UNIVERSITY EXAMINATIONS

OCT/NOV 2022

INF3708

Software Project Management

100 Marks

Duration 3:00 Hours

EXAMINERS:
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This paper consists of 8 pages.

Instructions

1. **Answer ALL questions.**
2. **Non-programmable calculators may be used.**
3. **Show all calculations and round off all your calculations to two decimal places.**
4. **The use of textbook is not allowed.**
5. **Please remember to sign the Dishonesty Declaration**
6. **All student must adherence to the Policies on Plagiarism, Academic Integrity, and Copyright Infringement?**

IRIS Information

This examination uses the IRIS tool

Exam Rules:

a. Students must upload their answer scripts in a single PDF file on the official myExams platform (answer scripts must not be password protected or uploaded as "read-only" files).

b. **NO** e-mailed scripts will be accepted.

c. Students are advised to preview submissions (answer scripts) to ensure legibility and that the correct answer script file has been uploaded.

d. Students are permitted to resubmit their answer scripts should their initial submission be unsatisfactory.

e. Incorrect file format and uncollated answer scripts will not be considered.

f. Incorrect answer scripts and/or submissions made on unofficial examination platforms (including the invigilator cellphone application) will not be marked and no opportunity will be granted for resubmission.

g. A mark awarded for an incomplete submission will be the student's final mark. No opportunity for resubmission will be granted.

h. A mark awarded for illegible scanned submission will be the student's final mark. No opportunity for resubmission will be granted.

i. Only the last file uploaded and submitted will be marked.

j. Submissions will only be accepted from registered student accounts.

k. Students who have not utilised invigilation or proctoring tools will be deemed to have transgressed Unisa's examination rules and will have their marks withheld.

l. Students have 48 hours from the day of their examination to upload their invigilator results from the Invigilator App. Failure to do so will result in students deemed not to have utilised invigilation or proctoring tools.

m. Students must complete the online declaration of their work when submitting. Students suspected of dishonest conduct during the examinations will be subjected to disciplinary processes. Students may not communicate with other students or request assistance from other students during examinations. Plagiarism is a violation of academic integrity, and students who do plagiarise or copy verbatim from published work will be in violation of the Policy on Academic Integrity and the Student Disciplinary Code and may be referred to a disciplinary hearing. Unisa has zero tolerance for plagiarism and/or any other forms of academic dishonesty.

n. Students are provided 30 minutes to submit their answer scripts after the official examination time. Students who experience technical challenges should report to the SCSC on 080 000 1870 or their College exam support centers (refer to the Get help

during the examinations by contacting the Student Communication Service Centre (unisa.ac.za)) within 30 minutes. Queries received after one hour of the official examination duration time will not be responded to. Submissions made after the official examination time will be rejected by the examination regulations and will not be marked.

o. Non-adherence to the processes for uploading examination responses will not qualify the student for any special concessions or future assessments.

p. Queries that are beyond Unisa's control include the following:

i. Personal network or service provider issues
ii. Load shedding/limited space on personal computer
iii. Crashed computer
iv. Using work computers that block access to myExams site (work firewall challenges)
v. Unlicensed software (eg license expires during exams)

Postgraduate students experiencing the above challenges are advised to apply for an aegrotat and submit supporting evidence within ten days of the examination session. Students will not be able to apply for an aegrotat for a third examination opportunity. Postgraduate/Undergraduate students experiencing the above challenges in their second examination opportunity will have to reregister for the affected module.

q. Students experiencing technical challenges should contact the SCSC on 080 000 1870 or via e-mail at Examenquiries@unisa.ac.za or refer to the Get help during the examinations by contacting the Student Communication Service Centre (unisa.ac.za) for the list of additional contact numbers. Communication received from your myLife account will be considered.

r.

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GOOD LUCK!!

Case Study

The department of a big car manufactory company (Car Trace) you are working for wants to grant a contract to an IT company called “Highway IT” for the upgrade of their largest financial system. This system is used by other support departments that interact with them. However, before the Car Trace management can endorse the IT project, the project has to be evaluated by the finance department to ensure its viability and benefits for the company in years to come. The financial department awaits this upgrade as it is becoming a challenge for other departments and people to interact effectively with them.

The Car Trace management is aware that the finance department needs a better system for the effective running of the company and has given their approval for the upgrade with any project that provides the best financial outlook after financial analysis. However, the management is not sure if the project proposed by the financial department is the most appropriate or if the department should consider the alternative project the management have in mind.

Parties (which are other departments like procurement, auditing, and reimbursement) need to outline and agree on what the system will cover before the project iteration starts. This will help the management ensure that the financial system will accommodate other departments. Since various departments will interact with a module of the system, there might be a need for frequent changes during the development stage. Consequently, the finance department wants a working system to be delivered at the end of each iteration to enable various departments to practice with their aspects of the system and come up with any changes.

