



<b>FACULTY/COLLEGE</b>	College of Business and Economics (CBE)
<b>SCHOOL</b>	School of Economics
<b>DEPARTMENT</b>	Dept. of Transport and Supply Chain Management
<b>CAMPUS</b>	APB
<b>MODULE NAME</b>	Transportation 2B
<b>MODULE CODE</b>	TRA0Y2B
<b>SEMESTER</b>	Year
<b>ASSESSMENT OPPORTUNITY MONTH AND YEAR</b>	Supplementary Final Summative Assessment December 2019

<b>ASSESSMENT DATE</b>	December 2019	<b>SESSION</b>	
<b>ASSESSOR</b>	Mr J Venter		
<b>INTERNAL MODERATOR</b>	Ms J van der Walt		
<b>DURATION</b>	2,5 Hours	<b>TOTAL MARKS</b>	100

<b>NUMBER OF PAGES OF QUESTION PAPER (Including cover page)</b>	16
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**INSTRUCTIONS TO CANDIDATES:**

1. Answer all the questions.
2. Question papers must be handed in.
3. This is a closed book assessment.
4. Read the questions carefully and answer only what is asked.
5. Number your answers clearly.
6. Answer **Section A** in the back of your answer book. Indicate the correct answer by means of an **X**.
7. Answer **Section B** in the answer book.
8. Write neatly and legibly.
9. Structure your answers by using appropriate headings and sub-headings.
10. The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment

**SECTION A****[40 MARKS]****QUESTION 1**

Which one of the following countries has the largest export trade flows?

- A United States
- B Germany
- C China
- D Japan

**QUESTION 2**

What positive outcomes have occurred in the global economy with increased interdependence?

- (i) Lower prices
- (ii) Wider availability of goods
- (iii) New employment opportunities

Choose the correct answer:

- A (i), (ii) and (iii)
- B (ii) and (iii)
- C (i) and (iii)
- D (i) and (ii)

**QUESTION 3**

On the micro level, global interdependence has \_\_\_\_\_.

- A decreased the level of complexity
- B increased competition
- C reduced outsourcing
- D increased product life cycles

**QUESTION 4**

Reverse logistics systems are developed for \_\_\_\_\_.

- A returning rail box cars
- B eliminating empty backhauls
- C receiving payment from customers
- D returning unacceptable products

**QUESTION 5**

Forward information in the supply chain is utilised to provide \_\_\_\_\_.

- (i) advanced shipment notices
- (ii) order status
- (iii) inventory availability

Choose the correct answer:

- A (i), (ii) and (iii)
- B (ii) and (iii)
- C (i) and (iii)
- D (i) and (ii)

**QUESTION 6**

Cash flow is important to organisations producing products for sale, because it \_\_\_\_\_.

- A reduces the need for working capital
- B eliminates the need for checks to pay vendors
- C provides bonus money for employees

**QUESTION 7**

Which of the following can be considered as the major flows in a supply chain?

- (i) Information
- (ii) Water
- (iii) Financials/cash
- (iv) Products

Choose the correct answer:

- A (i), (ii), (iii) and (iv)
- B (ii), (iii) and (iv)
- C (i), (iii) and (iv)
- D (i) and (ii)

**QUESTION 8**

One effective method to reduce the bullwhip effect in a supply chain is to replace inventory with \_\_\_\_\_.

- A outsourcing
- B information
- C TOFC service
- D transportation

**QUESTION 9**

Which one of the following is consistent with a green supply chain strategy?

- A Reducing packaging materials
- B Shipping small loads, more frequently
- C Using motor carriers instead of railroads
- D Shifting to a group of suppliers located at a more distant location

**QUESTION 10**

The volume of global trade over the course of the last 50 years has \_\_\_\_\_.

- A remained almost constant
- B doubled
- C tripled
- D decreased

**QUESTION 11**

Intramodal competition is which one of the following?

- A The joint use of trucks and railroads to serve common customers
- B Trucking organisations underbidding other modes to secure business
- C Various modes seeking to gain market share from other modes
- D A government sponsored activity

**QUESTION 12**

Which one of the following do the majority of rail movements involve?

- A Manufactured goods
- B Bulk liquids and coal
- C Low value, heavy commodities
- D Consumer goods

**QUESTION 13**

The demand for freight \_\_\_\_\_.

- A is a derived demand based on the demand for products
- B originates when the carrier asks for the business
- C starts when the shipper calls the railroad to provide equipment to move a shipment
- D is based on government quotas

**QUESTION 14**

Which one of the following best characterises the short-run cost structure of the railroads?

- A Low variable costs, high direct separable costs
- B Low fixed costs, low variable costs
- C Low joint costs, high separable costs
- D Large proportion of indirect fixed costs

**QUESTION 15**

Railroads are \_\_\_\_\_.

