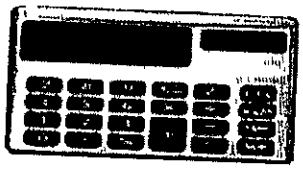
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

INF3708

May/June 2011

SOFTWARE PROJECT MANAGEMENT (INFORMATION SYSTEMS)

Duration 2 Hours

80 Marks

EXAMINERS :

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SECOND :	PROF MM ELOFF
EXTERNAL :	DR CARL MARNEWICK (UNIV OF JOHANNESBURG)

Use of a non-programmable pocket calculator is permissible.

This paper consists of 8 pages.

INSTRUCTIONS

- Non-programmable calculators may be used
- Show all calculations
- Round off all your calculations to two decimal places

GOOD LUCK!!

QUESTION 1 [5]

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

1 1	Which of the following statement(s) is/are true concerning the differences between General Project Management and Software Project Management in terms of inherent characteristics of software and the software environment are i Invisibility ii. Complexity iii Conformity iv Flexibility A ii, and iii only B i, ii, and iii only C i, and iv only D ii, iii, and iv only E i, ii, iii, and iv
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	Prototypes can be used to eliminate risk and facilitate communication by i Specific assumptions, dependencies or concepts are tested thus resulting in a better understanding of the system ii. Encourage end-user participation during all stages of development thereby largely reducing product uncertainty iii. 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. iv 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 i, ii and iv only. B ii and iii only C ii, iii, and iv only D i and iii only E i, ii, iii, and iv
1 4	Which of the following is taken into consideration by the Net Present Value? A Cash flow timing, discount rate and net profit B. Net Profit, discount rate and IRR C Cash flow, DCF and IRR D Net profit, DCF and IRR E All of the above

1 5	Software Project Management scope normally comprises the following. i Project Feasibility ii. Project Initiation iii Project Planning iv. Project Execution v. Project Control vi Project Termination Which of the above combination is correct for Project Management scope? A i, ii, v, and vi only. B i, iii, and v only. C ii, iv, and vi only D i, ii, iii, iv, v, and vi E i, ii, iii, and v only

QUESTION 2 [4]

Identify and name any two (2) tools that can be used to visualise the progress of a project, during project monitoring and control Briefly describe the two named tools (4)

QUESTION 3 [22]

Consider the following project scenario and some questions related to it. The table below gives the estimated cash flow for three different projects (in rands R).

Year	Project 1	Project 2	Project 3
0	- R 170 000	- R 150 000	- R 280 000
1	- R 10 000	+ R 5 000	+ R 10 000
2	+ R 20 000	+ R 20 000	+ R 30 000
3	+ R 50 000	+ R 30 000	+ R 50 000
4	+ R 50 000	+ R 80 000	+ R 120 000
5	+ R 60 000	+ R 90 000	+ R 120 000
6	+ R 60 000	- R 10 000	+ R 120 000

Table for project scenario: *Estimated cash flow for three different projects*

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 above, which project would you select to develop? (1)

3 3 Using the *shortest payback method* as discussed in Hughes and Cotterell, which project would you now select for development and why? (4)

3 4 Calculate the *Return on Investment (ROI)* of each of these projects (6)

3 5 Based on your calculation of the ROI of each project in Question 3 4 above, which project would you select to develop? (1)

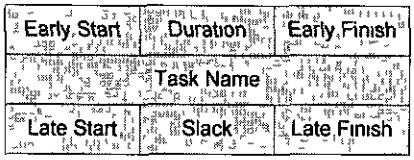
3 6 Assume a *discount rate* of 12% Calculate the *Net Present Value (NPV)* of each project The discount rate % at 12% is given as follows (6)

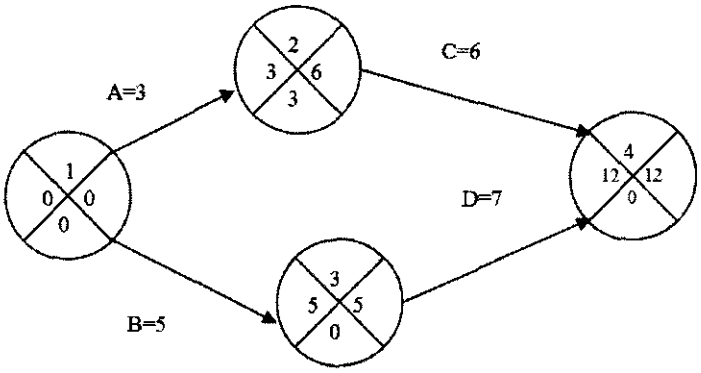
Year	Discount factor at 12%
0	1 000
1	0 8929
2	0 7972
3	0 7118
4	0 6355
5	0 5674
6	0 5066

