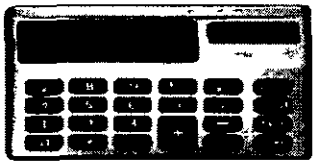
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

INF3708

October/November 2012

SOFTWARE PROJECT MANAGEMENT

Duration 2 Hours

80 Marks

EXAMINATION PANEL AS APPOINTED BY THE DEPARTMENT.

Use of a non-programmable pocket calculator is permissible.

Closed book examination.

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue.

INSTRUCTIONS

- **This paper consists of 7 pages.**
- Non-programmable calculators may be used
- Show all calculations.
- Round off all your calculations to two decimal places.
- Answer ALL the questions

GOOD LUCK!!

Select the appropriate answer: Write only the appropriate letter next to the question number in your answer book.

1.1	A ____is said to be *"A specific plan or design" or "A planned undertaking"* A. System. B. Scope. C. Project. D. Software. E. Management
1.2	When producing a system in a project, different models can be chosen. The following are advantages of one of the process models: i. Large projects may benefit from the limited iteration process allowed ii. Logical flow aids in understanding iii. Sequential project processes are easier to plan and implement iv. Allows project completion times to be forecast with a relative degree of accuracy v. It is relatively simple and easy to understand vi. Enables allocation of tasks within a phase vii. The progress can be evaluated at the end of each phase Which of the process model has the above advantages? A. Waterfall model. B. Spiral model. C. Rapid Application Development (RAD). D. Component-Based Development (CBD). E. "b" Model
1.3	According to Hughes and Cotterell, methods and plans differ in the following way: A. Methods are normally based on plans. B. Methods relate to activities in general and plans relate to real activities C. Plans are usually based on initial activities. D. Plans relate to activities in general and methods relate to real activities. E. A & B.
1.4	____, also known as accounting rate of return, provides a way of comparing the net profitability to the investment required. A. PERT. B Return On Investment (ROI). C. Payback period. D. Net Present Value (NPV). E. CPM.
1 5	Prototypes can be used to eliminate risk and facilitate communication by: 1) Specific assumptions, dependencies or concepts are tested thus resulting in a better understanding of the system. 2) Encourage end-user participation during all stages of development thereby largely reducing product uncertainty. 3) The systems development process becomes clear to all stakeholders

	and tangible deliverables are produced on a continuing basis allowing for regular end-user assessment and testing. 4) The iterative approach may identify possible risk areas early in the life cycle that will alert the project manager to apply risk management criteria to reduce the possible influence thereof on the project Which of the above statement(s) is/are true? A. 1, 2 and 4 only. B. 2 and 3 only. C. 2, 3, and 4 only. D. 1 and 3 only. E. 1, 2, 3, and 4.

Briefly explain what a project manager should NOT do when a project will not meet the target date. (2)

The cash flows of three different Projects A, B and C is given in the table below (in ZAR, South African rand, R):

Year	Project A	Project B	Project C
0	- R 175 000	- R 150 000	- R 300 000
1	+ R 15 000	+ R 5 000	+ R 30 000
2	+ R 20 000	+ R 15 000	+ R 30 000
3	+ R 50 000	+ R 20 000	+ R 50 000
4	+ R 50 000	+ R 30 000	+ R 120 000
5	+ R 50 000	+ R 60 000	+ R 120 000
6	+ R 50 000	+ R 90 000	+ R 120 000

Table 3.1: *Table of cash flows for Project A, B and C*

Based on the above table, answer the following questions

3.1 Calculate the **net profit** of each project. (3)

3.2 Based on your answer to Question 3.1, identify which project you would select to implement. Motivate your answer. (1)

3.3 Re-evaluate all the projects using the **shortest payback** method to identify which project you would now select for development, based on the shortest payback period.

