? (5 Marks)
- (ii) List out key terminal facilities & staff requirement? (5 Marks)

b) Select one of the port cargo handling terminals

- (i) Container Terminal
- (ii) Liquid Bulk Terminal
- (iii) Cruise Terminal

and draw a layout plan and identify terminal facilities requirements?

(10 Marks)

#### Question 08

Select one country and describe the port projects and the impacts to Sri Lankan Ports?

- a) Indian
- b) Singapore
- c) Malaysia
- d) UAE - United Arab Emirates
- e) Oman

(20 Marks)

-----END OF THE QUESTION PAPER-----



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Course CODE: COM550

Year 3 Semester II  
REPEAT EXAMINATION

Customs and Commodity Inspections Operations – CCIO0234

- This paper consists of EIGHT questions on FIVE (05) pages.
- Answer FIVE Questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write Legibly.
- Required documents are attached.

Date: 10.05.2023

Pass mark: 50%

Time: 03 Hours

**Question 01 (Compulsory)**

Nikko Best (Pvt) Ltd has imported 01 unit of used Toyota Aqua hybrid car (model NHP10) fitted with a 1,490 cc hybrid engine from Japan. The price agreed was JPY 1,400,000 Ex Works. In addition to that Nikko Best (Pvt) Ltd has paid JPY 35,000 as local handling charges to a handling company in Japan. However according to the list of minimum values published by the Sri Lanka Customs the minimum FOB price of Toyota Aqua NHP10 is JPY 1,895,000.

Ms. NYK Line Lanka (Pvt) Ltd has endorsed on the copy of the Bill of Lading that their standard freight cost is USD 65 per CBM. The volume of a Toyota Aqua car is 14.55 CBM.

The marine insurance has been obtained locally from the Sri Lanka Insurance Corporation for Rs. 7,250/=.

According to the Sri Lanka Tariff Guide 2016 the hybrid motor cars having a spark-ignition internal combustion reciprocating piston engine with a capacity less than 1500cc are classified within HS Code 8703.22.51 and the following taxes are payable to Sri Lanka Customs at the time of clearance.



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- (A) Customs Duty - 25%
- (B) VAT - 11%
- (C) PAL - 5%
- (D) NBT - 2%
- (E) Excise (SP) Duty - 92% or Rs. 1,750/= per cubic centimetre of engine.

Exchange Rates are Rs. 145.8899 per US Dollar and Rs. 1.2416 per Japanese Yen.

Calculate all five taxes payable for the subject vehicle. Formulas are provided in the attached document to this question paper.

(20 Marks)

## Question 02

Grand International Group is a multinational company based in the USA and the rights holder of several world renowned brands including "Walker" and "Bee" brands.

Great Walker Ltd is a Shoe manufacturing company based in China. They manufacture "Walker" brand Shoes according to the specified quality of Grand International Group and supply the same only to the buyers nominated by Grand International Group. Grand International Group holds 63% of shares of Great Walker Ltd and several Directors of Great Walker Ltd are also Directors of Grand International Group.

Grand Lanka Ltd is a Sri Lankan trading company registered under the Companies Act. However, Grand International Group holds 98% of shares of Grand Lanka Ltd. Several Directors including the Managing Director of Grand Lanka Ltd are also Directors of Grand International Group. Grand Lanka Ltd has been appointed by Grand International as their Sole-Agent in Sri Lanka for the sale of "Walker" brand Shoes. In addition to the Sole-Agency Agreement Grand Lanka Ltd has also entered into an agreement with Grand International Group termed as Royalty Agreement. According to this Royalty Agreement, Grand Lanka has to pay 5% of the Ex-Work price as Royalty to Grand International Group for the "Walker" brand Shoes purchased from Great Walker Ltd.

Grand Lanka has imported a shipment of 01x20' container said to contain 5,000 pairs of "Walker" brand Shoes from Great Walker Ltd. The Ex-Work price agreed is USD 2.50 per pair of Shoes. Grand Lanka has entrusted the transportation of the said container from



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China to the Port of Colombo to a Freight Forwarding company namely Sea-Sky Lanka Ltd. They have issued a quotation containing the following charges.

**Charges at Origin**

Sea Freight	- USD 1285
Packing Cost	- USD 315
Inland Transport	- USD 725
Handling Charges	- USD 165

**Charges at Destination**

Terminal Handling (THC)	- USD 250
Container Deposit	- Rs. 5750
Container Washing	- Rs. 1150

In addition to the above charges the Sea-Sky Lanka Ltd has also charged USD 150 as Bunker Adjustment Fee (BAF) and USD 110 as Currency Adjustment Fee (CAF) on the arrival of the container. The marine insurance has been obtained locally from Sri Lanka Insurance Company on payment of Rs. 16,875/= for the whole shipment. The Exchange Rate is Rs. 135.00 per US Dollar.

