



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCES

DEPARTMENT OF APPLIED CHEMISTRY

PROJECT DEVELOPMENT AND MANAGEMENT

SCH 4210

Examination Paper

December 2024

This examination paper consists of 4 pages

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INSTRUCTIONS

Answer any four (4) questions from the 5 provided

Each question carries 25 marks

Use of calculators is permissible

MARK ALLOCATION

QUESTION	MARKS
1.	25
2.	25
3.	25
4.	25
5.	25
TOTAL	125

1. a) Explain what is meant by stakeholder assessment and describe how you carried out the assessment for your income generating project highlighting challenges you encountered and how these were solved. (10 marks)

b) Draw the Thomas - Kilmann Conflict Resolution Model (4 marks)

c) Using the Thomas - Kilmann Conflict Resolution Model explain the best conflict resolution method for the following conflict stating reasons why you consider it best. (7 marks)

Production Manager to Quality Assurance Manager:

"Your job is to check and reject! Can't you see you are costing the company lots of money? We spend whole days in the heat. You sit in your office only to come out and say Reject! Are you Mr Reject?"

Quality Assurance Manager:

"Piss off! You can't do things right. You want me to do your job. You don't follow the procedures. Above all you are just arrogant".

d) Draw the WBS for your Income Generating Project (4 marks)

2. a) A Project Manager is using AOA to perform critical path analysis. The network diagram is represented as shown below. Calculate the activity free floats and Identify the critical path? (7 marks)

Activity	Duration	Dependent on
A	3	none
C	3	none
B	2	A
D	5	C
E	2	none
F	4	E
G	3	D,F
H	1	D,F
I	2	B,G
R	0	H,I

c) During a project meeting in which the team began to address the project management approach, team members were not collaborative and the environment became counterproductive. What stage of development of the Tuckman ladder was the team in? Justify your answer.

(3 marks)

d) Explain the following terms citing examples from your Income Generating Project.

Project scope (3 marks)

SMART objectives (3 marks)

Cost baseline (3 marks)

Project deliverables (3 marks)

Accrual accounting (3 marks)

3. a) With an original investment of \$35,000 and the net returns given below, two projects, A and B are competing for the funds. Cost of capital is 14%.

Year	Project A	Project B
1	\$12 000	\$10 000
2	\$14 000	\$12 000
3	\$16 000	\$16 000
4	\$12 000	\$14 000
5	\$10 000	\$12 000

Rank the two projects in accordance with Net Present Value (NPV) (6 marks)

b) Below is a pictorial representation of the leadership and managerial roles. Draw a table clearly distinguishing the roles of leadership and management highlighting those roles that are overlapping. (7 marks)



c) Rank the projects in 3a) in accordance with ROI. (4 marks)

d) Draw the Organization Breakdown Structure of your income generating project showing the linkage between operations and management. (8 marks)

4. Study the project shown below and answer the questions that follow

Activity	Duration in weeks	Activity	Duration in weeks
1,2	3	5,10	2
1,3	4	6,10	5
2,4	3	8,10	8
2,5	5	9,10	3
3,6	2		
4,7	3		
4,8	4		
7,9	3		

Draw the network. (AoA) (5 marks)

Calculate all the total floats (7 marks)

Calculate all the free floats (7 marks)

Mark the critical path on the diagram (3 marks)

What is an independent float? (3 marks)

5. A project has an original budget of \$600 000 and after the first 4 months of a 12 months planned project time, the Scheduled Costs, Actual Costs and Earned Values are as follows:

Months	1	2	3	4
Scheduled costs	32 000	60 000	150 000	240 000
Actual costs	35 000	70 000	160 000	250 000
Earned value	30 000	50 000	140 000	230 000

Draw the three curves, Scheduled, Actual & Earned Value (3 marks)

Calculate the Cost Variance for month 4 (3 marks)

Calculate the Schedule Variance (cost based) for month 4 (3 marks)

Find the Schedule Variance (time based) for month 4 (2 marks)

Calculate the CPI for month 4 (2 marks)

- Calculate the SPI (cost based) for month 4 (2 marks)
- Find the SPI (time based) for month 4 (2 marks)
- Calculate the estimated final cost of the project (3 marks)
- Calculate the estimated final completion time of the project (3 marks)
- Comment on the performance of this project (2 marks)