QUESTION 1 [10]

1.1 Given the information on the case scenario identify who the project stakeholders are. (4)

1.2 Often there is more than one major stakeholder in the project. Is it better for a project to have many or few stakeholders? Justify your answer by using a possible example from the exam case scenario. (4)

1.3 Which project management process group would you be engaging in by identifying the project stakeholder? Which project management competence should you have as a project manager consultant from Highway IT to enable you to achieve this? (2)

QUESTION 2 [15]

Using the information presented on Table 1 below, evaluate the financial **feasibility of the** two projects in front of this company so you can advise Car Trace management accordingly. The two projects are:

Project 1 – The finance department project.
Project 2 – The company's alternative project

Year	Project 1	Project 2
0	-R200 000	-R275 000
1	+R85 000	+R70 000
2	+R70 000	+R75 000
3	+R78 000	+R80 000
4	+R33 000	+R85 000

Table 1: Projects Cash Flow (in South Africa Rand R)

Based on the information provided in **Table 1** answer questions 2.1 to 2.3 below:

2.1 Calculate the net profit for the two projects. (5)

2.2 Calculate the Return on Investment (ROI) for the two projects. (5)

2.3 Calculate which year each of the projects will payback its capital investment. (5)

QUESTION 3 [21]

3.1 Why would you consider Net Present Value (NPV) over net profit as one of the primary methods for projecting financial viability of a project? (3)

3.2 Given a discount rate of 8% in Table 2 below; calculate the Net Present Value (NPV) for **projects 1 and 2**. Use the cash flow in Table 1 above. Please show all your calculations. (8)

Year	8% Discount rate
1	0.9259
2	0.8573
3	0.7938
4	0.7350

Table 2: 8% discount rate

3.3 Based on your calculations in questions 2.1 – 2.3 and 3.2, write a paragraph explaining to the company management which of the projects you recommend for the company to invests in (that is a project that is most financially viable). State a detailed reason/s for your advice.

(4)

3.4 Assuming the management of Car Trace has many criteria that are necessary for them to make decision on project selection. Using the information in table 3, calculate the weighted scoring for the project and use the result to support your decision in question 3.3.

(6)

Criteria	Weight	Project 1	Project 2
A	20%	50	45
B	35%	70	30
C	40%	40	50
D	10%	90	60
Weighted project score			

Table 3: Weighted scoring

QUESTION 4 [10]

4.1 Which development life cycle approach would you recommend as the most appropriate for Highway IT to use? **Justify your answer using information provided in the case study**. (5)

4.2 Provide a brief description of the prescriptive system development life cycle model you will not recommend for the Highway IT development team. Justify your choice in the light of information from the case study.

(5)

QUESTION 5 [20]

Take the activities in Table 4 to represent the activities for the project you recommended in question 3. The table represents the activities with their precedents and durations that are listed in days

Activity	Estimated Duration	Predecessor
A	2	-
B	6	A
C	6	A
D	4	B
E	3	B
F	4	C
G	1	D
H	2	D
I	3	G
J	2	E,F, H,I

Table 4: Activity precedents and their durations

5.1 Construct a network diagram **(Activity-on-Arrow). Indicate the activity duration, the event number, earliest date, latest date, and float on each node by completing both a forward and backward pass. (15)**

(N:B) Marks will be deducted from any student who fails to draw the current activity diagram and/or did not include the calculations on the node.

5.2 Indicate the critical path on the network diagram and its durations. (3)

5.3 Indicate the total and/or the free slack. (2)

QUESTION 6 [24]

Three points estimate using a PERT weighted average is another project cost estimation technique. Table 5 provides information on the optimistic and pessimistic factors for the calculation of the PERT weighted average for the first 4 activities of the project you modelled its Activity-on-Arrow (AOA) in question 5. **For the most likely factor, use the activities estimated duration depicted on Table 4.**

Activities	Optimistic (a)	Pessimistic (b)	Expected (t_e)
A	4	5	
B	3	6	
C	2	4	
D	5	7	

Table 5

Using Table 5 answer questions 6.1:

6.1 In relation to the exam case scenario, identify two critical risks that are likely to occur in the development of this project. What techniques are likely to be used to address the risks and which stakeholders would apply the techniques? (4)

6.2 Calculate the expected (t_e) values for all the activities in Table 5. (4)

6.3 Describe two project management knowledge areas where PERT weighted average formula calculation can be used. (4)

6.4 Assuming the budget that Car Trace management assigned for the finance department project is R120, 000. Presume the actual cost and earn value of the project are R90, 000 and R100, 000 respectively.

Answer the following questions:

(a) Calculate schedule variance and cost variance. (4)
(b) Calculate SPI and CPI. (4)
(c) How would you describe the performance of the project? Justify your answer. (2)
(d) Use the CPI to calculate estimate at completion for this project. Indicate how the project is performing. (2)