- (a) Calculate the **Cost of Transport** of the subject shipment from the warehouse of Great Walker Ltd to the Port of Colombo in **USD** (06 Marks)
- (b) Calculate the amount of **Royalty** payable to Grand International Group by Grand Lanka Ltd against the subject shipment in **USD** (06 Marks)
- (c) Calculate the **Customs Value** of the subject shipment in **Sri Lankan Rupees** (08 Marks)

**Question 03**

Write an essay describing the functions and the legal framework of the Sri Lanka Customs (20 Marks)



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#### Question 04

Name the **6 methods** given in the WTO Valuation Agreement to determine the Customs Value and explain the Transaction Value Method described in Article 1 and the adjustments under Article 8 of Schedule E of the Customs Ordinance.

(20 Marks)

#### Question 05

Explain the structure of an HS Code up to 8 digit level and the procedure one should follow to determine the HS Code of any given commodity.

(20 Marks)

#### Question 06

Write short essays on 4 of the following topics.

(4\*5 Marks)

- a) Customs Ordinance
- b) Imports and Exports (Control) Act
- c) Exchange Control Act
- d) Antiquities Ordinance
- e) Fauna and Flora Protection Act
- f) Revenue Protection Act
- g) Value Added Tax Act
- h) Cosmetics, Devices, and Drugs Act

#### Question 07

- a) Explain **Section 10** and **Schedule A** (Table of Duties) of the Customs Ordinance

(5 Marks)

- b) Explain **Section 12** and **Schedule B** (Table of Prohibitions and Restrictions) of the Customs Ordinance

(15 Marks)

#### Question 08

The payment methods in international trade have evolved based on how the risk is transferred between the buyer and the seller. Explain the six methods of payment in



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international trade with an emphasis on how the risk is transferred between the buyer and the seller. (20Marks)

-----END OF THE QUESTION PAPER-----



### Computation formulae for imported goods

Where

v	=	CIF value in Rupee
c	=	Cess levy under Sri Lanka Export Development Act
d	=	Customs Duty
e	=	Excise (Special Provisions) Duty (ED)
t	=	Value Added Tax (VAT)
n	=	Nation Building Tax
p	=	Port and Airport Development Levy (PAL)
r <sub>e</sub>	=	Rate of Excise (Special Provisions) Duty (ED)
r <sub>t</sub>	=	Rate of Value Added Tax (VAT)
r <sub>n</sub>	=	Rate of Nation Building Tax

- Customs Duty (d) = (CIF value) × (Customs duty rate)  
or  
= (quantity) × (unit rate of customs duty)
- Value Added Tax (t) = (v + 10% of v + d + c + p + e) × r<sub>t</sub>
- Cess Levy (c) = (v + 10% of v) × (Cess levy rate)  
or  
= (quantity) × (unit rate of Cess levy)
- Port and Airport Development Levy (p) = (CIF value) × (PAL rate)
- Excise (Special Provisions) Duty (e) = (v + 15% of v + d + c + p) × r<sub>e</sub>  
or  
= (quantity) × (unit rate of Excise Duty)
- Special Commodity Levy = (Quantity) × (unit rate of Special Commodity Levy)
- Nation Building Tax (n) = (v + 10%v + d + c + p + e) r<sub>n</sub>

No: RE/39/2021



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இலங்கைச் சங்கம் Sri Lanka Customs

Telephone: 2478864(DC), 2342501(DDC), 2445146(SC) E-mail: ddcppnr@customs.gov.lk

**Customs Notification (General)**  
**Customs Ordinance (Chapter 235)**  
**Rates of Exchange**

It is hereby notified that by virtue of powers vested in me under Section 17 of the Customs Ordinance (Chapter 235) I, Retired Major General G.V. Ravipriya, Director General of Customs, determine that with effect from 27.09.2021 all duties of Customs as well as other charges, penalties and forfeitures incurred under the Customs Ordinance (Chapter 235), shall be paid and received at the Rates of Exchange set out in the schedule overleaf.

The notification relating to the Rates of Exchange published in Gazette No: 2246/01 of 20.09.2021 is hereby rescinded.

Retired Major General G.V. Ravipriya  
Director General of Customs

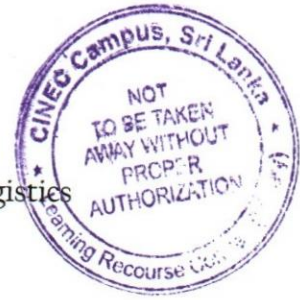
Sri Lanka Customs  
Colombo 11  
24.09.2021

