UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2012/2013 – 2nd Year Examination – Semester 4

IT4204 – IT Project Management
PART 2 - Structured Question Paper

20th July, 2013
(ONE HOUR)

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 **3 questions** and **8 pages**.

- **Answer all questions.** All questions **do not** 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.

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	3	
To be completed by the examiners:				

1) (a) Consider the Table 1 below that gives the cash flow projections of two projects, X and Y. These projects are to be completed in three years.

Year	Project X (Rs)	Project Y (Rs)
0	-200000	-100000
1	50000	50000
2	50000	50000
3	200000	50000

Table 1: Project cash flow projections (Amounts are end of year totals.)

(i) For project Y, the expected cash flow after year 2 is Rs.50,000. Using a discount rate of 10% (which is equal to the existing bank interest rate) compute the net present value (NPV) of **the Year 2 Rs.50,000** cash flow. (Note: Discount Factor $=\frac{1}{(1+R)^T}$ where R=discount rate expressed as a decimal value and T= the number of years into the future)

[3 marks]

ANSWER IN THIS BOX

$$\text{Discount factor} = \frac{1}{(1+0.10)^2} = +\frac{1}{(1.1)^2} = \frac{1}{1.21} = 0.82$$

∴ NPV of the Rs. 50,000 cash flow

= Rs.50,000 × 0.82

= Rs.41,322/=

(ii) Explain how one would use the NPV metric to evaluate the two projects X and Y.

[7 marks]

ANSWER IN THIS BOX

Like we did for (i), the NPV of each yearly cash flow for each project should be computed using

the discount factor for the relevant year. (For year 0, discount factor=1)

Then these individual NPV's should be summed to set the NPV of the net profit of each project.

THE PROJECT WITH A HIGHER NPV IS BETTER

(b) Define *payback period*. How would one use it to evaluate two projects?

[4 marks]

ANSWER IN THIS BOX

Payback period is the amount of time it takes to set back in the form of cash flows, the total money invested in a project. Payback occurs when the net discounted cumulative benefits and costs reach zero.

THE SHORTER THE PAYBACK PERIOD., THE BETTER

(c) Define *return on investment.* How would one use it to evaluate two projects?

[3 marks]

ANSWER IN THIS BOX

Return on Investment = Total discounted benefits- Total discounted costs
    (RoI)   Discounted costs

THE HIGHER THE ROI, THE BETTER

Index No …………………………

2) (a) Read the following:

The task that you have been assigned as the IT manager of your local hospital is to plan and manage the computerization project of its clinic booking system which is at present done manually. The present system causes a lot of inconvenience to patients as they have to come very early in the morning to get an appointment number. The obtained appointment time may be late in the morning or in the afternoon, which means that they have to waste their time in the hospital. Sometimes they may even not get a number which means that their effort was wasted and that they have to come again. With the planned system, the patients would be able to book a clinic appointment from home via the Internet. They will be able to get a printout of their appointment chit which they can use to pay the required fee to the hospital cashier and to get permission to consult a doctor. There are several things that you have to do in the project. Since the hospital does not have computers at present, you have to buy them; the requirement is for two computers: one to be used at the cashier, and the other a web server. The bank has no Internet connection at present and thus, you need to obtain it too. The computers need operating systems, the required programming language compilers and programming tools, and the web-server software. Since there is no IT staff at present, you need to hire the relevant staff too.

Draw the work breakdown table for the above project. (Note: Your table should contain nine (09) first-level tasks, their durations in weeks and their dependencies.)

[11 marks]

ANSWER IN THIS BOX

Tasks	Duration (Weeks)	Dependencies
A. Set computers	4	-
B. Set internet connection	1	A, C
C. Set OS	1	A
D. Set Programming S/W	1	C
E. Set web-server S/W	1	C
F. Design	1	-
G. Code and test	2	F, J
H. Test whole system	1	G, B
I. Install software system	1	A, D, E

(b) Consider the following Work Breakdown Table of a project:

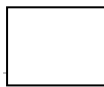| Task	Duration (days)	Dependencies
A	3	-
B	2	A
C	10	-
D	10	C
E	3	B,D

(i) Draw the **activity-on-node** network diagram for the above project. Do the forward pass, the backward pass and write the earliest start, earliest finish, latest start, and latest finish days for each activity. Also mark the **critical path** on your diagram.