- A more energy efficient than most other modes
- B more likely to haul energy producing materials than other modes
- C not as energy efficient as most other modes
- D buying more energy efficient locomotives

**QUESTION 16**

Which one of the following is one of the strengths of the railroad industry?

- A That it is not as affected by the weather as are other modes
- B That the railroads have large carrying capacity
- C That it can move products in both directions
- D That geographical barriers are not as formidable as they are for other modes

**QUESTION 17**

What is the difference between TOFC (trailer-on-flatcar) and COFC (container-on-flatcar) service?

- A TOFC is slower and cheaper.
- B Not all railroads can handle COFC.
- C COFC is more costly.
- D One method moves the trailer on its wheels and the other moves only the "box" or the container.

**QUESTION 18**

Railroad per unit costs decline as traffic increases. Which one of the following is the reason for this cost behaviour?

- A A high proportion of variable costs in the cost structure
- B A low proportion of fixed costs in the cost structure
- C A large proportion of fixed costs in the cost structure
- D Limited capital investment by the railroads

**QUESTION 19**

Which of the following are the top commodities transported by railroads?

- (i) Coal
- (ii) Farm products
- (iii) Chemicals
- (iv) Transportation equipment

Choose the correct answer:

- A (i), (ii), (iii) and (iv)
- B (ii), (iii) and (iv)
- C (ii) and (iv)
- D (i), (iii) and (iv)

**QUESTION 20**

With respect to global transportation, economic downturns \_\_\_\_\_.

- A lead to increased transportation demand and rates
- B lead to decreased transportation demand and rates
- C have no impact on transportation demand and rates
- D cause shippers to shy away for international trade

**QUESTION 21**

Which one of the following is a transaction channel activity in global transportation?

- A Transfer of ownership
- B Documentation of freight
- C Monitoring performance
- D Timely information sharing

**QUESTION 22**

Which of the following can be considered as advantages of private transportation?

- (i) Flexibility in operations
- (ii) Flexibility in capacity
- (iii) Greater control
- (iv) Improved service levels

Choose the correct answer:

- A (i), (ii), (iii) and (iv)
- B (i), (iii) and (iv)
- C (ii), (iii) and (iv)
- D (i), (ii) and (iv)

**QUESTION 23**

Which one of the following forms of private transportation is most prevalent?

- A Air
- B Rail
- C Ocean
- D Truck

**QUESTION 24**

When operating miles increase, \_\_\_\_\_.

- A fixed cost/mile and operating costs increase
- B operating costs decrease and fixed cost/mile decreases
- C operating costs decrease and fixed cost/mile increases
- D operating costs increase and fixed cost/mile decreases

**QUESTION 25**

Which one of the following is an example of a fixed cost for private trucking?

- A Depreciation
- B Labour
- C Insurance
- D Tolls

**QUESTION 26**

Which of the following can be considered as a performance criterion for evaluating and controlling a private fleet?

- A Miles operated (empty and full)
- B Human resource hours
- C Vehicle operating hours
- D Total gallons of fuel used by entire fleet

**QUESTION 27**

Which of the following can be considered as advantages of a sleeper cab?

- (i) Allows for two driver teams
- (ii) Reduces the cost of lodging
- (iii) Increases fuel efficiency
- (iv) Allows one driver to accumulate off duty time in the sleeper

Choose the correct answer:

- A (i), (ii), (iii) and (iv)
- B (i), (ii) and (iv)
- C (ii), (iii) and (iv)
- D (i), (iii) and (iv)



**QUESTION 28**

Which of the following can be considered as miscellaneous trucking costs?

- (i) Tolls
- (ii) Overload fines
- (iii) Driver road expense
- (iv) Insurance

Choose the correct answer:

- A (i), (ii), (iii) and (iv)
- B (i), (iii) and (iv)
- C (ii), (iii) and (iv)
- D (i), (ii) and (iii)

**QUESTION 29**

Management and overhead account for what proportion of the fixed cost of trucking?

- A 75%
- B 25%
- C 50%
- D 60%

**QUESTION 30**

Which of the following can be considered as advantages of private trucking?

- (i) Elimination of carrier profit
- (ii) Reduction in inventory levels
- (iii) Union presence
- (iv) For hire authority to back haul

Choose the correct answer:

- A (i), (ii) and (iv)
- B (i), (iii) and (iv)
- C (ii), (iii) and (iv)
- D (i), (ii), (iii) and (iv)

**QUESTION 31**

Which country is top in terms of vessel calls?

- A China
- B United States
- C Japan
- D Brazil

**QUESTION 32**

How much more fuel does the airline industry use in comparison to the motor carrier industry?

