

UNIVERSITY OF PETROLEUM
AND ENERGY STUDIES



End Semester Examination, May 2017

Program/course: BBA (Logistics Management)
Subject: Materials Management (Program Elective)
Code : BBCG 135
No. of page/s: 5

Semester : IV
Max. Marks : 100
Duration : 3 Hrs.

Section – A

[20 Qs x 1Mark = 20 Marks]

1. Answer all questions.

- i. The purchase of plant and machinery as capacity augmentation differs from routine purchase practices. [True / False]
- ii. Purchase of capacity elements of a factory is decided by : [Select the right answer(s)]
 - a) Materials Manager
 - b) Production Manager
 - c) Finance Manager
 - d) Engineering & Design Manager
- iii. The make or buy decision of capacity requirements largely depends on: [Select tight answer.]
 - a) Negotiation time
 - b) Source of availability
 - c) Amount of investment
 - d) All
- iv. Evaluation of capacity alternatives in the bidding process includes: [Select the right answer(s)]
 - a) Operation characteristics
 - b) Engineering & Design characteristics
 - c) Rate of obsolescence
 - d) Economic analysis of investment
- v. Which of the following is not a method of economic analysis for investment into capacity building? [Select the right answer(s)]
 - a) Payback period method
 - b) ROI method
 - c) IRR method
 - d) None
- vi. A dedicated computer hardware and software system, known as _____ allows two companies conduct electronic transactions with each other. [Fill in the blank.]
- vii. Capital equipment is procured on lease basis due to: [write the right choice(s)]
 - a) Short-period requirement
 - b) Non-availability of fund
 - c) Urgent requirement
 - d) Procedural delay in releasing the fund
- viii. Any item that is carried in inventory is a _____. [Fill in the blank.]
- ix. An advantage of centralized purchasing departments in organizations is that they are very responsive to the needs of operations. [True / False]
- x. Distribution resource planning is the planning for the replenishment of regional warehouse inventories. [True / False]

Answer the following short questions with reference to the SAP MM module:

- xi. _____ is a wider range of material type. [Fill in the blank]
- xii. When we create material master record every material is recognized by a number, that number will be unique and known as _____. [Fill in the blank]
- xiii. _____ is main source of material specific data in an enterprise. [Fill in the blank]
- xiv. The four types of procurement maintained in the purchase info record are – Standard, Subcontracting, pipeline and _____. [Fill in the blank]
- xv. _____ is the phase in which the material is received by the ordering party and the condition and quality are verified. [Fill in the blank]
- xvi. _____ is the formal and final confirmation of the requirements which is sent to vendor to supply material or services. [Fill in the blank]
- xvii. _____ is a reply by a vendor in response to RFQ. [Fill in the blank]
- xviii. Vendor database management is a module of MMIS. [True / False]
- xix. Can an MMIS use JIT approach to take a reordering decision when supplies' volume goes low? [No / Yes]
- xx. Sometimes, stock need to be blocked in advance so that it can be available at a particular point of time. This is known as _____. [Fill in the blank]

Section – B

Answer any four questions.

[4 Qs x 5 Marks = 20 Marks]

- 2. What are the primary and secondary objectives of materials management? List and explain.
- 3. Explain how 'make or buy' decisions are wisely done in materials planning stage.
- 4. Answer both parts of the question.
 - a. Prepare the annual materials budget for the 'print and stationary shop' of UPES_Kandoli Campus. Mention the assumptions taken.
 - b. What is 'Bill of Materials'? Explain with an example, how it differs from the explosion chart.
- 5. Differentiate the perspective sourcing from mandatory sourcing.
- 6. Explain the role of MMIS in fulfilling the basic and integrated objectives of materials management.

Section – CAnswer any three questions.**[3 Qs x 10 Marks = 30 Marks]**

7. What are the functions of materials management? Explain in detailed.
8. Answer both parts of the question.
- Explain the thin-line differences between ‘stockless inventory’, ‘zero inventory’ and ‘vendor managed inventory’.
 - A manufacturer has to supply his customers 3600 units of products per year. Shortages are not permitted. Inventory carrying costs Rs. 1.20 per unit per annum. The ordering cost per order is Rs. 80. Find the following
 - EOQ
 - Optimum no. of orders per annum
 - Average annual inventory cost (minimum)
 - Optimum period of supply per optimum order
9. What are the factors considered while locating a warehouse? Explain different techniques used for selecting a location.
10. Answer both parts of the question.
- Explain how supplier selection done through the stages of – sourcing, developing, and evaluating.
 - The following information is available on 3 vendors: A, B and C. Using the data below, determine the best source of supply under weighed-point method and substantiate your solution.
 Vendor A: Delivered 56 lots; 3 were rejected; 2 were not according to the schedule.
 Vendor B: Supplied 38 lots; 2 were rejected; 3 were late.
 Vendor C: Finished 42 lots; 4 were defective; 5 were delayed deliveries.
 Given ratings are: 40 weights for quality and 30 weights for service.
11. The director of materials management at AC Corp. is reviewing next year’s plan for the supply of component currently purchased from Sapphire Ltd (Canada). The director received the supply offer from another manufacturer, Chicago-West. Then, he wanted to review the ‘make-or-buy’ decision for the component. The director’s purchasing-analysis staff has developed the following estimates:

Source	Description of Cost Elements	Annual Fixed Costs	Variable Cost per Unit
MAKE in-house at ACC	Annual tooling	\$45,000	
	Inspection and rework		\$00.95
	Shipping		\$00.75
	Production costs		\$20.50
BUY from Sapphire (Canada)	Annual tooling	\$20,000	
	Inspection and rework		\$00.26
	Shipping		\$03.95
	Purchase price		\$21.88
BUY from Chicago-West	Annual tooling	\$55,000	
	Inspection and rework		\$02.05
	Shipping		\$01.55
	Purchase price		\$18.59

The purchasing-analysis group has learned that ACC will need about 50,000 components next year.

