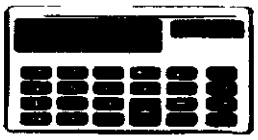
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

INF3708

May/June 2019

Software Project Management

Duration 2 Hours

100 Marks

EXAMINATION PANEL AS APPOINTED BY THE DEPARTMENT

Use of a non-programmable pocket calculator is permissible

Closed book examination

EXAMINATION PANEL

First Examiner Mrs Emilia Mwim
Moderator Mr Ephraim Bogopa
External Examiner Mr Marc Lonfo Fotio

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 number of the correct answer in your examination book. For example 1 – 2

1 The characteristic of a software that makes it easier to change to accommodate other components is know as?
   1 Conformity
   2 Changeability
   3 Flexibility
   4 Com-visibility

2 _____ is a software development approach that is appropriate where the requirements are well defined and the development methods are well understood
   1 Prototyping
   2 Incremental delivery
   3 Spiral method
   4 Waterfall method

3 Some of the difficulties of estimating software effort arises from all of the following except?
   1. Political implication and homogeneity of project experience
   2 Complexity and invisibility of software
   3 Changing technology and subjective nature of software
   4 Political implication and complexity

4 What needs to be done when identifying project infrastructure?
   1 Identifying project team organisation
   2. Establishing relationship between project and strategic planning
   3 Identifying project stakeholder
   4 Establish relationship between project stakeholder

5. One of the objectives of activity planning aim to achieve?
   1 Strategic fit
   2 Feasibility assessment
   3 Effort estimation
   4 Productivity

QUESTION 2 [9]

A library in your community is considering the implementation of a computer based system to help them in administering book loan at the library. Since they do not have any knowledge of software development, they have approached you to help them understand the benefits and problems of running off-the-shelf software development as one of their options instead of in-house development

Discuss with the library the advantages and disadvantages of running off-the-shelf software development (9)

QUESTION 3 [17]

Table 1 gives the estimated cash flow for three different projects: **Project 1, 2 and 3** (in South Africa Rand R)

Year	Project 1	Project 2	Project 3
0	-R175 000	-R150 000	-R300 000
1	+R15 000	+R5 000	+R30 000
2	+R20 000	+R15 000	+R30 000
3	+R50 000	+R20 000	+R50 000
4	+R50 000	+R30 000	+R120 000
5	+R50 000	+R60 000	+R120 000
6	+R50 000	+R90 000	+R120 000

Table 1: Projects Cash Flow

Based on the information provided in **Table 1** answer questions 3 1 to 3 4 below:

3 1 Calculate the net profit for the three projects (6)

3.2 Using the information on Table 1, calculate the Return On Investment (ROI) for the three projects (3)

3 3 Calculate the payback period for each of the three projects in Table 1. (6)

3 4 Based on your answer in question 3.1 – 3 3, which one of the three projects would you consider for development and why? (2)

QUESTION 4 [23]

4 1 Given a discount rate of 10% in Table 2 below, calculate the Net Present Value (NPV) for **project 1, 2 and 3** Use the cash flow in Table 1 above Please show all your caculations (8)

Year	10% Discount rate
1	0 9091
2	0 8264
3	0 7513
4	0 6830
5	0 6209

Table 2: 10% discount rate

4 2 Base on your calculation of the project Net Present Value (NPV), would you still recommend the project you selected for development in question 3 4? Motivate your answer (3)

4 3 You are a final year computing undergraduate student who in her third year undertook a placement with the IT department of an insurance company as a support analyst and then a network manager The placement year was very busy and rewarding as the company saw IT as providing business advantage in what was a very dynamic and aggressively competitive sector The project that you have proposed to do in your final year will use the insurance company as a client The proposed project involves gathering requirements for an application that records details of change requests for operational systems made by users and then tracks the subsequent progress of the change Having gathered the requirements you are to design the application, then build and implement it

Identify two possible risks you for see in the proposed project that you need to take care of (2)