[5 marks]

ANSWER IN THIS BOX
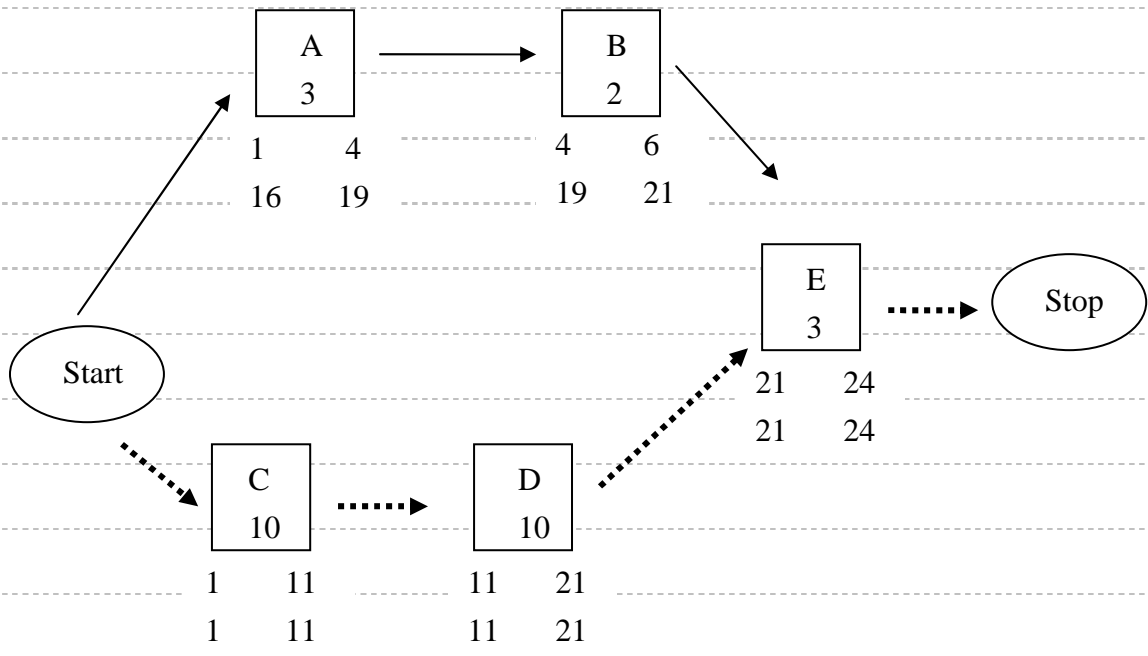
Legend:

ES   EF
LS   LF

▪▪▪▪▪▶ Critical path

(ii) The computer requirements for each of the above project tasks are given below:

Task	No.of computers needed
A	4
B	0
C	4
D	0
E	0

Write down how you can reduce the computer requirement in the above project by *resource levelling*.

[5 marks]

ANSWER IN THIS BOX

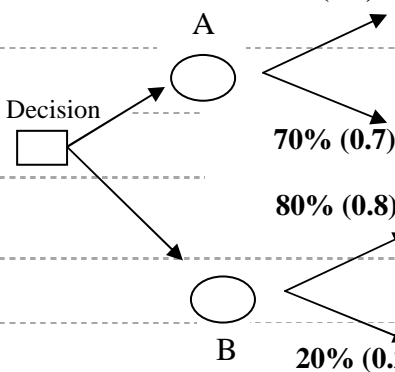If A and C are started on day 1 itself, then there will be a total requirement of 8 computers.

However, A can be delayed until C is finished (on day 2) so that the total computer requirement

For the project is just 4 computers.

3) (a) A company is trying to decide between two projects, Project A and Project B, to select one to send a proposal. The company estimates that there is a 30% probability that they will win the contract for Project A, which is estimated to be worth Rs.400,000 in profits. There is a 70% probability that it will not win the contract for Project A, and the loss is estimated to be Rs. 50,000. The company also estimates that there is a 80% probability that it will get the contract for Project B to earn a profit of Rs.100,000. The loss if it is not awarded the contract for Project B is Rs. 25,000. The company does not have the funds to invest in both these projects. By drawing a decision tree and computing Earned Monetary Value (EMV), decide for which project the company should send a proposal.

[8 marks]

ANSWER IN THIS BOX

Probability		Outcome	=	EMV
Times				

30% (0.3) × Rs: 400,000 = Rs: 120,000

A

Decision

70% (0.7) × - Rs: 50,000 = -Rs: 35,000

80% (0.8) × Rs: 100,000 = Rs: 80,000

B **20% (0.2)** × - Rs: 25,000 = Rs: 5,000

∴ EMV for project A = 120,000 - 35000 = Rs: 85,000

∴ EMV for project B = 80,000 - 5,000 = Rs: 75,000

∴ The company should select project A as it has a higher MV.

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(b) "From a buyer's perspective, the *cost plus percentage of costs (CPPC) contract* is the least desirable type of contract." Why?

[4 marks]

ANSWER IN THIS BOX

In this contract, the buyer pays the supplier for allowable performance costs along with a

Pre-determined percentage based on total costs. It is least desirable to buyer because the supplier

has no incentive to decrease costs. In fact, the supplier may be motivated to increase costs, since

doing. So will actually increase profits based on percentage of costs.

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