

KATHMANDU UNIVERSITY  
End Semester Examination [C]  
November/December, 2023

Marks Scored:

Level : B.E.

Year : III

Exam Roll No. :

Time: 30 mins.

Course : MGTS 303

Semester : II

F. M. : 10

Registration No.:

Date

03 DEC 2023

SECTION "A"

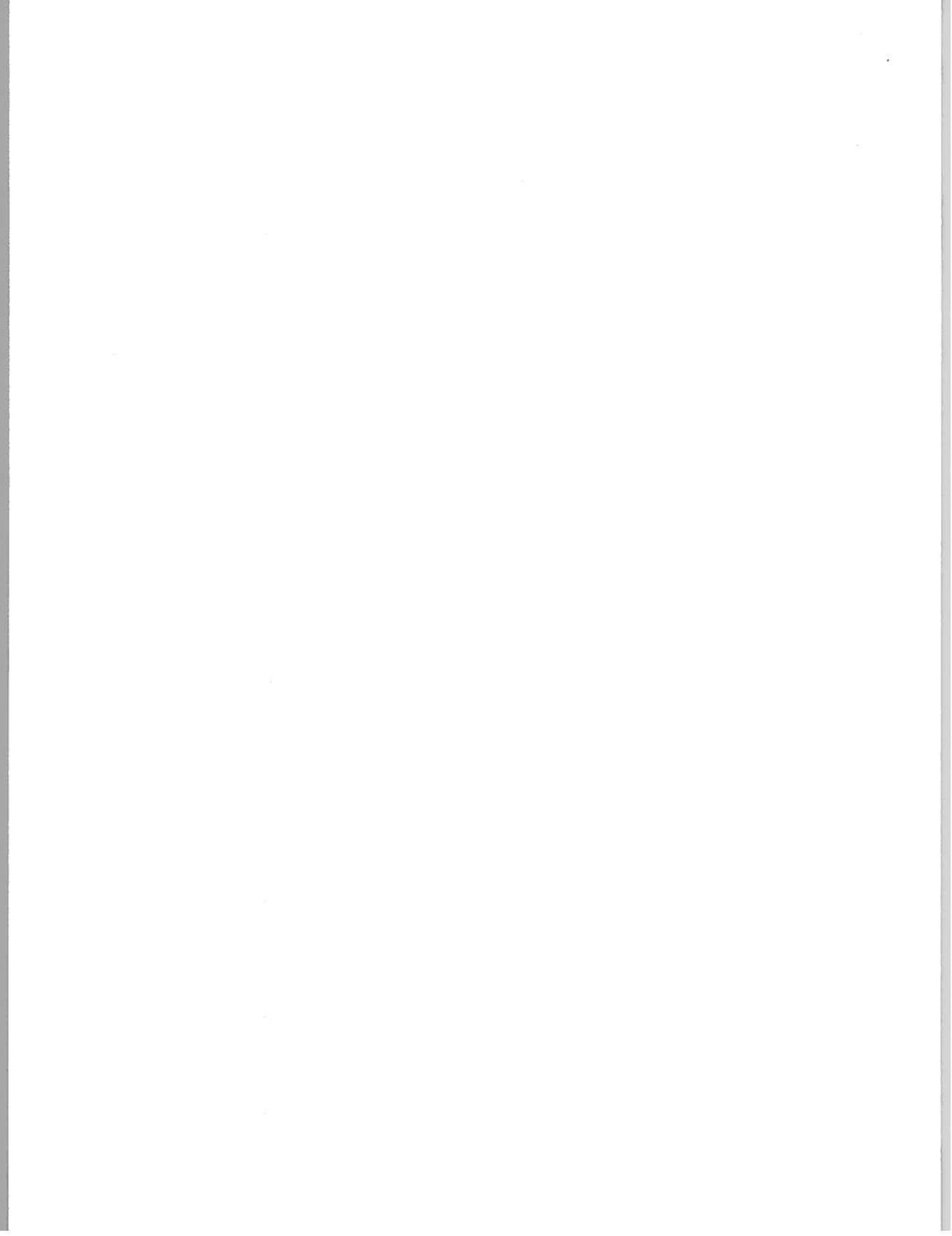
[20 Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option.

1. A \_\_\_\_\_ responsible for corrective action when organization faces important unexpected disturbances.
  - a. Disturbance Handler
  - b. Negotiator
  - c. Liaison
  - d. Entrepreneur
  
2. You are a mechanical engineer working in a manufacturing company. Your team is facing challenges in meeting production deadlines due to inefficient workflow and resource allocation. The management has asked you to propose a solution. What would be your initial step?
  - a. Hire additional workers to increase production capacity.
  - b. Conduct a detailed analysis of the current workflow and resource utilization.
  - c. Implement automation to reduce manual labor.
  - d. Request more funds for purchasing advanced machinery.
  
