Reg.No.									

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

IV SEMESTER B.S. DEGREE EXAMINATION -APRIL / MAY 2017

SUBJECT: INTRODUCTION TO INDUSTRIAL ENGINEERING (IE 241)

(BRANCH: INDUSTRIAL PRODUCTION ENGINEERING)

Thursday, 27 April 2017

Time: 3 Hours **Max. Marks: 100**

- ✓ **Answer ANY FIVE full Questions.**
- ✓ **Missing data, if any, may be suitably assumed.**
- ✓ **Neat sketches should accompany wherever necessary.**

1 A. What are the factors affecting plant location decisions.

1 B. What are the functions of dispatching? Explain the various documents raised.

1 C. Explain how Computer Simulation helps in the Organizational Research?

[8+6+6]

2 A. Briefly explain the Chronology of Industrial Engineering.

2 B. Determine the Personal time, Fatigue, and Delay (PFD) allowance to be used for computing time standards in the following situation. Second shift workers punch in at 3:30 p.m. and punch out at 12:00 midnight. They are provided one-half hour for supper at 6:00 p.m., which is not counted as part of the 8 hour shift. For purposes of determining the allowance, 35 minutes of break time (personal time and fatigue) are allowed each worker. In addition, the plant allows 40 min for lost time due to unavoidable delays. What should be the PFD allowance factor?

2 C. Discuss the objectives of Product Design? **[6+8+6]**

3 A. Describe the following types of production systems so as to clearly bring out their differences: (a) Job shop production (b) Batch production (c) Cellular manufacturing.

3 B. Define production planning and control. List various activities of PPC.

3 C. A certain product has a specification of 120 ±5. At present the estimated process average is 120 and $\sigma^1 = 1.5$

(a) Compute the $3\sigma^1$ limits for X bar, R chart based on a subgroup size of 4 (four).

(b) If there is a shift in the process average by 2%, what percentage of product will fail to meet the specification.

(c) What is the probability of detecting the shift by X bar – chart. **[6+8+6]**

4 A. Define a model of a system and differentiate between Discrete systems Vs Continuous systems.

4 B. What are the benefits expected from an effective layout?

4 C. A company produces dials for a machine. These dials are supposed to have a constant diameter. To check on the production process, the first 4 dials are selected every half hour for 12 hours giving a total of 96 observations. It was found that $\bar{\bar{X}}$ = 51.12 mm and $\bar{r}$ = 0.46 mm. Find the upper and lower control limits.

[6+6+8]

5 A. What types of manufacturing processes are employed for the manufacture of :
(i) Porous metal filters –
(ii) Steel wire –
(iii) Hollow shaped castings –
(iv) Mild steel plates –
(v) Hook attached to a chain for lifting load –

5 B. What is a Time Standard? Explain the functions of time standards.

5 C. List some commonly used forms in dispatching. What do you mean by expediting?

[6+6+8]

6 A. Explain SIMO chart and Activity Relationship Chart with one example for each.

6 B. Explain the factors of Productivity improvements?

6 C. What is meant by performance rating? List the various allowances to be considered while calculating the standard time of job.

[6+6+8]

7 A. What is an outline process chart? Explain the five symbols used in Flow process chart with suitable example.

7 B. Write a short note on Material and Labour factors in the plant layout and explain their significance.

7 C. Explain the steps in methods engineering. **[6+8+6]**

8 A. Explain the customer perception of quality. What are control charts and explain their significance.

8 B What type of layout would be appropriate for a grocery store? Home construction? Electronics assembly? A University?

8 C. Explain the use of p-charts and c-charts. When would you use one rather than the other? Give examples of measurements for both p-charts and c-charts.

[6+8+6]