Sri Lanka Institute of Information Technology

B.Sc. Honours Degree in Information Technology

Specialized in Computer Systems and Network Engineering

Final Examination
Year 2, Semester 1 (2018)

IE2090 – Professional Engineering Practices and Industrial Management

Duration: 2 Hours

October 2018

Instructions to Candidates:

- This paper is preceded by 10 minutes reading period. The supervisor will indicate when answering may commence.
- This paper has 4 questions.
- Answer all questions in the booklet given.
- The total marks for the paper is 100.
- This paper contains 6 pages, including the cover page.
- Electronic devices capable of storing and retrieving text, including calculators and mobile phones are not allowed.

Question 01 [25 Marks]

I. List the three main characteristics of an organization. [3 Marks]

II. Taking known organization as an example, explain part I three characteristics. [4 Marks]

III. Sketch the organizational structure of the organization that you have identified in part II as an example. [4 Marks]

IV. "Planning, Organizing, Leading and Controlling (POLC) are the four management function." Eleborate how the managers success depends on these four functions, in the statement. [4 Marks]

V. Discuss how important the "Innovation" for a Manager. [5 Marks]

VI. Use the scenario to answer the following question.

Samith is a graduate of Computer Systems and Network Engineering and he has obtained certain certifications related to computer systems and network administration. He is heading the Information technology service department (ITSD) with the team of 25 people. He is responsible of maintaining current infrastructure and predicting and planning for future demand of the organization. Further he is responsible for embracing new technologies to the company.

Assess Samith as a manager identifying skills that a manager should have. [5 Marks]

Question 02 [20 Marks]

I. Read the scenario to answer the following questions.

You have been assigned as the project manager to handle a project which is conducted by St. Diego Software company. The following scenario will explain the tasks that should be taken in order to complete the project successfully. As the initial step investigation and planning should be done around 15 days, to identify whether the customer requirements are feasible. Once the feasibility analysis is taken care of, the project and manager should arrange a meeting with the customer to discuss regarding the outcome. This task should be completed within 3 days. Once the customer feedback is taken, project team should start the system analysis, production cost analysis and market analysis activities under project analysis process. This should be carried out as three concurrent activities. Each task should be completed within 8, 6, and 7 days respectively. System Modelling (3 days), establish product cost (2 days), and defining the market (4 days) should be carried out after system analysis, production cost analysis, and market analysis process respectively. As soon as the system modelling is completed, Layout concept selection, should be estimated within 2 days. Once the market is defined, finalize the project cost to continue with further activities. Final project cost should be decided within 5 days. As the next step system testing should be carried out for 3 days. In order to start testing process all the previous steps should be completed. Once the testing is over, production should be taken place. After completing the production process within 20 days, start to finalize the project outcome. That should be carried out 5 days.

a. Develop the Work Breakdown Structure (WBS) by clearly mentioning relevant activities. [5 Marks]
b. Build the Critical Path Method (CPM) diagram. Hint: Durations of each task should be clearly mentioned. [8 Marks]
c. Determine the critical path of the project. [2 Marks]

II. Table 01 indicates the available resources for the project.

Table 01: Available Resources

Resource Name	Daily Cost ($)
Monica	300
Jane	200
Philip	175
Tom	200
Newton	225
Thomas	150
Oliver	200
Chandler	200

Following are the capabilities of above resources.

- Monica is the supervisor who looks into the overall project. She is the one who is responsible for the final project outcome. She is also a software developer. There are 2 other software developers namely Oliver and Chandler.
- There are 2 business analysts namely Jane and Philip. Business analyst is responsible of handling customer and the project layout. Business analyst can discuss project requirements with customer under the supervision of the supervisor.
- There are 2 System analysts namely Tom and Newton. System analyst is capable of handling system related tasks.
- Thomas is a tester, He should carry out the testing process with a system analyst.
- Project cost estimation tasks should be carried out under the guidance of the supervisor.

Referring the resource table 01;

a) allocate relevant team members to carry out the project tasks optimally. [6 Marks]

b) Justify the reasons for you resource allocations. [4 Marks]

Question 03 [25 Marks]

I. Explain two differences between a **Project** and a **Process** [4 Marks]

III. " CODEFEST" is the national software competition organized by university of Malabe to enhance the ICT knowledge among school students. List of CODEFEST activities relative to five project management processes. [8 Marks]

IV. Use the details of activities of a project given in the table 02 below and draw a network diagram using AON method. [9 Marks]

Table 02

Activity	Preceding Activity	Duration(weeks)
A	-	2
B	-	2
C	A	1
D	B	4
E	M	3
F	C	6
G	D	1
H	K	3
I	-	3
J	E	5
K	I	2
L	F,G	3
M	-	1
N	H,J	5
O	L	1
P	O,N	4

V. Using backward and forward pass, identify the project duration and critical path. [4 Marks]

Question 04 [25 Marks]

I. Describe the weighed scoring model of decision making. [5 Marks]

II. Company called Digibit has 3 investment plans. As the finance manager of the company you have to select the best investment plan for the company. Following table 03 gives the relevant data. Using NVP analysis, find the best plant for the company. [10 Marks]

Table 03

	Initial investment	Year 01	Year 02	Year 03	Year 04	Year 05	Discounted rate.
Plan A	1000 000	100 000	200 000	400 000	400 000	500 000	10%
Plan B	1200 000	200 000	300 000	400 000	400 000	700 000	9%
Plan C	1500 000	200 000	300 000	400 000	600 000	800 000	8%

III. Project is a team work. Steve is a project manager at company AXB. He was given the project of manufacturing and commercializing their new product of smart mirror. Discuss how he developed his team by elaborating different team building stages. [5 Marks]

IV. Refer to table 04 which contains information of 3 different projects, find the project with the least amount of risk.

Table 04

Project	Initial Investment (SLR) million	Probability of Success	Outcome (SLR) million	
			Failure	Success
A	2.0	65%	- 1.2	10
B	1.8	60%	- 1.5	7
C	2.5	75%	-2.0	8

[5 Marks]

END OF THE PAPER.