Having identified the risks, you need to decide on how to deal with them **Discuss five** various choices or ways you planned to deal with the risks (10)

QUESTION 5 [20]

Consider the following activities with their precedents and durations listed in Table 3

Activity	Duration	Predecessor
A	4 day	-
B	2 days	A
C	3 days	A
D	2 days	C
E	5 days	B
F	7 days	E
G	6 days	D,E
H	3 days	F
I	8 days	G
J	6 days	H,I

Table 3: Activity precedents and their durations

5 1 Draw a network diagram Activity-on-Node (AON). Indicate the activity duration, the event number, earliest date, latest date and float on each node by completing both a forward and backward pass (10)

(N:B) 5 marks will be deducted from student for not drawing the correct activity diagram

5 2 What is a critical path? (2)

Clearly indicate the critical path and its total duration (2)

Which other path is close to becoming a critial path? Why? (2)

5.3 What is the the shortest possible time it will take to complete this project? (2)

5 4 Identify all of the other paths on the network diagram and indicate their durations? (2)

QUESTION 6 [16]

6 1 In question 5 the below table was given (without resource column) and you were asked to Draw activity-on-node network

Activity	Resource	Duration	Predecessor
A	System analyst	4 day	-
B	System Designer	2 days	A
C	System Designer	3 days	A
D	Programmer	2 days	C
E	Hardware Installer	5 days	B
F	Tester	7 days	E
G	Tester	6 days	D,E
H	Trainer and supporters	3 days	F
I	System Maintainace	8 days	G
J	System Evaluation	6 days	H,I

Table 4: Activity precedents, their durations and resource

Given your activity plan (i.e your activity-on-node answer for question 5 1), use a bar chart to schedule the resources of the project activities as indicated in table 4 Assume each project activity is scheduled to start at its earliest start and end date (10)

6 2 Name and Describe three ways a manager project can use to visualize projects progress (6)

QUESTION 7 [10]

In the PERT network illustrated in figure 1 below, the targeted date for the completion of the project is 15 weeks

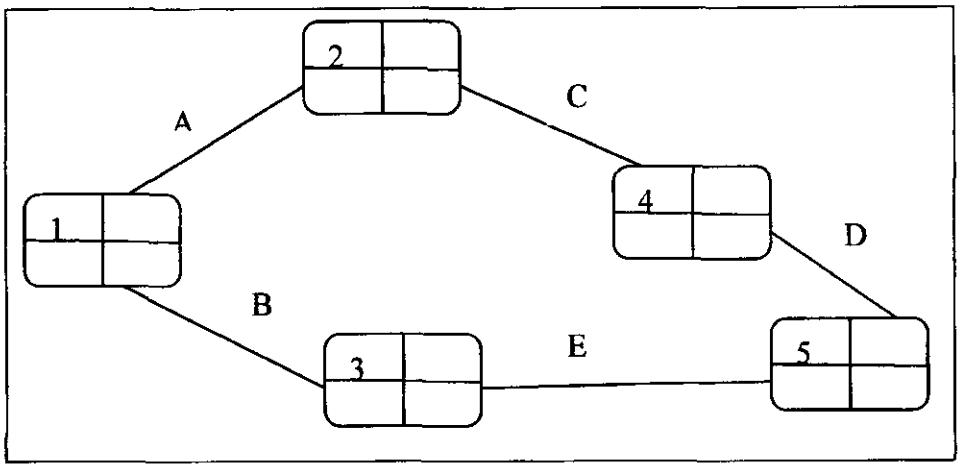


Figure 1

	Optimistic (a)	Most likely (M)	Pessismistic (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

Using Table 5 and Figure 1 *above answer the following questions:*

7 1 Calculate the expected (t_e) values for all the activities in Table 5. (3)

7.2 Calculte standard deviation (s) for all the activities in Table 5 (3)

7.3 Use Figure 1 to calculate the standard deviation (s) for event 4 and 5 (2)

7 4 Calculate the Z value on the last event (2)