Tennessee CTE

Supply Chain Management I

Occupational Safety

1 **Investigate the means by which businesses comply with personal and environmental safety practices associated with the appropriate handling and storage methods of materials in accordance with local, state, and federal safety and environmental regulations, specifically:** 1

- a adherence to Occupational Safety & Health Administration (OSHA) policies regarding reporting of accidents and observed hazards as well as emergency response procedures; 1.A
- b use of appropriate signs and symbols to identify hazardous materials within warehouses and during transportation of the materials; and 1.B
- c identification of dangerous goods and determination of the appropriate corrective actions if faced with a hazardous situation, as outlined by the Emergency Response Guidebook published by the U.S. Department of Transportation. 1.C

Logistics & Transportation

2 **Research the four subdivisions of logistics in light of organizational management practices and prepare an explanatory paper or presentation that discusses the similarities and differences between the following subdivisions:** 2

- a business logistics, 2.A
- b military logistics, 2.B
- c event logistics, and 2.C
- d service logistics. 2.D

3 **While variations exist from organization to organization, the following functions are often included under the logistics umbrella. Synthesize information from textbook(s), print, and online industry sources to describe each. Create a graphic illustrating how they interact with one another and write an accompanying explanatory narrative that indicates how each of the following affects product costs and profitability:** 3

- a transportation, 3.A
- b warehouse and storage, 3.B
- c intermodal freight transport, 3.C
- d materials handling, 3.D
- e inventory control, 3.E
- order fulfillment, 3.F
- inventory forecasting, 3.G

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h production planning/scheduling, 3.H

i customer service, 3.I

j facility location, 3.J

k return goods handling, 3.K

l parts and service support, and 3.L

m salvage and scrap disposal. 3.M

4 **Describe the tradeoffs that occur between transportation and inventory costs. Drawing on examples from real products and companies, explain when it is more profitable to use more expensive transportation and maintain smaller inventory, and when it is more advantageous to use cheaper transportation and maintain larger inventories. Discuss the application of key concepts such as Just-in-Time (JIT) strategy, lean dynamics, and Kanban systems.** 4

5 **Demonstrate the ability to calculate and explain to others the ordering cost, holding cost, and shortage costs for a given material or product within the supply chain. Determine total cost as a function of these costs and demonstrate the effects on profit for a specified price and quantity. Create a spreadsheet and graphical comparison of cost variations and recommend best price/quantity amounts to optimize profit.** 5

6 **Perform inventory calculations to minimize costs as would a logistics manager for a given company. Using algebraic reasoning and appropriate units, determine the economic order quantity (EOQ) and reorder point (ROP) for a given product. Research forecasting models for the specified product and understand how companies predict EOQ and ROP using logistics management.** 6

Warehousing

7 **Compare and contrast the warehousing requirements for a variety of different products including items such as perishable foods, hazardous chemicals, large items like furniture and appliances, school supplies, seasonal items, and subassemblies for the manufacture of a given product.** 7

8 **Write an informative report describing different warehouse layouts and equipment used to move materials in each, classifying equipment according to type and purpose (including but not limited to powered industrial vehicle, sortation equipment, conveyors, automatic storage and retrieval systems, etc). Differentiate between bulk and rack storage and indicate situations when each is employed. List the three categories of aisle spacing and describe the advantages and disadvantages of each.** 8

9 **Investigate various warehouse management system (WMS) software programs and create a comparison chart that could be used by a warehouse manager to select software to meet the specific needs of his/her operation.** 9

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10 **Demonstrate the ability to complete and interpret warehouse documents including, but not limited to, packing slips, bills of lading, advance shipment notices, distribution sheets, pick lists, invoices, special orders, and inventory**

forms. Research storage and shipping documentation required by government and regulatory agencies, such as declaration forms for Customs or MSDS when storing materials in a warehouse to be OSHA compliant. 10

Support Roles and Partnerships

11 **Evaluate the role of maintenance in all aspects of a supply chain model to the safety and efficiency of storage and distribution, including vehicle, pipeline, building, and other maintenance areas. Research and report actual instances where inadequate maintenance practices led to a disruption in a company's supply chain distribution.** 11

12 **Assess the importance of supply chain security. Describe the role Customs-Trade Partnership against Terrorism (CTPAT) plays in keeping the United States safe from terrorism through supply chain regulations and protocols. Research how a local company addresses safety and security within their supply chain channels.** 12

13 **Define third-party logistics (3PL) and describe services third-party logistics companies provide to other businesses. Justify why a business would choose to use third-party logistics services instead of performing the supply chain functions themselves. Research local third-party logistics companies and describe the services they offer local businesses.** 13

