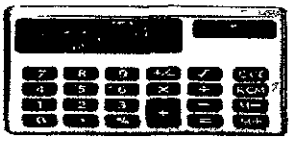
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

INF3708

May/June 2016

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

EXAMINATION PANEL

First Examiner PROF ERNEST MNKANDLA
Second Examiner MR MOLEFE MALOMA
External Examiner MR MARC LONFO FOTIO
Moderator MR ELISHA OCHOLA

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!!

QUESTION 1 [5]

Write down the question number and the corresponding letter of the correct answer in your examination book. (For example 1.1. 4 where 1.1 is the question and 4 the correct answer.)

1.1 The rapid application development model is:

1 Another name for component-based development
2. A useful approach when a customer cannot define requirements clearly
3. A high speed adaptation of the linear sequential model
4. All of the above
5 None of the above

1.2 The spiral model of software development:

1 Ends with the delivery of the software product
2 Is more chaotic than the incremental model.
3. Includes project risks evaluation during each iteration
4 All of the above
5 None of the above

1.3 Within the Project Execution activity, project management scope certainly also encompasses the systems development life cycle as follows:

i Systems Planning
ii Systems/Requirements Analysis
iii Systems Design
iv Systems Implementation
v Systems Maintenance and Support

Which of the above statements are true?

1 i and v only
2 i, iii, and v only.
3 ii and iv only
4 iv and v only
5 i, ii, iii, iv, and v. (All the five statements are true)

1.4 Similarities between General Project Management and Software Project Management in terms of the fundamental concepts include:

i. Scope
ii Time and deadlines
iii Cost / budget
iv Human resources

v Quality control
vi Communication
vii Setting and meeting objectives
viii Requires a feasibility study and planning

Which of the below combination is true?

1 All the eight statements are true
2 i, iii, v, and viii only
3 ii, iv, vi, and vii only
4 i, ii, iii, and viii only
5 i, ii, iii, iv, vi, vii and viii only

1.5 Software Project Management scope normally comprises the following:

a Project Feasibility
b Project Initiation
c Project Planning
d. Project Execution
e Project Control
f Project Termination

Which of the above combination is correct for Project Management scope?

1 a, b, e, and f only.
2 a, c, and e only
3 b, d, and f only.
4 a, b, c, d, e, and f
5 a, b, c, and e only

QUESTION 2 **[10 Marks]**

The cash flows of 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 250,000 00	-R 300,000 00	-R 200,000 00
1	R 25,000 00	R 25,000 00	R 40,000 00
2	R 25,000.00	R 50,000.00	R 40,000.00
3	R 50,000.00	R 75,000.00	R 40,000.00
4	R 50,000 00	R 50,000.00	R 40,000 00
5	R 100,000 00	R 50,000 00	R 80,000.00
6	R 100,000.00	R 75,000.00	R 80,000 00

Table of cash flows for Project A, B and C

Use the information in the table above to answer question 1 and 2

2. 1. Calculate the Net Profit for each project (5)
2. 2. Calculate the Return on Investment for each project (5)

QUESTION 3 **[20 Marks]**

3.1. Provide the equation and identify the variables in Boehm's equation for calculating effort in the use of the COCOMO model. (4)

3.2. The table below list five systems with their estimated lines of code. Analyse (Evaluate) and identify which system can be completed in three years (16)

System	Lines of code	System type
A	10568	Semi-detached mode
B	12572	Semi-detached mode
C	16342	Organic mode
D	8553	Embedded mode
E	7314	Embedded mode

Table for Question 3: System details

QUESTION 4 [12 Marks]

Consider the following activities with their precedents and durations.

Activity	Precedents	Estimated duration (days)
A	None	34
B	A	20
C	A	15
D	C	25
E	B	12
F	D, E	7
G	D, E	6
H	F	30
I	G	28
J	I, H	6

4.1. Draw a complete Activity-on-arrow network diagram. Include the event number, earliest date, latest date and slack on each node by completing both a forward and backward pass Clearly indicate the total duration and critical path (12)

QUESTION 5 [20 Marks]

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 (description or task) 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)

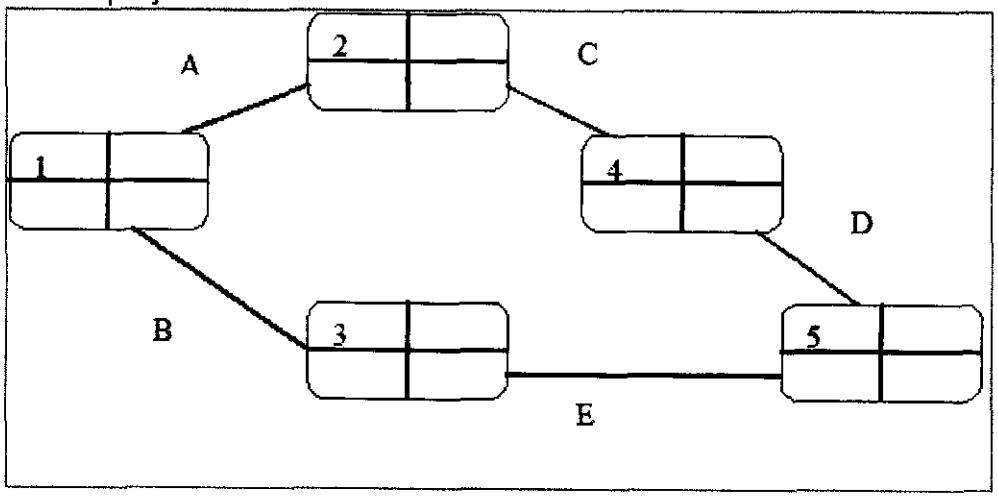
After the first week, Nomsa is delayed by a week, but she finished by the end of the 3rd week. By the end of the 4th week, Bennie has finished but Maggie was delayed for a week. This was the last delay in the project

5.1. Name and describe three ways that a manager can use to visualise this data. (10)

5.2. Present this data visually in each of the three ways named in the previous question Assume that each activity to a specific person can start at the same time. (10)

QUESTION 6 **[13 Marks]**

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



Pert network for Question 6

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

Table for Question 6

Use the table above to calculate the following:

6.1. Calculate the Expected (te) values and Standard Deviation (s) and indicate the (te) and (s) values on the diagram (10)

6.2. Calculate the Z value on the last event (3)