3. Who is called father of Scientific Management?
  - a. Frederick W. Taylor
  - b. Charles Babbage
  - c. Henry Towne
  - d. Henry Fayol
  
4. You are designing a heat exchanger for an industrial process. What is the first step in the design process?
  - a. Calculate the heat transfer rate.
  - b. Determine the materials and dimensions.
  - c. Select the type of heat exchanger.
  - d. Analyze the flow rates of the fluids.
  
5. You are a mechanical engineering manager leading a team of engineers responsible for designing a new product. Your team consists of highly skilled and experienced engineers, each with their own ideas and approaches to the project. What leadership approach is most suitable for fostering innovation and collaboration in this team?
  - a. Transactional Leadership: Providing rewards and recognition for achieving specific project milestones
  - b. Laissez-Faire Leadership: Allowing team members complete autonomy without interference.
  - c. Directive Leadership: Providing clear instructions and closely supervising the team's work.
  - d. Transformational Leadership: Inspiring and motivating the team by setting a vision and encouraging creativity

6. You are the project manager for a mechanical engineering project. The project was planned to have a Planned Value (PV) of \$80,000 for a specific phase. However, during the project execution, you find that only \$60,000 worth of work has been completed, which is the Earned Value (EV). Calculate the Schedule Performance Index (SPI) for this phase.
- a. SPI = 1.0      b. SPI = 0.75      c. SPI = 1.25      d. SPI = 0.8
7. Which of these is not a criticism of Scientific Management from workers point of view?
- a. Over Speeding      b. Weaking of Trade Union  
c. Monotony      d. Time Consuming
8. You are a mechanical engineer tasked with selecting a supplier for a critical component. You have three potential suppliers with different estimated stock levels in the event of a supply chain disruption:
- Supplier A: High stock level, with an estimated availability of 90%.
  - Supplier B: Moderate stock level, with an estimated availability of 70%.
  - Supplier C: Low stock level, with an estimated availability of 50%.
- According to the Maximax decision-making theory, which supplier would you choose to maximize the benefit in case of a supply chain disruption?
- a. Supplier A  
b. Supplier B  
c. Supplier C  
d. The decision depends on factors other than stock availability.
9. When structuring an organization, the engineer must be concerned with the grouping of related jobs, activities, or processes into major organizational subunits. This refers to:
- a. Division of labor      b. Delegation of authority  
c. Departmentalization      d. Span of control
10. You are a mechanical engineer preparing your CV for a job application. You want to ensure that your CV is professional and effective. Which of the following should you avoid including in your CV?
- a. Relevant work experience and achievements.  
b. Contact information, including a professional email address.  
c. Detailed technical skills and certifications relevant to the position.  
d. Personal hobbies and interests unrelated to the job.
11. Tannenbaum and Schmidt proposed that a manager should consider three types of forces before deciding, which of these isn't one of the forces?
- a. Force in situation      b. Force in manager  
c. Force in educational background      d. Force in non-manager
12. You are a mechanical engineer working for a manufacturing company. The company's Net Sales for the fiscal year are \$500,000, and its Total Assets at the beginning of the year were \$300,000. Calculate the Asset Turnover Ratio for the company.
- a. Asset Turnover Ratio = 1.67      b. Asset Turnover Ratio = 0.6  
c. Asset Turnover Ratio = 2.0      d. Asset Turnover Ratio = 0.5
13. Net Income Margin will be better
- a. Bigger      b. Bigger, will be < 1  
c. Smaller      d. Smaller, will be > 1

