Subject : SECD2613 System Analysis and Design

Task : Assignment 1

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QUESTION 1 (10 MARKS)

SkorBistari leading preschool was established with the dream of bringing quality of preschools to greater high based on Islamic principles, English emphasis, and cheerful well-designed facilities. The company grows to over 53 centers all over the country. Recently, the top management has decided to consider an information system to help their growing business. You have been hired as the system analyst to handle the project. Before continue with the development of the project, you need to assess the economic feasibility from the budget that the company plans to invest. Table 1 shows the information given by the company.

Table 1: Estimated cost and expected benefits for SkorBistari

Development Costs
Hardware RM 50,000
Software RM 15,000
Training RM 30,000
Consulting RM 80,000
Data Conversion RM 40,000
Production Costs
Supplies RM 15,000 per year
IS Salaries RM 75,000 in year 1; 10% annual increase
Upgrades RM 10,000 per year over 3 years
Benefits
Improve Customer Service RM 150,000 in year 1; 20% increase annually
Increase productivity RM 150,000 per year; 25% increase annually
Assumptions Discount rate 35 %

a) Calculate the cost-benefit estimation using the Present Value (PV) analysis (for 3 years) to assess the economic feasibility for the SkorBestari project proposal in the worksheet.

(9 Marks)

b) What is the profitability index (PI) value for this PV analysis? What is your recommendation based on the PI value and justify it.

(1 Mark)

Answer:

a)

Costs	Year 0	Year 1	Year 2	Year 3
Development course				
Hardware	50,000			
Software	15,000			
Training	30,000			
Consulting	80,000			
Data Conversion	40,000			
Total	215,000			
Production Costs				
Supplies		15,000	15,000	15,000
IS Salaries		75,000	82,500	90,750
Upgrades		10,000	10,000	10,000
Annual Prod. Costs		100,000	107,500	115,750
Present Value		74,074	58,985	47,046
Accumulated Costs		289,074	348,059	395,105

Benefits	Year 0	Year 1	Year 2	Year 3
Improve Customer Service		150,000	180,000	216,000
Present Value		111,111	98,765	87,791
Increase Productivity		150,000	187,500	234,375
Present Value		111,111	102,881	95,260
Total PV of Benefits		222,222	201,646	183,051
Accumulated Benefits		222,222	423,868	606,920
Gain or Loss		-66,852	75,809	211,815
Profitability Index	1			

b)

215,000
——————   1
211,815
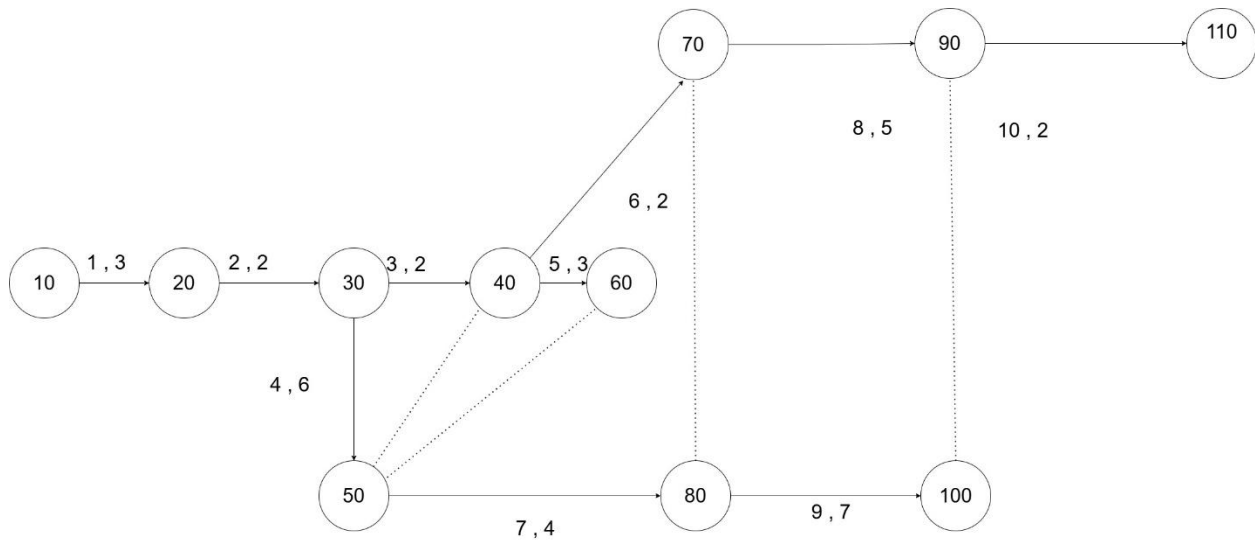
QUESTION 2 (10 MARKS)

A project has been defined to contain the following list of activities along with their required times of completion.