- A The airline uses three times more fuel.
- B The airline uses two times more fuel.
- C Actually, the motor carrier industry uses three times more fuel than the airlines.
- D The airlines use the same amount of fuel as the motor carrier industry.

**QUESTION 33**

What was the primary response of carriers when dealing with fuel price increases?

- A Increased rates per pound of cargo
- B Use of fuel surcharges
- C Reduction of capacity
- D Increasing capacity

**QUESTION 34**

Which one of the following modes is the most intensive user of fuel?

- A Truck
- B Air
- C Rail
- D Water

**QUESTION 35**

What type of technology is being utilised to foster collaboration in the supply chain by carriers and shippers?

- (i) V.M.I
- (ii) R.F.I.D.
- (iii) E.D.I.

Choose the correct answer:

- A (i), (ii) and (iii)
- B (ii) and (iii)
- C (i) and (iii)
- D (i) and (ii)

**QUESTION 36**

What is meant by the term, carbon footprint?

- A Truck length
- B Fuel consumption
- C Number of accidents/year
- D CO<sub>2</sub> emissions

**QUESTION 37**

In transportation, this axiom “Don’t Ship Air” refers to which one of the following?

- A Bubble wrap
- B Empty barrels
- C Air balloons
- D Empty space in equipment

**QUESTION 38**

The most important aspect of collaboration is sharing \_\_\_\_\_.

- A costs
- B risk
- C information
- D customers

**QUESTION 39**

How have carriers responded to the fuel issue and sustainability?

- (i) Service capacity and network optimization
- (ii) Operational efficiency
- (iii) Technology

Choose the correct answer:

- A (i), (ii) and (iii)
- B (ii) and (iii)
- C (i) and (iii)
- D (i) and (ii)

**QUESTION 40**

Transportation has been described as \_\_\_\_\_.

- (i) the glue that holds the supply chain together
- (ii) the enabler of the underlying tactics and strategies for supply chains
- (iii) an enabler for firms to compete in the growing and complex market place

Choose the correct answer:

- A (i), (ii) and (iii)
- B (ii) and (iii)
- C (i) and (iii)
- D (i) and (ii)

**SECTION B****[60 MARKS]****QUESTION 1****[10 MARKS]**

**Read the case study below and answer the questions that follow.**

**TABLETS FOR THE MASSES**

Jacob Kindl is trying to capture the attention of Black Friday shoppers for OptiShop, a discount chain with 1 500 stores in South Africa and neighbouring states. Jacob wants to offer a high power tablet computer at a price point of USD249 that rivals much more expensive options from Samsung and Apple. He believes that it will be possible to sell 150 000 units during the holiday season and 15 000 units per month over the subsequent 12 months.

After much effort to ensure feasibility of the initiative, evaluate product quality, and compare supplier capabilities, Jacob has narrowed his focus to three options. Each supplier offers a reasonably priced, high quality tablet that meets OptiShop specifications. However, each supplier is in a different country, which gives Jacob some concerns about delivery costs, risks, and foreign exchange rate exposure. Highlights of each proposal are provided below.

**Option 1**

Purchase tablets from Takena Electronics in Nagano, Japan, a long-time supplier of products to OptiShop. Takena works on an open account basis and promises to make shipments of 4 500 units in 40-foot containers under terms Incoterm DAP (delivered at place, Port of Durban). The price offered per unit is 20 000 JPY (Japanese Yen).

**Option 2**

Purchase the tablets from RaoTex Industries, a Bhopal, India, based manufacturer. RaoTex has a solid reputation and Jacob nearly purchased smartphones from them last year. Their offer is based on OptiShop taking deliveries of 1 900 units in 20-foot containers under Incoterm FAS (free alongside ship at the Port of Mumbai). The price offered is 10 600 INR (Indian Rupees) using Letter of Credit payments.

**Option 3**

Purchase the tablets from Luca Enterprises, an electronics distributor in Bucharest, Romania. Luca sources tablets from contract manufacturers in Eastern Europe. Their offer is based on OptiShop taking control of the product at the Luca distribution centre under Incoterm EXW (ex works Bucharest). The price offered is 555 RON (Romanian New Leu), cash in advance.

As Jacob considered his options, he consulted an online currency converter to evaluate the quotes. He found the following exchange rates:

1 USD = 107.2 JPY.      1 USD = 61.1 INR.      1 USD = 3.4 RON.

**Source:** Coyle, JJ, Novack, RA & Gibson, BJ. (2015). *Transportation: A Supply Chain Perspective*. 8th Edition. United States: Cengage Learning. pp. 357.