(Use graph paper)

xxxxxxxxxxxxxxxxxxxxxxxxxxxxx END xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Attachments

TABLE 6.4

FACTORS FOR CALCULATING THE PRESENT VALUE OF \$1

No. of Periods	Discount Rate									
	2%	4%	6%	8%	10%	12%	14%	16%	18%	20%
1	0.980	0.9615	0.9434	0.9259	0.9091	0.8929	0.8772	0.8621	0.8475	0.8333
2	0.961	0.9246	0.8900	0.8573	0.8264	0.7972	0.7695	0.7432	0.7182	0.6944
3	0.942	0.8890	0.8396	0.7938	0.7513	0.7118	0.6750	0.6407	0.6086	0.5787
4	0.924	0.8548	0.7921	0.7350	0.6830	0.6355	0.5921	0.5523	0.5158	0.4823
5	0.906	0.8219	0.7473	0.6806	0.6209	0.5674	0.5194	0.4761	0.4371	0.4019
6	0.888	0.7903	0.7050	0.6302	0.5645	0.5066	0.4556	0.4104	0.3704	0.3349
7	0.871	0.7599	0.6651	0.5835	0.5132	0.4523	0.3996	0.3538	0.3139	0.2791
8	0.853	0.7307	0.6274	0.5403	0.4665	0.4039	0.3506	0.3050	0.2660	0.2326
9	0.837	0.7026	0.5919	0.5002	0.4241	0.3606	0.3075	0.2630	0.2255	0.1938
10	0.820	0.6756	0.5584	0.4632	0.3855	0.3220	0.2697	0.2267	0.1911	0.1615
11	0.804	0.6496	0.5268	0.4289	0.3505	0.2875	0.2366	0.1954	0.1619	0.1346
12	0.788	0.6246	0.4970	0.3971	0.3186	0.2567	0.2076	0.1685	0.1372	0.1122
13	0.773	0.6006	0.4688	0.3677	0.2897	0.2292	0.1821	0.1452	0.1163	0.0935
14	0.758	0.5775	0.4423	0.3405	0.2633	0.2046	0.1597	0.1252	0.0985	0.0779
15	0.743	0.5553	0.4173	0.3152	0.2394	0.1827	0.1401	0.1079	0.0835	0.0649
16	0.728	0.5339	0.3936	0.2919	0.2176	0.1631	0.1229	0.0930	0.0708	0.0541
17	0.714	0.5134	0.3714	0.2703	0.1978	0.1456	0.1078	0.0802	0.0600	0.0451
18	0.700	0.4936	0.3503	0.2502	0.1799	0.1300	0.0946	0.0691	0.0508	0.0376
19	0.686	0.4746	0.3305	0.2317	0.1635	0.1161	0.0829	0.0596	0.0431	0.0313
20	0.673	0.4564	0.3118	0.2145	0.1486	0.1037	0.0728	0.0514	0.0365	0.0261
21	0.660	0.4388	0.2942	0.1987	0.1351	0.0926	0.0638	0.0443	0.0309	0.0217
22	0.647	0.4220	0.2775	0.1839	0.1228	0.0826	0.0560	0.0382	0.0262	0.0181
23	0.634	0.4057	0.2618	0.1703	0.1117	0.0738	0.0491	0.0329	0.0222	0.0151
24	0.622	0.3901	0.2470	0.1577	0.1015	0.0659	0.0431	0.0284	0.0188	0.0126
25	0.610	0.3751	0.2330	0.1460	0.0923	0.0588	0.0378	0.0245	0.0160	0.0105
30	0.552	0.3083	0.1741	0.0994	0.0573	0.0334	0.0196	0.0116	0.0070	0.0042
35	0.500	0.2534	0.1301	0.0676	0.0356	0.0189	0.0102	0.0055	0.0030	0.0017
40	0.453	0.2083	0.0972	0.0460	0.0221	0.0107	0.0053	0.0026	0.0013	0.0007
45	0.410	0.1712	0.0727	0.0313	0.0137	0.0061	0.0027	0.0013	0.0006	0.0003
50	0.372	0.1407	0.0543	0.0213	0.0085	0.0035	0.0014	0.0006	0.0003	0.0001