Activity No	Immediate Activity	Time (weeks)	Predecessors
1	Collect requirements	3	
2	Analyze processes	2	1
3	Analyze data	2	2
4	Design Process	6	2
5	Design data	3	3
6	Design Screens	2	3, 4
7	Design reports	4	4,5
8	Program	5	6, 7
9	Test and document	7	7
10	Install	2	8, 9

a) Draw a PERT Diagram for the activities.

(3 Marks)

b) Lists all the paths.

(2 Marks)

c) Calculate and identify the critical path.

(2 Marks)

d) Construct a Gantt chart for the project defined above.

(3 Marks)'

Answer :

a)

b)c)

- 2-3-5-7-8-10

  = 3+2+2+3+4+5+2 = 21

- 1-2-3-5-7-9-10

  = 3+2+2+3+4+7+2 = 23 (critical)

- 1-2-4-7-8-10

  = 3+2+6+4+5+2 = 22

- 1-2-4-9-10

  = 3+2+6+7+2 = 20

- 1-2-3-6-8-10

  = 3+2+2+2+5+2 = 16

- 1-2-4-5

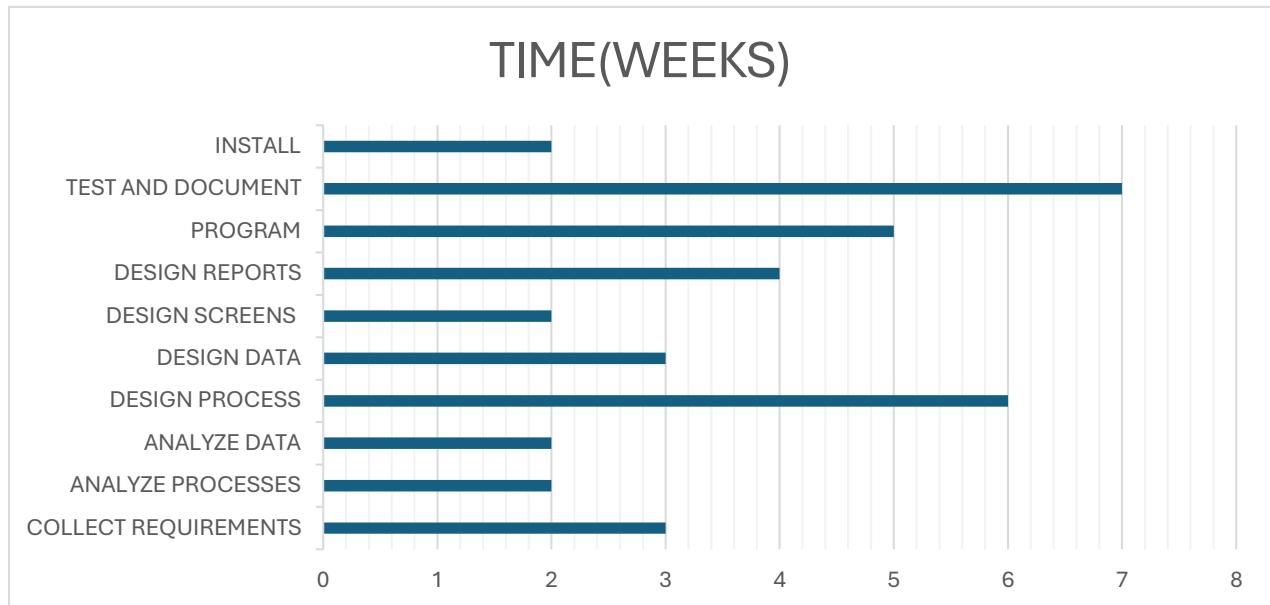 = 3+2+6+3 = 14

- 1-2-4-6-8-10

  = 3+2+6+2+5+2 = 20

- ❖ **<u>1-2-3-5-7-9-10 is critical path</u>**

d)

TIME(WEEKS)

Activity	Time (weeks)
INSTALL	2
TEST AND DOCUMENT	7
PROGRAM	5
DESIGN REPORTS	4
DESIGN SCREENS	2
DESIGN DATA	3
DESIGN PROCESS	6
ANALYZE DATA	2
ANALYZE PROCESSES	2
COLLECT REQUIREMENTS	3

QUESTION 3 (10 MARKS)

In the following table, you as a project manager for Smart Project in Company A have listed out all the activities (in weeks) for the project.

