To be completed by the candidate

BIT Examination Index No: _____

Important Instructions:

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions is English.
- This paper has **2 questions** on **08 pages**.
- **Answer all questions.** Both questions carry equal marks.
- **Write your answers in English using the space provided in this question paper.**
- Do not tear off any part of this answer book.
- Under no circumstances may this book, used or unused, be removed from the examination hall by a candidate.
- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.
- Non-programmable calculators may be used.

Questions Answered
Indicate by a cross (✗), (e.g. ✖) the numbers of the questions answered.

	Question numbers		
To be completed by the candidate by marking a cross (✗).	**1**	**2**	
To be completed by the examiners:			

(1) Consider the following work breakdown table and the explanatory information given below regarding a project.

Activity code	Activity Name	Time (days)	Immediate Predecessors	Percentage Completed
A	**Requirement gathering**	3		
A.1	Identify stakeholders	1		100%
A.2	Collect requirements	2	A.1	100%
B	**Requirement Analysis**	6		
B.1	Analyze processes	3	A.2	100%
B.2	Analyze data	3	B.1	100%
C	**Designing the system**	13		
C.1	Design processes	3	B.2	50%
C.2	Design data	2	B.2	75%
C.3	Design screens	1	B.2	0%
C.4	Design reports	3	C.1, C.2	0%
C.5	Design the system	4	C.3, C.2	0%

The project was awarded on 1st June 2015 and started on the same day. The three summary tasks are requirement gathering, requirement analysis and designing the system. The first summary task has two individual tasks. Individual task (A.1) takes only 1 day and individual task (A.2) takes 2 days. The second summary task contains 2 individual tasks (B.1 and B.2) where each takes 3 days to complete. To date, the first two summary tasks have been completed. The last summary task is designing the whole system that contains five individual tasks. These five tasks take 3,2,1,3, and 4 days respectively. The percentage of completion of the first two individual tasks (C.1 and C.2) in the last summary task are 50% and 75% respectively. Other individual tasks (C.3, C.4, and C.5) have not been started. The estimated time taken to complete activities, immediate predecessors and percentage of completion by 20th August 2015 are given in the table. There are **no** non-working days.

(a) Draw the axes of the Gantt chart. [5 marks]

(b) Indicate the contract awarding milestone in the Gantt chart. [5 marks]

(c) Draw the requirement analysis summary task. [5 marks]

(d) Draw the individual tasks under the requirement analysis summary task. [6 marks]

(e) Show the percentage of work completed of the individual task C.1. [5 marks]

(f) Mark the dependency between individual task B.2 and C.1. [4 marks]

(g) The requirement analysis summary task was completed on 15th June 2015. Show the actual number of days taken to complete this summary task. [5 marks]

(h) Indicate the delay on the Gantt chart using the standard symbol. [5 marks]

ANSWER IN THIS BOX

ANSWER IN THIS BOX

(i). Name the critical path(s) from the beginning. **[5 marks]**

> ANSWER IN THIS BOX

(j). What is the slack time of the individual activity C.3 ? **[5 marks]**

> ANSWER IN THIS BOX

(2) Nimal's organization was recently awarded a project to develop an information system for a car renting company. Nimal was asked to meet the client, identify the requirement and prepare a cost estimate. The purpose of preparing the cost estimate is to allocate resources, prepare cost budget and control cost involved in carrying out the project.

An extract of the detailed report prepared by Nimal contains the following information:

Item No	Description
1	The car renting company has already purchased 50 tracking devices which cost the car renting company SLR 50,000/= each.
2	Some components of a system previously developed by Nimal's organization can be used in developing the system for the car renting company. It is estimated that the worth of reusable software component is SLR 60,000/=.
3	The car renting company has already paid SLR 100,000.00 to four research students who developed a prototype of the system. This prototype was developed as a proof of concept. Nimal's organization is not going to use this prototype.
4	An existing project manager of Nimal's organization will use 50% of his work time for this new project. His monthly salary is SLR 100,000/=.
5	An assistant manager will help the project manager. Monthly salary of the assistant manager is SLR 60,000/=.
6	It is estimated that the initial project documentations will cost 10% of the entire cost estimate for the project managers. The project documentation will be done by a freelancer.
7	An embedded system programmer whose hourly rate is SLR 2,000/= will be hired. He will work 200 hours for this project.
8	The top management of Nimal's organization has decided to get two estimates for the software development cost. One will be taken from experts. The other one will be taken by analyzing the total number of functional points. If the difference is greater than 20%, the minimum will be taken. Otherwise, the average of the two estimates will be taken. The experts estimate that the system would cost SLR 6,000,000/=. The functional point analysis comes to SLR 8,000,000/=.
9	The system needs four servers estimated at SLR 400,000/= each, based on recent server purchases.
10	The system needs 100 handheld devices with each one costing SLR 10,000/=.
11	Proprietary software for the handheld devices would cost SLR 1,000,000/=. Only this proprietary software supports the handheld devices.
12	The annual subscription fee of the proprietary software for each handheld device is SLR 2,000/=. However, the first year is exempted.
13	It has been decided to use open source software for the servers. A similar proprietary (commercial) software would cost SLR 600,000/=
14	Testing will be estimated as 15% of the total hardware and software cost. The software does not include project management cost.
15	It is expected to train 100 trainees. The cost per trainee per day will be SLR 1,000/=. A session contains 5 training days.
16	It is the practice of Nimal's organization to reserve 20% of the total cost estimate as a reserve for contingencies.

The project is expected to be completed in 6 months.

There are seven (7) project categories. *Project management* category contains items 4 and 5. Item 6 belongs to *project documentation* category. *Software development* category includes item 7 and 8. *Computer hardware* category contains items 9,10,11,12, and 13. *Testing, training, and contingency* categories contain item 14, 15, and 16 respectively. Other items do not belong to any category.

Nimal is a senior software engineer, but he does not have experience in preparing cost estimates. Therefore, Nimal seeks your advice to prepare cost estimates for the project. This cost estimate is only for internal purposes. Nimal's organization requires the final cost estimates according to the following format. You are required to draw a table similar to the given format and calculate the total cost estimate. If an item is not relevant, you are required to write dash (-) in the amount column and briefly mention the reason in the description column.

[Each item carries three (3) marks and the final answer carries two (2) marks. Marks 3 x 16 + 2 = 50]

Item No.	Description	Unit cost/ monthly cost	Number of units/months	Amount	Category total
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
Total					

Item number should be the item number given in the detailed report prepared by Nimal.

ANSWER IN THIS BOX

ANSWER IN THIS BOX

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ANSWER IN THIS BOX

8

*** **END** ***