**Questions:**

- 1.1 Calculate the price per tablet in USD (United States Dollars) for the Takena Electronics offer and then briefly explain the costs, responsibilities and risks that OptiShop assumes under DAP (delivered at place), Port of Durban. (2).
- 1.2 Calculate the price per tablet in USD for the RaoTex Industries offer and then briefly explain the costs, responsibilities and risks OptiShop assumes under FAS (free alongside ship), Port of Mumbai. (4)
- 1.3 Calculate the price per tablet in USD for the Luca Enterprises offer and then briefly explain the costs, responsibilities and risks OptiShop assumes under EXW (ex works), Bucharest. (4)

**QUESTION 2****[10 MARKS]**

**Read the case study below and answer the questions that follow. Question 2.1 is based on the case study. Question 2.2 is not based on the case study.**

**NITTANY PRODUCTS: A SEQUEL**

Nittany Products produces a variety of outdoor grills for private households as well as for commercial use. The business was started by Nick Shannon as a hobby. Nick Shannon liked to cook and particularly liked to do outdoor cooking on a grill. The size of the groups that he entertained kept growing as his barbeques became almost legendary. During this period, Nick became very dissatisfied with his standard size grill that had been purchased at the Pleasant Gap Hardware Store. Being a metal fabricator by trade, he decided to build his own larger grill in his garage shop. Like most prototypes, it did not meet all of Nick's expectations, and he built additional versions until he was satisfied. His guests and neighbours were intrigued with his grill and asked him to build them similar grills. The number of requests were small enough that he could produce them in his garage. Nick estimated that he might receive 20 requests per year, which was manageable. When the requests reached 50 per year, he realised that he could not satisfy the demand using his garage shop. It was too small and precluded options to operate more efficiently. So, Nick borrowed money from the local bank using his home as collateral and rented a nearby abandoned service station. He also purchased new tools and equipment and hired students from the local vocational school to work part time during the school year and full time in the summer to meet peak demand. His decisions resulted in much more business and lower production costs.

The success leads them to consider expanding their market area in Gauteng. The population of the area had expanded significantly over the last 10 years since Nick initially began to build and sell grills because of the improved highway system and the growth of the nearby university. Nittany Products, to this point in time, had built the grills to customer needs, and shipped them assembled to customer locations when requested in 15-20-foot vans that they leased. Customers also had the option of picking up the grills themselves to eliminate the delivery charge. Nick needed to rethink the approach to production, marketing and logistics with an expanded market area, a much larger potential volume of sales, and an

expanded product line.

Nick felt that it was more economical to ship the grills unassembled and have them assembled at the delivery point. He also recognised that home owners and restaurant owners could be challenged to assemble the grills, especially since these were larger grills available with a variety of fuel options. He assumed that they would need to make deliveries in trucks with a driver who could efficiently assemble the grills for customers onsite. Such a strategy would require premium pricing and specially trained drivers. Nick and his daughter, Tracie, who joined her father in the business to manage the delivery service, felt that the delivery option offered a value added service that could enhance sales, especially for their commercial customers who purchased larger, more expensive grills usually for their restaurant operations. They believed that they could sustain a private fleet with the expanded sales and market area.

**Source:** Coyle, JJ, Novack, RA & Gibson, BJ. (2015). *Transportation: A Supply Chain Perspective*. 8<sup>th</sup> Edition. United States: Cengage Learning. p. 445.

### Questions:

- 2.1 You have been hired by Nittany Products to write a report, presenting them with the advantages and disadvantages of offering customers a delivery service as well as the special issues and challenges their type of business would face with private transportation service.

Based on your report, make recommendations whether to use a private transportation service or some other option.

Note: Your responses should include an analysis of the challenges of providing for-hire service compared to private transportation. (8)

- 2.2 Explain the concept of “private transportation”. (2)

### QUESTION 3

[9 MARKS]

Comment on the current issues facing the air industry.

### QUESTION 4

[12 MARKS]

The railroads own and maintain their own rolling stock. The characteristics of these cars have changed considerably to suit customer requirements. Today's car fleet is highly specialised and is designed to meet the needs of the individual shipper.

Identify and discuss any six generalised railcar types.

**QUESTION 5****[3 MARKS]**

When an organisation purchases goods from an international supplier, the buyer typically focuses on product price, quality, and quantity of goods. However, transportation issues must also be considered and a number of relevant activities must take place.

State any three relevant activities that must take place.

**QUESTION 6****[8 MARKS]**

Energy, food, and water are frequently cited resources that are critical for economic development.

Explain the importance of each one to economic development.

Note: In your answer, address issues such as: what disparities exist among countries with respect to these three resources? How can these challenges be resolved?

**QUESTION 7****[8 MARKS]**

Differentiate between absolute and comparative advantage.

**END OF ASSESSMENT**