



**DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY**

**University Examinations 2021/2022**

**MSC. MACHINE TOOL DESIGN & MANUFACTURING**

**EMM 6109: COSTING OF MACHINE TOOLS**

DATE: DECEMBER 2021

TIME: 3 HOURS

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**INSTRUCTIONS**

- (a) This examination contains SECTION A AND B
  - (b) SECTION A IS COMPULSORY
  - (c) You are required to attempt ANY TWO (2) questions in SECTION B.
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**SECTION A: COMPULSORY**

**QUESTION ONE (30 MARKS)**

- a) Define accounting (2 marks)
- b) Differentiate between Normal and Actual costing systems (2 marks)
- c) Outline the two ways of tracing costs to costs objects in an industrial setting (2 marks)
- d) A company with a Fixed cost of \$12,000 produces 2000 units of Product A, 3500 units of B and 5000 units of C. The respective unit contribution margins are \$2, \$2.5 and \$1.5 respectively. Compute the Break-even number of units for the multiple products. (3 marks)
- e) List and briefly describe the three major types of transactions that affect retained earnings in an organization. (3 marks)
- f) Benefits of Activity-based costing (4 marks)
- g) A Company is considering a new product line to supplement its range of products. It is anticipated that the new product line will involve cash investments of 700,000 at time 0 and 1,000,000 in year 1. After-tax cash inflows of 250,000 are expected in year 2, 300,000 in year 3, 350,000 in year 4 and 400,000 each year thereafter through year 10. Although



the product line might be viable after year 10, the company prefers to be conservative and end-all calculations at that time.

- (i) If the required rate of return is 15 per cent, compute the net present value of the project? Is it acceptable?
- (ii) What would be the case if the required rate of return were 10 per cent?
- (iii) Calculate its internal rate of return?
- (iv) Compute the project's payback period?

(8 marks)

### **SECTION B: Answer any TWO QUESTIONS**

#### **QUESTION TWO (20 MARKS)**

- a) Define Management Accounting (2 marks)
- b) Differentiate between current and long-term liabilities (2 marks)
- c) State four advantages of the Net Present Value (NPV) technique (4 marks)
- d) Outline any four distinguishing differences factors between functional and activity-based cost management system. (4 marks)
- e) Discuss the six steps involved in the Capital Budgeting process (6 marks)
- f) GYP mould manufacturers sold 10 moulds to an Oil Marketing Company for \$ 12,000. The Direct material and manufacturing labour costs for the moulds are \$ 4,000 and \$ 2,000 respectively, utilizing 1,500 machine hours. The company uses 4,200 machine hours for all jobs incurring \$8,400 as manufacturing overheads. Compute the cost of goods sold and the Gross Margin Rate. (6 marks)

#### **QUESTION THREE (20 MARKS)**

- a) Distinguish between product and period costs (2 marks)
- b) Outline the components of a corporation's equity (3 marks)
- c) List at least six steps followed in Job costing (3 marks)



- d) Beginning work in process for TIPOP company was \$85,000. Manufacturing costs incurred for the month were \$120,000. There were \$75,000 of partially finished goods remaining in work in process inventory at the end of the month. What was the cost of goods manufactured during the month? (4 marks)
- e) Discuss the four forms of business organization (8 marks)
- f) Describe the five steps or phases of Product Costing (5 marks)

**QUESTION FOUR (20 MARKS)**

- a) Define what is sunk costs? (2 marks)
- b) State three advantages of Payback period technique (3 marks)
- c) Outline the three steps involved in Activity-based costing (3 marks)
- d) State four limitations of Accounting Rate of Return (ARR) or Average Rate of Return (ARR) (4 marks)
- e) Briefly describe the four broad categories of quality costs giving at least one example for each category. (4 marks)
- f) ERT Company had an inventory of \$32,000 of raw materials at the beginning of the month. During the month, \$276,000 of raw material was purchased. A count at the end of the month revealed that \$28,000 of raw material was still present. What is the cost of direct material used? (4 marks)



## PRESENT VALUE TABLE

Present value of \$1, that is  $(1 + r)^{-n}$  where  $r$  = interest rate;  $n$  = number of periods until payment or receipt.

Periods ( $n$ )	Interest rates ( $r$ )									
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149

Periods ( $n$ )	Interest rates ( $r$ )									
	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.079	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026