

INTERMEDIATE EXAMINATION

June 2015

I-P2(OMS)

Syllabus 2008

Operation Management and Information Systems

Time Allowed: 3 Hours

Full Marks: 100

The figures in the margin on the right side indicate full marks.

Operation Management

Answer *Question No. 1* which is compulsory and *any two* questions from the rest.

1. (a) Choose the most correct alternative: 1×5
- (i) $(\text{Total station time/cycle time} \times \text{Number of work stations}) \times 100$ is know as
(A) Line efficiency (B) Line smoothness (C) Balance delay of line (D) Station efficiency
- (ii) The most powerful and popular method for solving linear programming problem is
(A) Simplex method (B) Graphical method (C) Transportation method (D) Assignment method
- (iii) Most suitable layout for continuous production is
(A) Line layout (B) Process layout (C) Group technology (D) Matrix layout
- (iv) The card, which is prepared by dispatching department to book the labour involved in each operation
(A) Labour card (B) Wage card (C) Credit card (D) Job card
- (v) _____ are designed to take drills up to about 8/16 inch in diameter.
(A) Sensitive Drilling Machine (B) Pillar Drilling Machine (C) Radial Drilling Machine
(D) Multiple Spindle Drilling Machine
- (b) Put an appropriate word in blank position: 1×5
- (i) _____ systems replace human beings to read data from products and documents and interpret the data.
- (ii) The user's expectation method of _____ provides a subjective feel of the market.
- (iii) _____ control is typically found wherever a particular bottleneck machine exist in the process of manufacturing.
- (iv) General purpose machines are less prone to _____ .
- (v) Turning means producing _____ surface on a job.

(c) Indicate whether the following are TRUE or FALSE.

1×4

- (i) A Jig is an appliance which holds the work when it is machined.
- (ii) Activity Sampling is not a technique of Job Evaluation.
- (iii) A good plant layout is one of the factors in effective utilisation of labour.
- (iv) Labour-intensive technology does not involve investment in huge capital intensive system.

2. (a) Kindly mention the various plant layout principles.

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(b) State the Principal Parts of a Lathe.

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(c) A company is considering the expansion of a manufacturing process by adding more 1 Ton capacity furnaces. Each batch (1ton) must undergo 30 minutes of furnace time, including load and unload operations. However the furnace is used only 80% of the time due to power restriction in other parts of the system. The required output for the new layout is to be 16 tons/shift (8 hours). Plant (system) efficiency is estimated at 50% of system capacity.

(i) Determine system capacity and the number of furnaces required.

(ii) Estimate the percentage of time, the furnaces will be idle.

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(d) The annual hand-made furniture show and sales occurs next month and the school of vocational studies is planning to make furniture for the sale. There are three wood working classes –I year, II year, III year at the school and they have decided to make three styles of chairs A, B and C. Each chair must receive work in each class and the time in hours for each chair in each class is given.

Chair	I year	II year	III year
A	2	4	3
B	3	3	2
C	2	1	4

In the next month there will be 120 hours available in first year class, 160 hours in the second year class and 100 hours in third year class to produce chairs. The teacher of the wood working class feels that a maximum of 40 chairs can be sold at the show. The teacher has determined that the profit from each type of chair will be A- ₹ 40, B- ₹ 35 and C- ₹ 30.

Formulate a linear programming model to determine how many chairs should be produced to maximise profit.

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