KUMARAGURU
college of technology
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Register Number: ……

MBA DEGREE EXAMINATIONS:MAY 2015

(Regulation 2012)

Fourth Semester

MASTER OF BUSINESS ADMINISTRATION

MBA661**:** Facilities Planning and Design

Time: Three Hours **Maximum Marks: 100**

PART A (1 x 20 = 20 Marks)

1. **Case Study:- Plant Layout Design**

Alpha, a four –wheeler company is a leading company in the south manufacturing chassis of bus / lorry in 600 acres of land with 3000 employees. The annual production capacity of the plant is 60,000 chassis. The market research department projected its future demand to be 2.5 times the present capacity of the plant. So the company took a decision to set up another plant in the north with a capacity of 75,000 chassis. It is in the process of procurement of the required land of 1000 acres. The projected number of employees in the new factory would be 4000.

The productivity of any company mainly depends on the type of layout that is used to carry out the activities to produce the product. So, the industrial engineering department of the existing company is given the task of designing the right type of layout for the new company.

All the sections of the automobile company will not have the same type of layout. The final assembly of the chassis is done on a powered conveyor belt. This part of the company uses product layout which assembles the necessary subassemblies and components to form a full chassis.

Other sections of the company are engine assembly, crank case production, cylinder production, cylinder head production, piston production, connecting rod production and gear production (about 40 different gears). Other items and subassemblies that are subcontracted include radiator, fuel pump, fuel injections system (components), cams, gearbox, clutch plate, transmission system (tie rod, gears, axles etc.), wheels and braking system, tubes and tyres, horn and electrical system including batteries, bulbs , doors, glasses, body frame and panel for driver cabin, bearings, nuts and bolts, cotter pins and bumpers.

Now the company is left with the option of process layout / product layout / group technology layout / fixed position layout for the sections listed in this case.

Questions:

a) As a consultant to the company, critically examine the material handling activities in each section and accordingly design a suitable layout. (10)

b) Design the overall layout of the company which shows the positioning of different sections in relation to the chassis assembly line. (10)

Answer all the Questions:-

PART B (10 x 2 = 20 Marks)

2. List the importance of plant location.
3. Define facility layout.
4. Define the objectives of a good plant layout.
5. Define cellular layout.
6. What is CRAFT?
7. Define assembly line balancing.
8. List the principles of material handling.
9. Explain the advantages of using ASRS in an industry.
10. Define unit load concept.
11. Explain measuring and benchmarking service performance.

PART C (4 x 15 = 60 Marks)

12. a) Explain the qualitative and quantitative factors that influence plant location with examples.

(OR)

b) Explain the types of layout indicating their merits, demerits and applications with neat sketches.

13. a) Choose a few fixed path and variable path material handling equipments and evaluate their applications.

(OR)

b) Analyse the production flow analysis with a diagram for a product of your choice.

14. a) (i) ABC Limited is evaluating 3 cities for a new plant designed to produce a product which will sell for Rs.170/= each. The economic portion of a plant location study shows the following cost and market data: (10)

Cost data	City A	City B	City C
Fixed costs per year	Rs.3,00,000	Rs.2,00,000	Rs.1,50,000
Variable cost per unit	Rs.30	Rs.45	Rs.65

Market data	
Volume	Probability
4500	0.1
5500	0.3
6500	0.6

Evaluate the city to be selected based on the given volume estimate.

(ii) Determine the break even volume for the city selected. (5)

(OR)

b) Determine the balance delay when the required production in a shift of 8hours is 80 units.

Activity	A	B	C	D	E	F	G	H
Preceding activity	----	----	A	A	B,C	D	E	F
Duration in minutes	5	2	3	3	6	4	5	1

15. a) Explain the important factors to be considered for planning the service facilities of a hotel industry.

(OR)

b) Design the service facilities for a pump manufacturing unit with the help of a diagram.

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