14. You are a mechanical engineer evaluating an investment opportunity. The investment requires an initial outlay of \$50,000 today. The project is expected to generate returns of \$30,000 at the end of the first year and \$40,000 at the end of the second year. The rate of return is 10% per year. Should you invest in this project based on its Net Present Worth (NPW)?
- Yes, because NPW is positive.
  - No, because NPW is negative.
  - Yes, because the rate of return is higher than 10%.
  - No, because the project returns are not provided annually.
15. A \_\_\_\_\_ is the probability that a failed system will demonstrate it can be restored to specified performance for within a stated period of time when operated under specific conditions
- Risk
  - Reliability
  - Availability
  - Maintainability
16. Who defined Quality as Fitness for Use?
- Joseph M Juran
  - Philip B Crosby
  - Kaoru Ishikawa
  - W Edwards Deming
17. BCWP (Budgeted Cost of Work Performed) is also known as
- Planned Value
  - Earned Value
  - Actual Cost
  - All of the mentioned
18. You are a mechanical engineer assigned to manage a complex engineering project that involves acquiring specialized equipment. During the planning phase, you discover that the lead time for procuring this equipment is longer than originally anticipated, which could potentially delay the project. What should be your immediate action?
- Proceed with the project as planned, and deal with the equipment delay when it arises.
  - Revise the project schedule to account for the longer lead time of the equipment.
  - Consider alternative equipment suppliers with shorter lead times.
  - Notify the project stakeholders of the potential delay but take no immediate action.
19. On basis of Utilitarianism consider you are a mechanical engineer working on a project for a manufacturing company. During the project, you discover a cost-saving shortcut that could expedite production but might compromise the long-term durability of the product. You are aware that using this shortcut may lead to potential safety hazards for end-users. According to Utilitarianism, what should be your primary consideration?
- Implement the shortcut to save costs and expedite production since it benefits the company's profitability.
  - Prioritize long-term product durability and safety, even if it increases production costs and time.
  - Seek approval from your immediate supervisor and let them decide based on company goals.
  - Consult with colleagues to reach a consensus on the best course of action.
20. On basis of deontology consider you are working for a construction company. You discover a structural design flaw in a building project that could potentially compromise its safety. You believe that following ethical principles is essential. What should you do?
- Keep the design flaw confidential to avoid causing panic among stakeholders.
  - Report the design flaw to your immediate supervisor and request guidance on how to proceed.
  - Wait until the project is completed and then inform the relevant authorities anonymously.
  - Continue with the project, hoping that the design flaw won't be discovered.



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**SECTION "B"**  
[6Q. × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. Consider a factory producing two products, product X and product Y. The problem is this: If you can realize \$10.00 profit per unit of product X and \$14.00 per unit of product Y, what is the production level of x units of product X and y units of product Y that maximizes the profit P each day? Your production, and therefore your profit, is subject to resource limitations, or constraints. Assume in this example that you employ five workers—three machinists and two assemblers—and that each works only 40 hours a week.
  - Product X requires three hours of machining and one hour of assembly per unit.
  - Product Y requires two hours of machining and two hours of assembly per unit.State the problem: How many of product X and product Y to produce to maximize profit?
2. What are the advantages and disadvantages of functional organization and projected organization?
3. Define Span of Control. What are the factors determining effective spans, please elaborate?
4. An engineered system consists of one each of three components X, Y, and Z with reliabilities. RX, RY, and RZ of 0.94, 0.80, and 0.95. (a) What is the system reliability, assuming that one component of each type must work? (b) If required system reliability is 0.85, show how you can meet this goal by replacing one of these components with two of that same component in parallel.
5. Your company has two alternative opportunities, each requiring your entire capital investment budget of \$325,000. Alternative A will return \$390,000 at the end of one year; alternative B will return \$216,000 at the end of each of the first two years. Which (if either) alternative should you recommend on the basis of (a) simple payback time? (b) net present worth?
6. Describe Total Quality Management. Describe Ishikawa's Cause and Effect (Fishbone) Diagram with an example.
7. Write Short notes on *ANY TWO*:
  - a. Exploratory Technological Forecasting
  - b. Barriers of Whistle Blowing
  - c. Arsenal of Venice

SECTION "C"  
[2Q × 8 = 16 Marks]

Attempt *ANY TWO* questions.

8. Write on Scientific Management and its criticism.
9. Hytek Corporation ended 2012 with cash of \$50,000, accounts receivable of \$100,000, and inventory of \$300,000. Property, plant, and equipment were valued at their original cost of \$470,000, less accumulated depreciation of \$170,000. Current liabilities other than income taxes owed (see details that follow) were \$120,000, and long-term debt was \$250,000. Stockholders' equity consisted of (a) \$90,000 capital stock investment and (b) accumulated retained earnings, which had totaled \$130,000 at the end of 2011. Net sales for 2012 were \$900,000. Expenses included \$500,000 as cost of goods sold, \$50,000 as allowance for depreciation, \$85,000 as selling expense, and \$65,000 as G&A expense. Interest income and expense were \$5,000 and \$25,000, respectively, and income taxes for the year (unpaid at year's end) were \$80,000. Dividends of \$20,000 were paid. Prepare a balance sheet and an income statement reflecting these figures. Prepare a balance sheet and an income statement reflecting these figures.
10. For the project outlined in the following table, prepare.
- An arrow network diagram
  - A PDM Diagram
  - What and how long is the critical path?

Task	Follows Task(s)	Duration (Weeks)
A	Start	3
B	Start	4
C	Start	3
D	A	2
E	A, B	5
F	D, E, C	2