

UNIVERSITY OF SWAZILAND

DEPARTMENT OF ECONOMICS

FINAL EXAMINATION PAPER 2011/12

TITLE OF PAPER: TRANSPORT ECONOMICS

COURSE CODE: ECON 423

TIME ALLOWED: THREE (3) HOURS

**INSTRUCTIONS:**

- 1. ANSWER FOUR QUESTIONS  
TWO QUESTIONS FROM SECTION A;  
QUESTION 1 IS COMPULSORY, AND ANY TWO  
QUESTIONS FROM SECTION B.**
- 2. ALL QUESTIONS CARRY EQUAL MARKS, OF  
25 EACH.**

**THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN  
GRANTED BY THE INVIGILATOR.**

**SECTION A****ANSWER QUESTION 1 AND ANY OTHER QUESTION IN THIS SECTION****Question 1**

Salgaocar (Pty) Ltd is a company mining iron ore at Ngwenya. The company is asking for a quotation for transporting the iron ore from Ngwenya to Maputo a distance of 1,200 kilometers a return trip.

As a transport manager for a freight company, you are asked to provide the quotation for shipping 30,000 cubic meters of ore from Ngwenya to Maputo. The capacity of the trailer is 35,000 kilograms and 31000 cubic metres.

The following information is available to you:

| <b><u>Vehicle Data</u></b>           | <b><u>Power Unit</u></b> | <b><u>Trailer</u></b> |
|--------------------------------------|--------------------------|-----------------------|
| Purchasing price                     | 1,000,000                | 500,000               |
| Residual Value                       | E200,000.00              | E100,000.00           |
| Depreciation                         | 10 years/700,000km       | 15 years/800,000km    |
| Repair and Maintenance per kilometer | E0.40                    | E0.10                 |
| Vehicle Insurance per annum          | E50,000.00               | E20,000.00            |
| Number of tyres                      | 10                       | 12                    |
| Cost per tyre                        | E8,000.00                | E8,000.00             |
| Lifetime of tyre in kilometres       | 60,000                   | 60,000                |
| Interest                             | 10%                      | 10%                   |
| Fuel Consumption in Litres/km        | 0.5                      |                       |
| Fuel Price per Litre                 | E9.00                    |                       |

**Other Costs**

|                                              |             |
|----------------------------------------------|-------------|
| Driver Wages per Year                        | E100,000.00 |
| Allowance on Expenses per Trip               | E200.00     |
| Profit Margin (%)                            | 15          |
| Effective Hours available for truck per year | 2000        |
| Pickup Time (Hrs)                            | 6           |
| Journey time for return trip (hrs)           | 30          |
| Delivery / Off-loading (hrs)                 | 4           |

- (a) How much should the company charge for the shipment? **[15]**
- (b) ) After giving a quotation to the client that is valid for fourteen (14) days, fuel price increases by 10%. Is it still profitable for the company to ship the goods at the quoted price? **[10]**

**QUESTION 2**

- (i) Discuss three benefits of privatisation in the context of transport. **[6]**
- (ii) Discuss any three factors that affect crash costs. **[9]**
- (iii) Discuss the advantages and disadvantages (3 each) of the following modes of transport: - Road and Air. **[10]**

**QUESTION 3**

- (i) Discuss any four (4) factors that affect the demand for transport. **[10]**
- (ii) Discuss any four (2) factors that affect travel time cost values. **[5]**
- (iii) Transport is considered to be a major contributor to environmental impacts. Discuss any Four (4) impacts caused by transport? **[10]**

**QUESTION 4**

- (i) Explain how demand can be used in pricing transportation services? **[10]**

- (ii) Define the two transportation costs that are directly borne by the commuter or transport user. **[7]**
- (iii) Take any one in (ii) and discuss any two factors affecting it. **[8]**

## **SECTION B**

### **QUESTION 5**

Swazi Oxy supplies gas to the three campuses of the University of Swaziland. The company purchases the gas from two companies: Southern Gas and Northern Gas. Gas demands for the three campuses are: Kwaluseni 400 units, Luyengo 200 units; and Mbabane 300 units. Contracts have been entered into to provide the following quantities: Southern Gas 500 units, and Northern Gas 400 units. The distribution costs per unit (in Emalangeni) are as follows:

| <b>FROM</b>         | <b>TO</b>        |                |                |
|---------------------|------------------|----------------|----------------|
|                     | <b>Kwaluseni</b> | <b>Luyengo</b> | <b>Mbabane</b> |
| <b>Southern Gas</b> | 10               | 20             | 15             |
| <b>Northern Gas</b> | 12               | 15             | 18             |

- a) Develop a network representation of this problem. **[10]**
- b) Develop a linear programming model that can be used to minimize the total distribution costs; make sure you define the variables in your model. **[15]**

### **QUESTION 6**

- (i) Describe the two types of traffic congestion. **[5]**
- (ii) Discuss three; negative and positive, effects of traffic congestion. **[15]**
- (iii) Give two reasons why building more roads does not solve the congestion problem. **[5]**

**QUESTION 7**

The planning process for transport projects requires a number of stages to be undertaken. Describe the stages involved. **(25)**

**QUESTION 8**

- (i) Discuss the four (4) impacts of transportation in economic development of a country. **(10)**
- (ii) Discuss two actions for reducing congestion under the Travel Demand Management (TDM). **(10)**
- (iii) How can the Government recover the costs of constructing the road? **(5)**