Justify your answer by referring to the projects' payback periods and possible profits in the payback year. (4)

3.4 Calculate the **return on investment** *(ROI)* of each of the projects given in Table 3.1. (6)

3.5 Based on your calculation of the ROI of each project in Question 3.4, identify which project you would select to implement. (1)

3.6 Assume a *discount rate* of 10%. Calculate the *Net Present Value (NPV)* of the each project. Use the 10% discount rate from Table 3.2 given. (6)

Year	Discount factor at 10%
0	1.000
1	0 9091
2	0 8264
3	0 7513
4	0.6830
5	0.6209
6	0.5645

Table 3.2: *Table for Question 3 6*

3.7 Which is the best project to implement and why? (1)

4.1 Consider the following list of tasks with dependencies and estimated durations reflected in table 4.1. Draw a CPM network (activity-on-arrow diagram) to illustrate the interaction of activities. Include all the values in the nodes. (12)

Activity	Precedents	Estimated duration (weeks)
A	None	5
B	None	9
C	None	11
D	A	8
E	B	5
F	B	12
G	C	10
H	G	5
I	D,E	11
J	F,G	4
K	G	4

Table 4.1 *Table for Question 4.1*

4.2 Write down the critical path(s) using the letters of the tasks and calculate and write down the duration of the project. How many paths are there in total? Identify them all and write them down. (3)

4.3 Assuming that a change on activity duration is possible, what will the effect on the project be if the duration of activity A changes to 12 weeks? (1)

In the PERT network illustrated in the figure below, the target date for the completion of the project is 15 weeks.

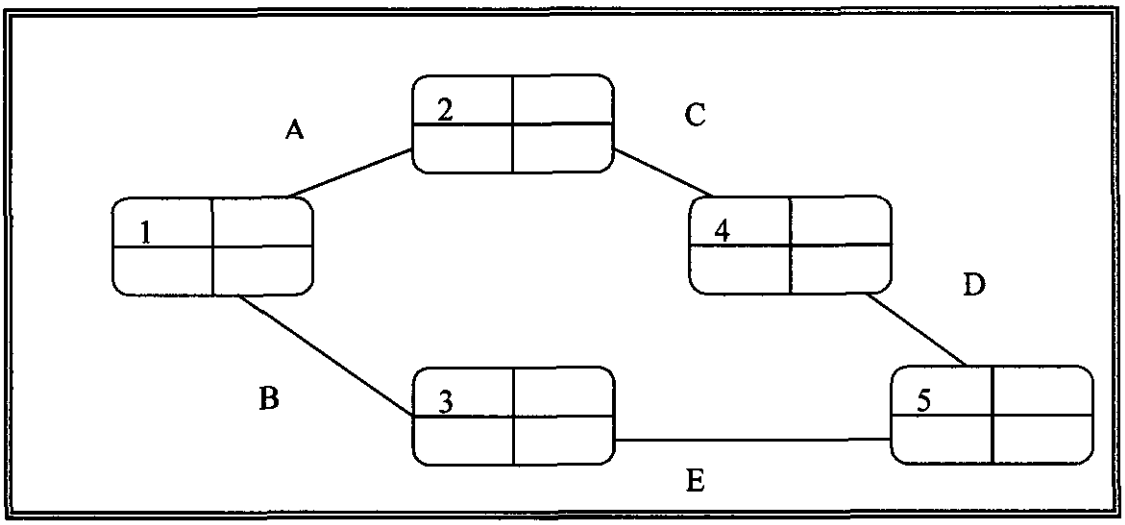


Figure 5.1: *PERT network diagram for Question 5*

Activity	Optimistic (a)	Most Likely (m)	Pessimistic (b)	Expected (t_e)	Standard Deviation (s)
A	4	6	8		
B	1	4	5		
C	2	3	5		
D	2	5	6		
E	3	4	5		

Table 5.1: *Values for the PERT network for Question 5*

Use the table and the figure above to calculate the following:

5.1 Calculate the Expected (t_e) values and Standard Deviation (s) and indicate the (t_e) and (s) values on the diagram. (10)

5.2 Calculate the Z value on the last event. (2)

5.3 According to Figure 5.2 below, what is the probability of not meeting the target date? (1)

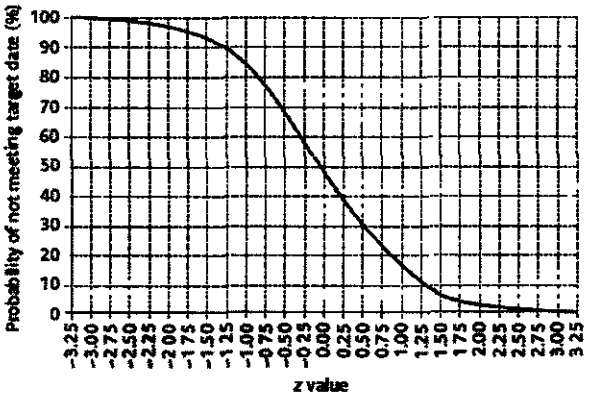


Figure 5.2: *for question 5 3*

6.1 Below is partial precedence network for an IT project. Specific individuals have not been allocated to activities yet, but all the activities will be carried out by 'standard' analysts or software developers.