- Which supply source provides the least cost for the next year?
- How many components would have to be bought next year for each of the sources to be the least-cost source?

Section – D

[Case Study Questions = 30 Marks]

12. Study the CASE and answer all the questions with proper logical analysis and justifications.

CASE STUDY: VOLVO-SUNWIND

Volvo is a Swedish multinational which manufactures cars and trucks. Sunwind is one of its suppliers, which supplies floor panels for the station wagon models of Volvo's 240 and 740 series of cars to Volvo's Torslanda plant in Sweden. Sunwind is a company of some 200 employees, and its product range consists of different interior fittings for the automobile and airplane industries. Volvo has been one of Sunwind's main customers since the start.

In the early 1950s, Volvo had severe problems with the quality of the floor panels in their station wagon model *Volvo Deuett*. One of the Volvo's employees knew two guitar craftsmen who had their workshop located in the vicinity of Volvo's Torslanda plant. These craftsmen were able to solve Volvo's problems with the help of a different milling technique and a couple of other process improvements. Volvo invited them to continue the relationship, and provided capital to the two entrepreneurs, who left the music business to join the automobile industry. Thus Sunwind was born.

At Sunwind's Save plant, some 100 km from Torslanda, the production rate is 2000 floor panels per week for the 740 series and 1000 for the 240 series. The assembly of panels is done in two assembly lines, one for each model. The panels are produced in eight different variants per line (two different covering materials in four colors). The role of Sunwind was like a subcontractor, as Volvo developed the prototypes and supplied the tools and raw materials to Sunwind. The completed floors were delivered to Volvo in different containers, each part in its own container. The product being bulky and color-dependent, a large storage space, both adjacent to the assembly line at Volvo as well as in Sunwind's own operations, was required. Volvo bought and collected the goods from the Save factory twice a week.

In order to gain cost benefit for both the parties, Volvo and Sunwind initiated JIT-like delivery schedule. The role of Sunwind has changed into being more of a partner than a subcontractor with an increased responsibility for the development and manufacture of their products to meet Volvo's specifications. The floors are now being delivered from Sunwind in sequence with the demand of the final assembly line of the Volvo and transported in custom-built containers in Sunwind's own trucks, which is unloaded less than 100 yards from the assembly point. Each container holds the complete set of floors for eight vehicles, stacked on one another in the same sequence as the vehicles that arrive at the assembly point in Torslanda, where the floors are assembled into the cars.

Every four weeks, a delivery schedule is made by Volvo, containing an estimate of the floor requirements of different colors, grades, etc. According to these forecasts, Sunwind orders their raw materials such as carpet materials and plywood, which are delivered to its plant in Hogsater some 200 km north of Save. Sunwind has reduced the number of suppliers and now relies up to a great extent on single sourcing. Due to economic reasons, the quantity bought at each shipment is the same – one truck load – but the mix of colors is pegged more accurately to the Volvo demand forecast. Volvo sends a specified order to Sunwind approximately ten days ahead of the production schedule. At Hogsater, work begins by milling out the plywood parts and cutting the covering materials to shape. Deliveries are made out of forecasts once a day to Sunwind's Save plant. By reducing set-up times, Sunwind had been able to transfer inventory backwards and, thus save on the inventory costs.

At Sunwind, the final assembly of floors does not take place until the complete delivery sequence is known, e.g., when a certain vehicle has passed through the paints works at Volvo, passed the subsequent quality controls, and reached the next assembly station. Each time a vehicle enters this point of the assembly line, a message is sent to the Save plant with a full assembly specification for the complete floor. The printer is actually standing in the assembly hall in Save and approximately once a minute an order is received. When assembly starts at Sunwind, the car in the Volvo plant in Torslanda is seven hours away from the assembly point where the floor will be installed into the car. The deliveries of the floor panels are made at the Torslanda plant four times a day. When the shipment arrives at the assembly building, it is only one hour until the first floor will be assembled into the car from the unloading dock, one container at a time is fetched by a forklift operator and delivered to the assembly point (Karlsson & Norr, 1994).

Questions:

- a. Volvo has another assembly plant in Kalmar at a distance of some 450 km from Sunwind's Save plant. Can Sunwind be used by Volvo to deliver floors to its Kalmar plant according to JIT schedules as it does for its Torslanda plant?
- b. Are these positive results due to Sunwind transferring the problems on hand to their own suppliers?
- c. Summarize the pros and cons of the JIT system from the point of view of Volvo and that of Sunwind.