BCT 2409: Assignment 1

Question 1_Cost Benefit analysis (25 Marks)

As part of a preliminary study towards development of a new system, John is working on cost–benefit analysis of the project. He has identified a number of cost factors and values for the new system, summarized below:

Development Costs—Personnel
2 Systems Analysts 200 hours/each @ $50/hour
2 Programmer Analysts 300 hours/each @ $35/hour
1 GUI Designer 200 hours/each @ $40/hour
1 Telecommunications Specialist 40 hours/each @ $50/hour
1 System Architect 80 hours/each @ $50/hour
1 Database Specialist 25 hours/each @ $45/hour
1 System Librarian 250 hours/ea @ $15/hour

Development Costs—Training
5 Oracle training registration $3000/student

Development Costs—New Hardware and Software
1 Development server $18,700
1 Server software (OS, misc.) $1500
1 DBMS server software $7500
7 DBMS client software $950/client

Annual Operating Costs—Personnel
2 Programmer Analysts 125 hours/each @ $30/hour
1 System Librarian 20 hours/each @ $20/hour

Annual Operating Costs—Hardware, Software, and Misc.
1 Maintenance agreement for server $995
1 Maintenance agreement for server $525
Preprinted forms 10,000/year @ $.22/form

The benefits of the new system are expected to come from two sources: increased sales and lower inventory levels. Sales are expected to increase by $30,000 in the first year of the system's operation and will grow at a rate of 10% each year thereafter. Savings from lower inventory levels are expected to be $15,000 per year for each year of the project's life.

Using a format similar to slide 21 in the powerpoint shared on Project Initiation and Feasibility Study summarize this project's cash flow, assuming a four-year useful life after the project is developed. Compute the present value of the cash flows, using an interest rate of 9%.

- What is the NPV for this project?
- What is the ROI for this project?
- What is the break-even point?
- Should this project be accepted by the approval committee? Why?

Question 2 _Project Scheduling (15 Marks)

A project consists of 10 activities A – J. The duration (in days) of each activity, and the activities preceding each of them are as follows:

Activity	**Duration**	**Preceding activities**
A	10	-
B	4	-
C	8	B
D	6	C
E	8	I
F	5	-
G	10	A,D
H	2	G
I	4	-
J	10	D,F,I

a) Construct an activity network for the project.
b) Find:
   i. the earliest start time for each activity in the network
   ii. the latest starting time of each activity
c) Calculate the slack time of each activity, and hence determine the critical path