14 **Investigate the importance of negotiation in business in general and specifically in supply chain management. Prepare a "how-to" demonstration that includes preparations for negotiations, effective negotiation strategies and tactics, developing a negotiation plan that provides benefits to all involved parties, and selecting a business partner that is like-minded in mission.** 14

Regulations

15 **Create a chart listing international, national, state, and local agencies and organizations that regulate some part of the supply chain and the role played by each. Indicate what areas each agency has jurisdiction over. Example agencies include:** 15

- a U.S. Department of Transportation (DOT), 15.A
- b U. S. Customs and Border Protection (CBP), 15.B
- c Homeland Security (HS), 15.C
- d Environmental Protection Agency (EPA), 15.D
- e Occupational Safety and Health Administration (OSHA), 15.E
- f World Shipping Council, 15.F
- g United Nations, including the International Maritime Organization (IMO), 15.G
- h International Organization for Standardization (ISO), 15.H
- i World Customs Organization (WCO), 15.I
- j city and county laws and ordinances, and 15.J
- k state laws. 15.K

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16 **Analyze the impact of international trade agreements on logistics decisions.** 16

17 **Research International Commercial Terms, also known as INCOTERMS®, developed by the International Chamber of Commerce. Create a table or chart to indicate what each of the three letter standard terms means by delineating the respective obligations of the buyer and seller involved in the delivery of goods from the Seller to the Buyer.** 17

Problem Solving

18 **Solve given problems related to transportation of goods and warehousing by evaluating data and presenting solutions or recommending appropriate decisions. Use spreadsheets and/or other software in calculating "what if" scenarios as appropriate. Types of problems should include scenarios such as:** 18

- a selecting routes and modes of transportation between a distribution center and various markets; 18.A
- b calculating the carbon footprint of similar products shipped from different locations and by different modes of transportation; 18.B
- c optimizing warehouse usage; 18.C
- d maximizing trailers for shipping 18.D
- e comparing offsite vs. onsite warehousing 18.E
- f planning for the moving and handling of hazardous goods; 18.F
- g analyzing the impact of natural disasters on supply chain; 18.G
  - 1 forecasting potential threats related to the geography of a company's supply base; 18.G.1
  - 2 designing of contingency plans in times of natural disasters; and 18.G.2
- h developing strategies for working toward the sustainable use of specific materials and modes of transportation. 18.H

19 **Given a selected case, plan for the storage, movement, and delivery of a specified good or service from one location to another. Using logistics data and applying concepts learned in the course, justify the tradeoff decisions (i.e., mode of transport, holding time, delivery constraints such as fuel cost) in the proposed plan, coherently explaining the logic behind each choice as if presenting to a senior manager. For example, outline the plan for fulfilling an order for a personal computer by a fixed date and transporting it through customs to a purchaser in a foreign country.** 19

Trends

20 **Analyze case studies of the logistics operations of various retail companies to see how they plan for and adjust their operations to remain competitive with companies such as Amazon, WalMart, and Kroger.** 20

21 **Using websites and journals from professional organizations related to transportation, distribution, and logistics, identify five trends that are impacting local, regional, national, and international supply chains. Trends could include such factors as rising fuel costs, movements toward fully automated warehouses,**

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and greening the supply chain. Summarize research in an informative essay that includes: 21

a description of the trend and explanation of how it affects the supply chain, 21.A

b examples of how various businesses are responding to the trend, and 21.B

c an outline of the information that must be considered before a business implements any change, including a formal cost-benefit analysis. 21.C

22 **Describe how eCommerce has changed traditional supply chains. Analyze how continual changes in technology have affected the delivery of goods and services in both the businessto-business and business-to-consumer segments of the supply chain.** 22

23 **Analyze automation processes that have replaced the work of laborers within nodes of supply chain channels. Compile an exhaustive list of the costs and benefits associated with the use of human laborers versus automation systems, specifically in warehouses. Debate the ramifications of each to efficiency, productivity and local economic indicators. Determine when it becomes advantageous to replace laborers with machines.** 23

Project

24 **Utilizing resources such as Tennessee Economic and Community Development, Tennessee Department of Transportation, maps of Tennessee, and other sources, create a written brief and formal presentation complete with visuals and professionally designed promotional handouts analyzing the geographical and infrastructural benefits to the state of Tennessee. Include pros and cons of businesses locating in close proximity to one another forming industrial parks and how this affects the supply chain channels within the state. Promote Tennessee as a supply chain hub for the United States.** 24