Activity	Description	Predecessor	Expected Time
A	Select administrative staff	-	12
B	Survey	-	9
C	Select equipment	A	10
D	Prepare final plan	B	10
E	Interview applicants for staff	A	10
F	Purchase and take delivery of equipment	C	35
G	Construct the project	D	40
H	Development an information system	A	15
I	Install the equipment	F, G	4
J	Train staff	E, H, I	9

a) Draw a PERT Diagram for the activities.
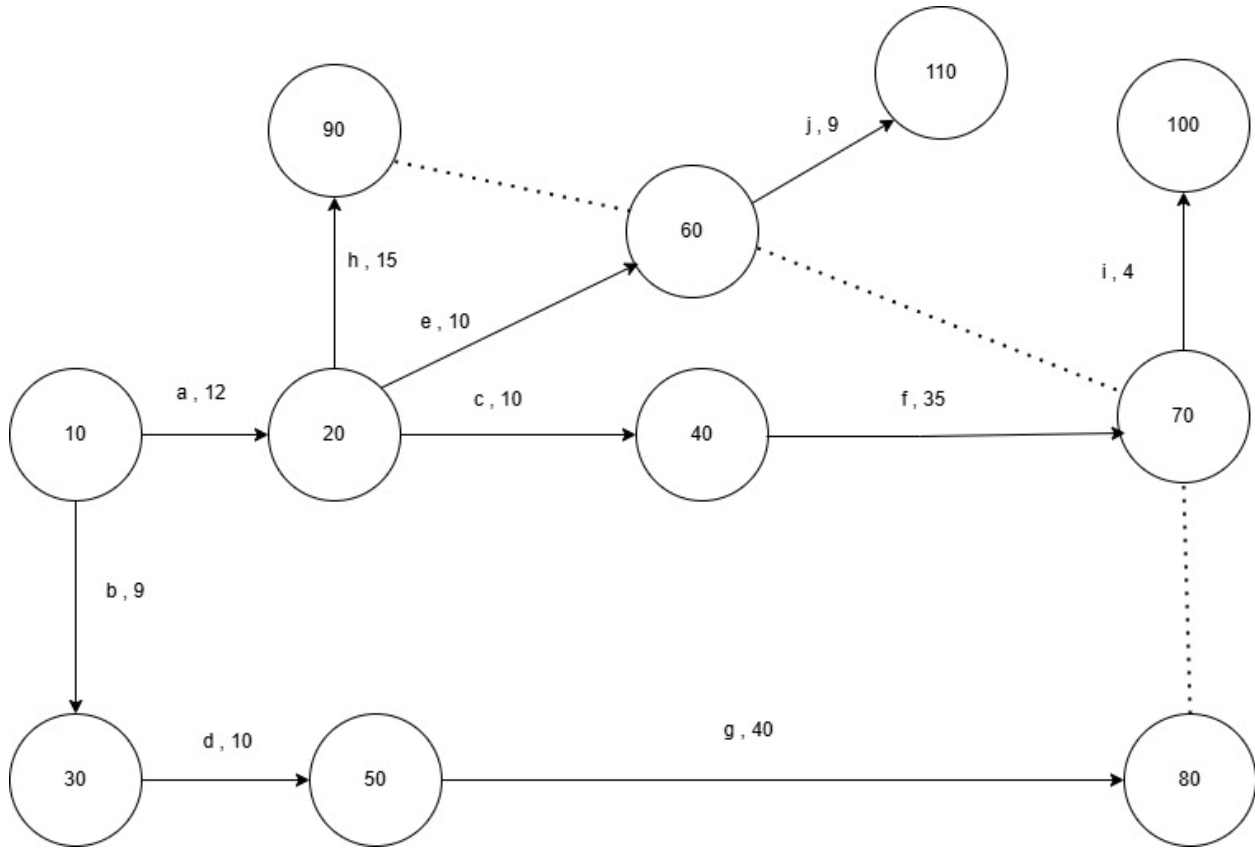
(5 Marks)

b) Lists all the paths.

