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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 – 2020/2021

IS2108 – IT Project Management

TWO (2) HOURS

To be completed by the candidate

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Important Instructions to candidates:

1. The medium of instruction and question is **English**. **Write your answers** in **English**.
2. If a page or a part of this question paper is not printed, please inform the supervisor immediately.
3. Note that questions appear on both sides of the paper. If a page is not printed, please inform the supervisor immediately.
4. Write your index number on each and every page of the answer paper.
5. This paper has **4** questions in **16** pages including the cover page.
6. Answer **ALL** questions. All questions carry equal marks (**25** marks).
7. Any electronic device capable of storing and retrieving text including electronic dictionaries and mobile phones are **not allowed**.
8. **Non-Programmable** calculators are **allowed**.

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

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Question 1

(a) Project is a unique process with a set of planned activities. State 5 characteristics of a project. [5 Marks]

(b) Briefly explain how software projects differ from other projects. [4 Marks]

(c) State 3 types of risks that can be involved with a project. [3 Marks]

(d) It is estimated that $500,000 would cost to replace a hardware configuration that is used to develop a software application. There is a 3% chance of a fire. Installing fire alarms at a cost of $5000 would reduce the chance of fire to 2.5%. Calculate the RRL value. [5 Marks]

(e) Calculate the *Expected duration* and *Activity standard duration* for the given situation. (Show the calculations). [8 Marks]

Activity	Optimistic (a)	Most Likely (m)	Pessimistic (b)	Expected duration (t_e)	Activity standard duration (s)
A	3	4	10		
B	2	6	14		
C	4	5	12		
D	6	3	15		

Continued...

Question 2

(a) A high-level assessment of a project is needed to see whether it is worthwhile to proceed with it. The initial investment for Project is $2000. The discount rate for this project is 10%. This project will yield $1000, $1500, and $1000 in the coming three years. Calculate the Net Profit, ROI, NPV, BCR at the end of three years. [12 Marks]

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(b) Following table illustrates activities, their durations, and predecessors of a project. Answer **part (i), (ii)** and **(iii)** based on the information given on the table.

Activity	**Duration**	**Predecessor**
A	3	-
B	8	A
C	5	A
D	3	A
E	6	B
F	3	C
G	4	E, F
H	6	F, D
K	3	G, H

(i) Draw the Activity of Node (AoN) diagram for the given project. [5.5 Marks]

(ii) Calculate the duration of the above project (Use the AoN diagram drawn for part (i) to show how you derived the answer). [5.5 Marks]

(iii) What is the critical path for the above project? [2 Marks]

(i)

Continued...

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(ii)

(iii)

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Question 3

(a)

(i) A module of a pharmacy management system is to be developed and there are two parameters to be considered: the number of inputs given, and the outputs derived from the module to be built. There are two similar projects which were previously developed which can be used to estimate the effort required for the new project.

The new project requires 12 inputs and 14 outputs. A past project *Pharmaco* has 8 inputs and 15 outputs. Another past project *HealthFirst* has 15 inputs and 12 outputs. Find the **Euclidean Distances between the sources and the target.**

The Formula to derive the Euclidean Distance is as follows:

$$Euclidean\ Distance = \sqrt{((target\_parameter_1 - source\_parameter_1)^2 + \ldots\ldots\ldots\ldots (target\_parameter_n - source\_paramater_n)^2)}$$

[6 Marks]

(ii) **Which project is more suitable** to use in the analogy estimation technique for the effort estimation of the new project in **(i)** above? Justify your answer.

[3 Marks]

(b)

(i) A software developing company in Wellawatte has two options to carry out a large software project for a client.

It has been estimated that the software will consist of 20 subsystems each having approximately 15 modules. Each module has been designed to contain approximately 40 lines of source code.
If the effort for the software is given by,

$$\text{Effort} = c \times \text{size}^k$$

Where Size is in kdsi (thousands of delivered source code instructions)
Effort in person months (pm)

Calculate the **effort to develop the software in person months**. Assume that the system is an embedded mode software where $c = 3.6$ and $k = 1.2$.

[5 Marks]

(ii) Calculate the **time needed to complete the above development** at (i). Round off the answer to the nearest whole number.
The formula for calculating the development time ***Tdev*** is:

$$\mathbf{Tdev} = 2.5(Effort)^{0.32}$$

[3 Marks]

(iii) Calculate the amount of money spent on the two options of development below for the whole period in **(ii)** above in LKR. **Identify which option is best to invest on.**

(I) Developing the software by a team in the mother company
(II) Outsourcing the project to its branch in Battaramulla

Assume that the average monthly salary of a software developer in mother company and outsourced company are approximately 55,000 LKR and 42,000 LKR respectively.

[3 Marks]

(iv) State the **most important assumption** you made in calculating the effort and the time incurred on the developments mentioned in (i) above.

[1 Mark]

(v) List **two features of an embedded** type of project in the COCOMO model.

[2 Marks]

(c) The software development project Yathra 2.0 was granted as a contract to TechLion Pvt. Ltd in January 2017. It was planned to be completed with 10 software engineers in 3 years. In 2018, 10 interns were recruited to the company and they were also appointed for Yathra 2.0. This made the total crew appointed for the project to be 20. The whole crew was aware that the initial timeline given for the project completion was 3 years. Since the crew got doubled in the first year, TechLion estimated that they would be able to complete the project one year before the initial timeline. However, this estimation did not work out and the project was completed only on the initial completion date. **State the theory behind this situation and explain** the same.

[2 Marks]

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Question 4

(a) State **three methods of visualizing the progress** of a project that could be used in project monitoring.

[3 Marks]

(b) What are the **three schedules** that should be provided at the end of *resource allocation* of an IT Project?

[3 Marks]

(c)

(i) Draw **two relevant schedules** out of the schedules you mentioned in (a) above for the following project.

Activity	Predecessor	Duration	No. of Labourers
A	-	2	2
B	A	3	4
C	A	2	3
D	B	3	4
E	D	2	2

[8 Marks]

(ii) What is the **total duration** of the project?

[1 Mark]

(d)

(i) State **four reasons** for unnatural project termination.

[4 Marks]

(ii) State **two advantages and two disadvantages** of Fixed Price Contracts.

[4 Marks]

(e) What are the **two inputs** given by the project development team to create an efficient project communication plan?

[2 Marks]

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