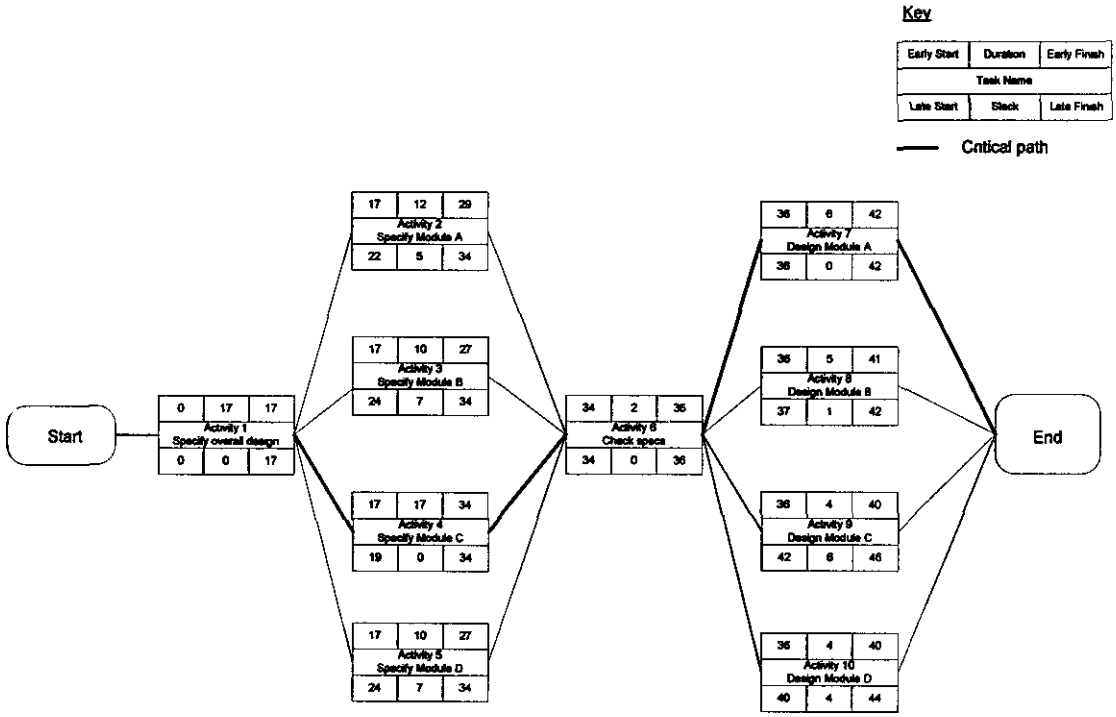


Figure 6: *Precedence Network diagram for question 6*

Draw up a Gantt chart and resource histogram for the information given in the precedence network above (10)

7.1 Sipho is the project leader and his duty is to make sure the project is finished in time. The other members and their job specifics are:

Nomsa – Analyse existing systems (2 weeks)
Bennie – Obtain user requirements (3 weeks
Maggie – Plan office layout (3½ weeks)
Alice – Finalise office layout (4 weeks)
Arthur – Issue tender (4½ weeks)

(Note: the weeks in brackets denote the scheduled time within which each person's part of the project is to be completed. The longest time, i.e. 4½ weeks is the scheduled time for the completion of the whole project).

After the first week Nomsa is delayed by a week, but she finished by the end of the 3rd week By the end of the 4th week Bennie has finished but Maggie was delayed for a week. This was the last delay in the project.

Name and describe three ways that a manager can use to visualise this data. Present this data visually in all the three ways. Accept that each activity, allocated to a specific person, starts at the same time. (12)

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