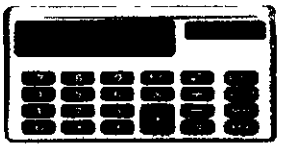
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

INF3708

October/November 2018

Software Project Management

Duration 2 Hours

90 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 6 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 – 2

1 Which software development approach is developed and modified until it is finally in the state where it can become the operational system?
   1 Waterfall model
   2 Agile method
   3 Evolutionary prototypes
   4 Incremental delivery

2 _____ is NOT one of the activities in identifying project scope and objectives
   1 Identifying project team organisation
   2. Identifying stakeholders
   3 Identifying objectives
   4. Identifying measures of effectiveness

3 Which of the following project selection technique has the disadvantage of ignoring any income (or expenditure) once the project has broken even?
   1 Net present value
   2 Return on investment
   3 Internal rate of return
   4 Payback period

4 Which of the following is NOT the objective of activity planning?
   1 Resource allocation
   2 Feasibility assessment
   3 Measure of reliability
   4 Motivation and coordination

5 Risk planning include all of the following except
   1 Risk reduction
   2 Risk transfer
   3 Risk Monitoring
   4 Risk acceptance

QUESTION 2 [13]

2 1 A successful project is one delivered 'on time', 'within budget' and with 'required quality'. This implies that project manager has to work to meet a set target All with the assumption that the targets are reasonable – however, no account is taken of the possibility of project managers achieving records of productivity from their team, but still do not meet a deadline because of incorrect initial estimates.

With the above in mind, name and discuss the difficulties associated with software estimation (8)

2.2 Incremental delivery is one of the approaches that can be selected for project development Discuss some of the justifications you would give to any project team for recommending this project development approach. (5)

QUESTION 3 [19]

Table 1 gives the estimated cash flow for three different projects (1-3) for company XYZ in South Africa Rand (R).

Year	Project 1	Project 2	Project 3
0	-R202 022	-R317 250	-R364 750
1	+R6 000	+R5 540	+R20 000
2	+R10 000	+R90 000	+R100 000
3	+R65 223	+R101 098	+R50 000
4	+R56 676	+R78 902	+R82 000
5	+R65 970	+R80 426	+R182 000

Table 1 Projects Cash Flow

Based on the information provided in Table 1 do the following.

3.1 Calculate the net profit/net loss for the three projects (3)

3 2 Calculate the ROI for the three project (3)

3.3 Calculate payback period for each of the three projects (6)

3.4 Based on your answer of question 3.1 to 3 3 which project would you recommend for development? Why? (3)

3.5 Which project would you not consider at all for development? Explain clearly why. (4)

QUESTION 4 [21]

4.1 In allocating individuals to project tasks, project managers need to take a number of factors into consideration. Discuss four important factors a project manager should consider. (8)

4.2 You are working with a team that is developing a new software project for a start-up company. The following information on Table 2 was given to you on the first three activities of the software development.

Activity	Description	Precedenting activities	duration (Weeks)	Budget cost in Rand	Work completed	Money spent
A	Planning	-	5	1000	25%	500
B	Analysis	-	2	500	75%	300
C	Systems design	-	4	3000	25%	1000
D	Coding and testing	A	4	500		
E	Installation	A,B	2	2000		
F	Evaluation	A,B	5	500		
G	Maintenance	E,F	2	750		
H	Enhancement	D,F	1	250		

Table 2: Earned Value Analysis

Given the above information, do the following for **activity A – Planning:**

a. Explain what an Earned Value (EV) is and calculate the EV (4)

b. Explain Cost Variance (CV) and calculate the CV for activity A. What does the CV you calculated indicate about the activity performance? (5)

c. Calculate the Cost performance Index (CPI). Explain what the value you calculated for CPI indicate about the performance of activity A. (4)

QUESTION 5 [22]

You are working with a software development team on a new IT project of a company. As a developing project manager in the development team, the following main activities of the project and their time estimate has been given to you as shown in Table 3.

Activity	Precedenting activities	Estimated duration (Weeks)
A	-	2
B	A	5
C	A	9
D	A	3
E	B	6
F	B, C	4
G	C, D	2
H	E, F	4
I	G,H	2

Table 3 Activity precedents and their duration

The group asked you to consider the activities, their durations and the precedences of the new software as depicted in Table 3 and based on that do the following:

5.1 Draw a complete **Activity-on-node network diagram**. Include the event number, forward and backward pass, and the slack on each node (15)

5 2 Clearly indicate the critical path and its total duration. (2)

5.3 List all the remaining paths with their total duration (5)

QUESTION 6 [10]

In the PERT network illustrated in the Figure 1 below, the targeted date for the completion of the project is 10 weeks.

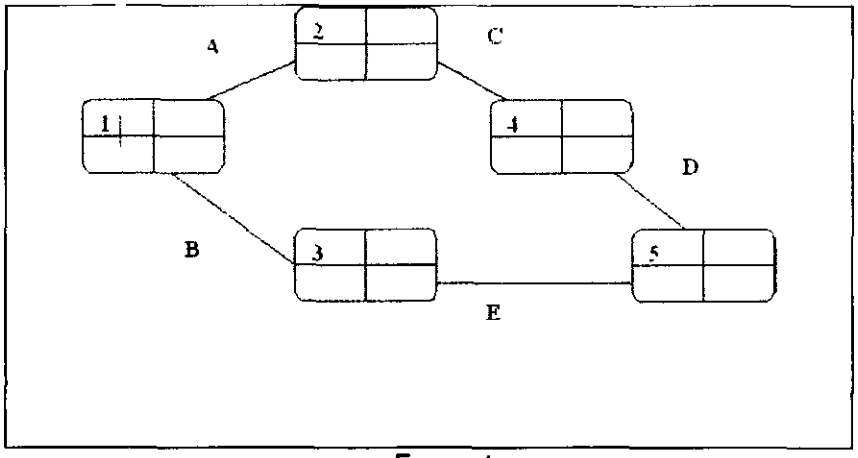


Figure 1

	Optimistic (a)	Most likely (M)	Pessismistic (b)	Expected (t_e)	Standard deviation (sd)
A	8	4	7		
B	2	3	1		
C	4	4	8		
D	5	3.5	10		
E	3	8	6		

Table 4 PERT activity time estimates

Using the above table calculate:

6 1 Calculate the expected (t_e) values and standard deviation (s) and use your answers to complete Table 4. Indicate the (t_e) on Figure 1 (4)

6.2 Calculate the standard deviation *(sd)* for all the events of Figure 1 (4)

6.3 Calculate the Z value for node 5 (2)