(2 Marks)

c) Calculate and identify the critical path.

(3 Marks)

Answer question 3:

a)

b)c)

A-C-F-I-J

= 12+10+35+4+9 = 70

A-E-J

= 12+10+9 = 31

A-H-J

= 12+15+9 = 36

B-D-G-I-J

= 9+10+40+4+9 = 72 (Critical)

❖ **Critical path is B-D-G-I-J**

QUESTION 4 (10 MARKS)

At Good Solution Development, where you work as a project manager, you have been asked to conduct user training sessions for a new information system. You must develop a specific schedule for the following tasks:

- First, confirm arrangements for the training facility you plan to use (3 days).
- After you have confirmed the training facility, two tasks can begin at the same time: you need to send an e-mail message to all department managers announcing the training sessions (1 day) and you can develop the training material (5 days).
- As soon as the training material is complete, you can work on two tasks at once: arrange to have copies of handout material printed (2 days) and develop a set of PowerPoint slides (5 days).
- When the PowerPoint slides are ready, you conduct a practice training session with the instructor who will assist you (2 days).
- Finally, when the practice session is over and the handout material is ready, you can conduct the user training sessions (4 days).

a) Draw a PERT Diagram that shows the project.

(5 Marks)

b) Identify all path and its duration for each path from (a).
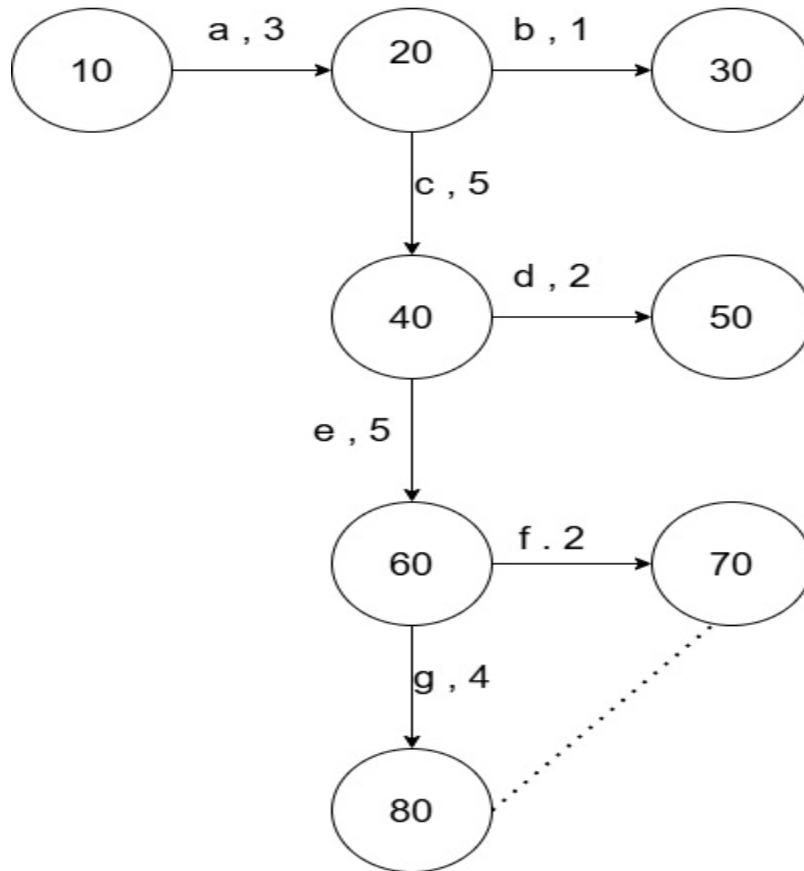
(4 Marks)

c) What is the critical path?

(1 Mark)

Answer questions 4

a)

Task No	Activity	Duration	Process
a	Confirm training facility arrangements	3	
b	Send email to department managers	1	a
c	Develop training material	5	a
d	Print handout materials	2	c
e	Develop PowerPoint slides	5	c
f	Conduct practice training session	2	e
g	Conduct user training sessions	4	d,f

b)

c)

- ✓ a-b
  3 + 1 = 4
- ✓ a-c-d-g
  3+5+2+4=10
- ✓ a-c-e-f-g
  3+5+5+2+4=19

  a-c-e-f-g is critical path because 19 days