Schedule  
Rates of Exchange Effective From 27.09.2021 to 03.10.2021

	Country	Country Code	Currency	Currency Code	Rate of Exchange (Rs.)
1	Australia	AU	Dollar	AUD	148.0169
2	Bahrain	BH	Dinar	BHD	538.4594
3	Bangladesh	BD	Taka	BDT	2.3816
4	Brazil	BR	Brazil Real	BRL	38.2736
5	Brunei	BN	Brunei Dollar	BND	150.3698
6	Canada	CA	Canadian Dollar	CAD	160.2204
7	China	CN	Renminbi	CNY	31.4158
8	China	CN	Offshore	CNH	31.4082
9	Czechoslovakia	CZ	Koruna	CZK	9.3877
10	Denmark	DK	Kroner	DKK	32.0474
11	Egypt	EG	Pound	EGP	12.9299
12	Euro Zone		Euro	EUR	238.3109
13	Ghana	GH	Cedi	GHS	33.6091
14	Hongkong	HK	Dollar	HKD	26.0787
15	Hungary	HU	Forint	HUF	0.6690
16	India	IN	Rupee	INR	2.7490
17	Indonesia	ID	Rupiah	IDR	0.0142
18	Iran	IR	Riyal	IRR	0.0048
19	Japan	JP	Yen	JPY	1.8395
20	Jordan	JO	Dinar	JOD	286.3176
21	Korea	KR	Won	KRW	0.1725
22	Kuwait	KW	Dinar	KWD	674.4159
23	Macau	MO	Pataca	MOP	25.3069
24	Malaysia	MY	Ringgit	MYR	48.5180
25	Maldives	MV	Rufiya	MVR	13.1306
26	Mauritius	MU	Rupee	MUR	4.7652
27	Myanmar	MM	Kyat	MMK	0.1090
28	Nepal	NP	Rupee	NPR	1.7227
29	New Zealand	NZ	Dollar	NZD	143.4088
30	Nigeria	NG	Naira	NGN	0.4933
31	Norway	NO	Kroner	NOK	23.5985
32	Oman	OM	Riyal	OMR	527.2843
33	Pakistan	PK	Rupee	PKR	1.1983
34	Papua New Guinea	PG	Kina	PGK	57.8548
35	Philippines	PH	Peso	PHP	4.0254
36	Poland	PL	Zloty	PLN	51.6682
37	Qatar	QA	Riyal	QAR	55.2484
38	Russia	RU	Rouble	RUB	2.7925
39	Saudi Arabia	SA	Riyal	SAR	54.1245
40	Seychelles	SC	Rupee	SCR	13.6971
41	Singapore	SG	Dollar	SGD	150.3698
42	South Africa	ZA	Rand	ZAR	13.7473
43	Sweden	SE	Krona	SEK	23.5356
44	Switzerland	CH	Francs	CHF	219.5654
45	Taiwan	TW	Dollar	TWD	7.3211
46	Thailand	TH	Baht	THB	6.0796
47	U.A.E.	AE	Dirham	AED	55.2657
48	United Kingdom	GB	Sterling Pound	GBP	278.5149
49	America	US	Dollar	USD	202.9992
50	Zambia (Old)	ZM	Kwacha	ZMK	0.0391
51	Zambia (New)	ZM	Kwacha	ZMW	12.2473
52	Zimbabwe	ZW	Dollar	ZWD	0.5349



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Year 3 Semester II

## REPEAT EXAMINATION

### Airport Planning and Management – APMG0353

- This paper consists of EIGHT questions on TWO (02) pages.
- Answer FIVE Questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2023.05.09

Pass mark: 50%

Time: 03 Hours

#### Question 01: (Compulsory)

- (a) 'Every airport has four "publics" with which it interacts despite the difference in size and scope of activities of airports.' Explain with examples. (11 Marks)
- (b) Briefly explain the 3(three) types of Air traffic control services provided by Airport and Aviation Services Sri Lanka (AASL). (09 Marks)

#### Question 02

- (a) Differentiate between aeronautical charges and non-aeronautical charges with examples. (08 Marks)
- (b) Financing of large scale airport projects is always a concern for airport owners and operators due to the large amounts of capital required. Explain different sources of financing available for developing airport infrastructure. (12 Marks)

#### Question 03

Airport terminal configurations play an important role in airport management and operations and have evolved to accommodate the ever-growing air transport industry. Explain the evolution of airport terminal configurations by comparing different terminal configurations. (20 Marks)

#### **Question 04**

Airports play different roles in shaping the economic, political, and environmental aspects of the communities they serve. Explain in detail the economic role played by an airport operating at its maximum capacity. (20 Marks)

#### **Question 05**

- (a) Briefly explain the difference between Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). (08 Marks)
- (b) Runway configuration refers to the relative orientations of one or more runways on an airfield. There are different runway configurations at different airports. Explain how each basic runway configuration affects capacity and delay of an airport? (12 Marks)

#### **Question 06**

- (a) Define delay and capacity. Identify factors that cause delays in an airport and explain strategies that can be used by the airport management to overcome these factors that cause delays. (10 Marks)
- (b) Briefly explain the importance of prevention of foreign object debris (FOD) at airports and FOD prevention methods. (10 Marks)

#### **Question 07**

- (a) What is meant by an airport master plan? Explain the elements of an airport master plan with examples. (10 Marks)
- (b) Aviation is a system that is vulnerable to security threats with the changing environment of the industry. Explain the different techniques and methods used by commercial airports to provide airport security. (10 Marks)

#### **Question 08**

The aviation sector is growing fast and will continue to grow. Airport management is responsible to make airports safer, more convenient, and more efficient to ensure the airports can be successful in future. Explain strategies that airports must utilize to be successful and survive in the future. (20 Marks)

-----END OF THE QUESTION PAPER-----