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Daffodil International University

Department of Textile Engineering

Faculty of Engineering

Final Examination, Spring 2026

Course Code: 0413-221 Course Title: Industrial Management

Level & Term: L2T2 Section: F1, F2, & F3

Name & Designation of the Course Teacher: Arnob Chowdhury Mithun, Lecturer

Time: 2 hours. **Total Marks: 40**

Answer all the questions:

01. Given the following project schedule: [CO-3, PO-11, C-5] **[1+4+6]**

Activity	Immediate Predecessor	Op. Time (a)	Most Likely Time (m)	P. Time (b)
A	-	2	4	6
B	A	1	3	5
C	A	3	6	9
D	B	2	5	8
E	C	4	7	10
F	D, E	3	8	13
G	C	1	3	5
H	F, G	2	5	14
I	H	1	2	3

a. Define slack time.

b. Build a network diagram for this problem.

c. Evaluate the expected time, variance, and discover the critical path for this problem. And determine the possibility of finishing the project in 28 days?

02. A textile company, Green Textiles Ltd., is considering investing in automated weaving machines that will increase production efficiency and reduce labor costs. The initial investment cost of the machines is $750,000. The company expects to achieve savings in operational costs for the next 5 years, as outlined below. Cash Flow Estimates for the next 5 years: $140,000; $160,000; $175,000; $190,000; $210,000 with 10% Discount Rate. **[12]**

1. Determine the Net Present Value (NPV) and IRR of this investment.
2. Based on your NPV and IRR values, explain whether Green Textiles Ltd. should proceed with the investment in the automated weaving machines. [CO-3, PO-11, C-5]

03. A garment factory in Dhaka operates 10-hour shifts, 6 days a week. Workers are paid below the minimum wage set by the National Minimum Wage Board. Management denies weekly holidays and provides no overtime compensation, citing high production targets. Evaluate the extent to which this factory violates the provisions of the Bangladesh Labor Act, 2006, and recommend specific corrective measures to bring the factory into compliance. **[05]**

[CO-2, PO-5, C-5]

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04. Before establishing a new textile mill, a company must conduct a market feasibility study. Identify and briefly explain the key components of a market feasibility study, illustrating the importance in evaluating the viability of a new mill setup. [05] [CO-3, PO-11, C-5]

05. The following activities are planned for a new garment production line setup: [07]

Activity	Predecessor	Duration (days)
A	—	3
B	A	4
C	A	2
D	B	5
E	C	3
F	D, E	2

Analyze the network by:

(a) Performing forward and backward passes to find EST, EFT, LST, and LFT for each activity.

(b) Determining the Total Float of each activity.

(c) Identifying the Critical Path and total project duration. [CO-3, PO-11, C-4]