Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech(CHE)/SEM-2/CHE-12/2012

2012

MANAGEMENT PRINCIPLES

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions taking at least *one* from each Module.

MODULE – I

1. a) Enumerate the five basic schools of management theory.

   b) State the principal focus, contribution of one of the major proponents and criteria of any one school of your choice. 5 + 9

2. a) What do you mean by organizational structure ?

   b) Write technical notes on : Hierarchy-Community Phenotype Model of Organizational Structure.

   c) Discuss Graicunas theory of span of management. 3 + 6 + 5

MODULE – II

3. Here are five jobs each of which must go through the m/cs *A, B, C* in the order $A \rightarrow B \rightarrow C$.

Item	***Processing Time in hrs.***				
Job No. (i)	1	2	3	4	5
Machine *A* (Ai)	5	7	6	9	5
Machine *B* (Bi)	2	1	4	5	3
Machine *C* (Ci)	3	7	5	6	7

Determine the sequence to minimize the total elapsed time to complete the jobs and also the idle times on each m/c.

4. Enumerate any four methods of payment of financial incentives. State their advantages and disadvantages.

MODULE – III

5. a) Justify the following statements :

   i) Quality Circle Meeting is not a replica of Departmental Meeting.

   ii) Financial incentives should not be sanctioned for attending the Quality Circle Meeting.

   b) What is SWOT analysis ? Explain its different steps.

   c) Enumerate the 5-gemba principles.

$(2 \times 2\frac{1}{2}) + (1 + 3) + 5$

6. A Q.C. was formed in a R & D centre dealing with biotechnological processes. In the first meeting an effective brainstorming was conducted and the circle identified a problem pertaining to the same work area. In a next meeting the members identified 20 causes of the selected problem under four sub-heads. Considering yourself to be the leader of the circle present this case study and draw an Ishikawa diagram.

MODULE – IV

7. a) Interpret the patterns of variations on $\bar{X}$ and R chart for the following cases.

   i) Jumps in process level

   ii) High proportion of points near or outside limits.

   b) An automatic continuous blending process needs to be controlled for the acidity of the output measured in pH. The following samples were taken where the process was running smoothly.

Sample No.	*Values of* pH
1	5·32, 5·29, 5·38, 5·28, 5·41
2	5·40, 5·33, 5·37, 5·30, 5·40
3	5·34, 5·27, 5·29,, 5·35, 5·33
4	5·29, 5·32, 5·31, 5·40, 5·39
5	5·31, 5·27, 5·38, 5·36, 5·40
6	5·41, 5·38, 5·33, 5·37, 5·42

Assuming Schewart's theory of control chart, determine the sample and population variance of the data with the help of the following table :

No. of Observation	A_1	A_2	d_2	d_3
2	3·76	1·88	1·13	0·85
5	1·60	0·58	2·33	0·86
10	1·03	0·31	3·08	0·8
15	0·82	0·22	3·47	0·76
20	0·7	0·18	3·74	0·73

(2 × 3) + 8

8. In Vayuputra aircraft's landing gear assembly the defects are detected as given in the table below :

Aircraft Number	*Number of defects*		
	Serious 'A'	*Not so serious 'B'*	*Minor 'C'*
1	------	------	5
2	------	1	4
3	------	1	------
4	1	------	2
5	------	2	1
6	------	------	3
7	------	------	3
8	------	------	9
9	------	1	6
10	------	------	1
11	1	------	3
12	------	------	1
13	------	2	------
14	------	4	2
15	------	------	------
16	------	1	4
17	------	1	6
18	1	1	3
19	------	------	4
20	------	------	2

If the weightages given for the different class of defects are A : 10, B : 5, C : 1, construct appropriate stabilized control chart/charts for quality. 8 + 6