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UCSC

UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

BACHELOR OF SCIENCE IN INFORMATION SYSTEMS
BACHELOR OF SCIENCE HONOURS IN INFORMATION SYSTEMS

Second Year Examination – Semester II – 2019

IS2108 – IT Project Management

TWO (2) HOURS

To be completed by the candidate

Examination Index No: .....

Important Instructions to candidates:

1. The medium of instruction and questions is **English**.
2. All questions must be answered in **English.**
3. If a page or a part of this question paper is not printed, please inform the supervisor immediately.
4. Note that questions appear on both sides of the paper. If a page is not printed, please inform the supervisor immediately.
5. Write your index number on each and every page of the answer paper.
6. This paper has **04** questions on **14** pages.
7. Answer **ALL** questions. All questions carry equal marks (**25** marks).
8. Any electronic device capable of storing and retrieving text including electronic dictionaries and mobile phones are **not allowed**.
9. **Non-Programmable** calculators are **allowed**.

For Examiner's use only	
Question No	**Marks**
1	
2	
3	
4	
Total	

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Question 01

a) List down two (02) characteristics of a project.

[2 Marks]

1.

2.

b) Use two (02) examples and briefly describe how software projects differ from other projects.

[4 Marks]

1.

2.

c) Give one (01) example each and briefly describe the following IT project life cycle types.

[6 Marks]

Predictive:

Iterative:

Adaptive:

d) Following table shows the predicted revenues of two projects (Project X and Y) that ABC Pvt Ltd has shortlisted to invest. Initial investment for each project is Rs. 50,000.00.

Year	Project X (Rs.)	Project Y (Rs.)
1	10,000.00	10,000.00
2	40,000.00	50,000.00
3	10,000.00	30,000.00
4	50,000.00	20,000.00

Discount rates of project X and Y are 15% and 20% respectively.

i. Briefly describe the importance of the Net Present Value (NPV) when deciding to invest on a future project.

[2 Marks]

ii. Calculate the total NPV value of project X and Y at the end of four years. You should clearly state the NPV value for each year as well.

[4 Marks]

iii. Calculate the Return on Investment (ROI) of projects X and Y at the end of four years.

[2 Marks]

iv. What is the most suitable project to invest? Explain based on NPV and ROI values of these projects.

[5 Marks]

Question 02

a) Briefly explain two (02) techniques of risk identification that can be used in an IT project.

[2 Marks]

1.

2.

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b) As a project manager you have identified following possible risks in your project:

Risk I: power failures affecting the main server performance
Risk II: currently used technologies not meeting the expected performance criteria
Risk III: high employee turnover

Briefly explain *risk planning and controlling* activities to overcome those risks.

[6 Marks]

Risk I:

Risk II:

Risk III:

c) Following table shows the activities of a project with their time durations and precedents.

Activity	Duration (Weeks)	Precedent Activity
A	2	-
B	3	-
C	4	A
D	4	A, B
E	2	C, D
F	1	D
G	2	E, F
H	2	F

i. What is *a precedent activity*?

[2 Marks]

ii. What are the activities that can be carried out parallelly?

[2 Marks]

iii. Draw the activity on node diagram using the standard 9-partition node convention.
Note: You should complete both forward and backward passes of the diagram.

[6 Marks]

iv. What is the project duration?

[2 Marks]

v. State the critical path and explain the reason for choosing it.

[5 Marks]

Question 03

Assume that you are managing an **organic** type software project which is into seven days of its execution. You are now reviewing the project status with the details given below.

The actual cost of Activity A is Rs. 300,000.00 and that of Activity B is Rs. 200,000.00. The planned values of these activities are Rs. 280,000.00 and Rs. 160,000.00 respectively. The Activity A is 100% complete. However, Activity B is only 75% complete.
(You can make your own assumption on the total activities in this project.)

a) What would be the assumptions you can make to calculate cumulative data on total project activities.

[2 Marks]

b) Calculate Schedule Variance (SV) and Schedule Performance Index (SPI) and explain how likely that the project will/will not finish on time.

[5 Marks]

c) Calculate Cost Variance (CV) and Cost Performance Index (CPI) and explain how the project manager can make a conclusion about the future performance of the project in terms of cost.

[5 Marks]

d) Assume that the size of this **organic** type project has been estimated to be 45,000 lines of source code. Assume that the average salary of a software engineer to be Rs. 25,000/- per month.

i. Using the COCOMO model, determine the effort required to develop this software product.

Hint: COCOMO model equations:

Effort	Development time
2.4 x size $^{1.05}$	2.5(Effort) $^{0.38}$
3.0 x size $^{1.12}$	2.5(Effort) $^{0.35}$
3.6 x size $^{1.20}$	2.5(Effort) $^{0.32}$

[3 Marks]

ii. Calculate the nominal development time in months.

[3 Marks]

iii. Calculate the cost required develop the product.

[3 Marks]

iv. Write down 4 characteristics of an organic type software project.

[4 Marks]

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Question 04

Consider the table 1 and table 2 below that represent the activity schedule and the human resource requirements details of a project respectively.

Table: Activity schedule (duration in days)

Activity	Precedence	Duration (days)	Required HR types
A	-	**2**	**managers and business analysts only**
B	**A**	**1**	**business analysts only**
C	**A**	**2**	**software architects only**
D	**B**	**2**	**programmers only**
E	**C and D**	**2**	**managers and technical writers only**

Table 2: Human resource requirements per day

HR Type	Dates						
	1st	2nd	3rd	4th	5th	6th	7th
Managers	3	3	0	0	0	2	0
Business Analysts	1	1	3	0	0	0	0
Software Architects	0	0	5	3	0	0	0
Programmers	0	0	0	1	2	0	0
Technical Writers	0	0	0	0	0	2	1

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a) Draw the Gantt chart and clearly write on it the human resource requirements per day on an activity by activity basis. E.g., Day 1: Activity A- 4 people

[10 Marks]

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b) Draw the resource histogram.

[8 Marks]

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c) Assume that this company can accommodate only 7 workers on a day. Explain how the company can enforce this requirement by using the resource leveling technique.

[4 Marks]

d) Explain the difference between resource leveling and resource smoothing.

[3 Marks]

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