3 7 Based on your calculation of each project's NPV, which project would you now select for development? In general, what conclusion do you reach regarding the viability of these projects? (Base your answer on the NPVs of each project) (1)

QUESTION 4 [27]

4 1 Convert the following CMP diagram into Precedence network (Activity-on-node) diagram Use the naming convention for nodes as used in Hughes & Cotterel, which is based on the British Standard BS 4335 (see figure below) (5)





CMP Diagram

4 2 Consider the following activities with their precedents and durations

Task	Precedents	Duration
A	None	6
B	None	7
C	None	28
D	B	7
E	A	6
F	A	9
G	D,E	5
H	F,G	8

Draw a complete Precedence network (Activity-on-node) diagram. Complete both a forward and backward pass to determine the total duration and critical path (18)

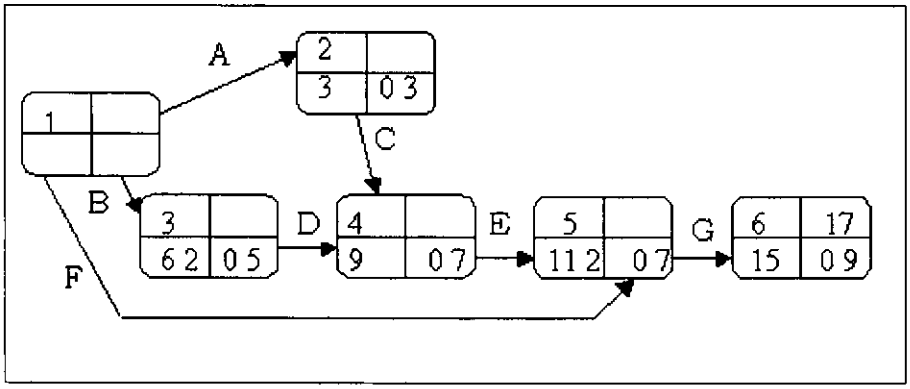
4 3 List all the paths with their total durations based on the drawn complete Precedence network (Activity-on-node) diagram in question 4 2 above. (4)

QUESTION 5 [7]

In the table below the optimistic, most likely and pessimistic values are shown The table also indicates the expected and standard deviation. The Target date is 17

	Optimistic (a)	Most Likely (m)	Pessimistic (b)	Expected (te)	Standard Deviation (s)
A	2	3	4	3	0 3
B	5	6	8	6 2	0 5
C	3	4	5	4	0 3
D	1	3	4	2 8	0 5
E	2	2	3	2.2	0 2
F	1	3	5	3	0 7
G	2	4	5	3 8	0 5

The **te** and **s** values are indicated in the figure below



5 1 Calculate the s value of activity 4 (3)

5 2 Calculate the s value of activity 5 (2)

5 3 Calculate the z value (2)

QUESTION 6 [7]

6 1 Provide the equation and identify the variables in Boehm's equation for calculating effort in the use of the COCOMO model (4)

6 2 Three systems with the following estimated lines of code were identified Determine if System A can be completed in three years (3)

System	Lines of code	System type
A	6749	Semi-detached mode
B	8556	Embedded mode
C	10485	Organic mode

Table for Question 6 2 System details

System type	c	k
Organic	2 8	1.06
Semi-detached	3.0	1 12
Embedded	3.4	1 24

Table for Question 6 2 COCOMO constants

QUESTION 7 [8]

The labour costs of the SOC-Programming Project are shown below The project is scheduled to be completed in 50 days An amount of R300 per day is charged by the programming team towards overhead costs for the days scheduled Phillip and Albert are both the project leaders and will spend an additional week on the project to plan and carry out the post project review Phillip will spend an extra 4 days with the marketing strategy Daphney will work on the project every day Mpho and Faith will work mornings (5 hours) only and Donald will work only 1 week (You can take a workday to consist of 8 hours, and a workweek to consist of 5 days, thus 8*5=40 hours per week)

Staff Members	Hourly Cost
Phillip	R 450
Albert	R 500
Mpho	R 380
Daphney	R 200
Faith	R 250
Donald	R 300

Table for Question 7

Calculate the cost of the SOC-Programming Project (8)