TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2081 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, BAG, BGE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering (*CE 701*)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. All the activities progressing according to schedule is seldom the case in project. Explain on the basis of dynamic environment. [5]
2. Explain the project life cycle phases with activities carried out in each phase. [6]
3. Why a compressive project appraisal is necessary for formulation of any project? Explain the necessity of a project proposal for successful completion of the project. [2+8]
4. What are the various component of Engineering Project Proposal? Briefly explain each component. [2+6]
5. Define critical path. Write down its characteristics in network diagram of a project activities and mention its importance. [1+3]
6. Draw CPM network diagram and compute ES, EF, LS, TF, FF, Int.F and IF-from the information given below. Also compute project duration and mark the critical path. [12]

Activity	A	B	C	D	E	F	G	H	I	J	K	L	M
Predecessor	-	-	A	A,B	B	C	D	D	E	D,F	H,I	K	G
Duration (days)	2	4	3	5	5	1	4	5	7	2	3	6	7

7. What is Work Break Down Structure (WBS) in project planning? Write down its importance. [3+3]
8. Why continuous monitoring and control is required in project? Do you think project monitoring and controlling is difficult in Nepal? Write your point of view. [4+3]
9. A project is undertaken where the work has to be completed within 60 days with a budget of Rs. 20, 00,000. According to the progress reports, at the end of the first month, only 25% of the total work has been completed and at the cost of Rs. 12,00,000. Perform the earned value analysis (EVA) for this project. [6]
10. What is project control? Write down the steps of project control cycle. [2+3]
11. Projects in Nepal are usually completed over budget with delayed completion time, what are the major source of risk that are associated with the such projects in Nepal? [6]
12. Capital structure of a firm consists of 500 ordinary share @ Rs 100/ share and Rs 30,000 preference share @ 15% interest per year. Firm has a loan of 30,000 @12% per year. Earnings before interest and tax is 40,000. Determine dividend provided to each share for ordinary shareholders if tax rate 20%. [5]

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TRIBHUVAN UNIVERSITY
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Examination Control Division
2081 Baishakh

Exam.	Back		
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Programme	BCE, BEL, BAG, BGE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering (*CE 701*)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
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1. a) Describe, what are the activities to be performed in termination phase of project life cycle. [4]

   b) Differentiate between goal and objective of any project giving suitable example. Define project environment and explain how task environment of any project influences ability to achieve project's objectives even though it provides resources and limitations. [4+4]

2. a) Define project appraisal. State and explain what are the contents to be included in the project appraisal report. [1+5]

   b) Why any project needs to be formulated properly and concisely? State and analyse the various techniques used in project formulation to provide project parameters in terms of reference (ToR) of a project. [2+4]

3. a) Draw a network diagram from the following data: [10]

   i) Find Critical Path, Critical activities. (ii) Find ES, EF, LS, LF, TF, FF, Ind.F and Int.F.

Activities	Predecessors	Duration (Weeks)
A	None	1
B	None	3
C	A	2
D	A, B	4
E	B	3
F	C, D	5
G	D	1
H	D	2
I	E, H	6
J	E, H	3
K	F, G, I	2
L	K, J	4

   b) What is Work Breakdown Structure (WBS)? Discuss importance of WBS. [2+2]

4. a) Differentiate between quality assurance and control. What are the different types of cost associated with quality? [2+6]

   b) A project is undertaken where the work has to be completed within 60 days with a budget of Rs. 20,000. The cost breakdown per month is Rs. 10,000. The work scheduled in each month is half of the total work to be completed. According to the progress reports, at the end of the first month, only 25% of the total work has been completed and 50% of the total budget has been spent. Also, for the completion of 25% work, the actual cost incurred is 50% of the total budgeted cost. Perform EVA and comment on performance. [6]

5. a) Define concept of risk in project. Explain different categories of project risk. [2+4]

   b) Elaborate risk management cycle. How the project risk can be managed effectively? [2+4]

6. Write down sources of project financing. Explain about steps of capital budgeting process. Discuss net present value (NPV) used in capital budgeting decision. [2+3+2]

7. Write short notes on: [3×3]

   a) Importance of Work Breakdown Structure (WBS)
   b) Project monitoring, evaluation and controlling
   c) Project quality control

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2080 Bhadra

Exam.	**Regular**		
Level	BE	**Full Marks**	80
Programme	BCE, BEL, BAG, BGE	**Pass Marks**	32
Year / Part	IV / I	**Time**	3 hrs.

Subject: - Project Engineering (*CE 701*)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
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1. a) What is a project? What are its main attributes? Write the major activities carried out in the implementation phase of a project. [1+2+5]

   b) Discuss on scope of project engineering. Explain in detail the project operates in dynamic environment with suitable example. [2+6]

2. a) Why project appraisal is necessary for initiating a project? What are the major aspects that needed to be considered to carry out the appraisal of project? [2+4]

   b) Why project proposal is considered as the important document for imitating any project? Explain in regards with its contents. [6]

3. a) Find all the components of CPM from the following information: (USE AOA) [12]

S.N.	Activity	Duration (Weeks)	Predecessor	Successor
1	A	1	-	C, E
2	B	6	-	C, D
3	C	2	A, B	F
4	D	2	B	H
5	E	4	A	G
6	F	3	C	G, H
7	G	4	E, F	I
8	H	2	D, F	I
9	I	5	G, F	J
10	J	3	I	-

   b) Explain the differences between CPM and PERT. [4]

4. a) Differentiate between Monitoring and Evaluation. What are different tools of project quality control? [2+4]

   b) Suppose you have a project that is scheduled to be completed in 10 days at a budgeted cost of 100,000. At the end of day 6, you do an analysis and you determine the job is 70% complete and you have spent 65000. [6]

      i) Is the project ahead, behind schedule or on time?
      ii) Is the project expected to complete on budget, under or over budget?
      iii) What is project's SPI and CPI at Day 6^{th} ?

5. a) Define risk. Explain on different types of project risk. [2+4]

   b) How could you effectively manage risk in a project? Explain on qualitative and quantitative risk management system. [2+4]

6. a) Define the term project finance and what are the sources of financing in any project? Write down and explain about the determinants of structure decision to be undertaken for investment proposal. [2+4]

   b) Differentiate between conventional and project financing. A project has an initial investment of Rs 25,00,000 and the salvage value of Rs. 5,00,000. The annual revenue of the project is Rs 10,00,000 and the annual expenses is Rs 2,00,000. Calculate ARR, NRV, Profitability index (PI) and simple payback period of a project. [6]

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Year / Part	IV / I	**Time**	3 hrs.

Subject: - Project Engineering (*CE 701*)

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- ✓ *Attempt **All** questions.*
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1. a) Define the project in your word and explain its phases. [6]

   b) Explain characteristic of project comparing with final year project. [6]

2. a) Describe step by step process of project appraisal. [6]

   b) Describe different methods of project formulation. [10]

3. a) Draw a network diagram for a hydropower project having information as given below. Find out ES, EF, LS, LF, TF, FF and IntF, IndF and then analysis the situation of the project stating Critical Path, Project Completion Time and Critical Activities. [12]

Activity	Duration (month)	Predecessors
A	3	-
B	5	-
C	8	-
D	4	A
E	7	A
F	2	B
G	1	C
H	7	A
I	4	E,F,G
J	9	C

   b) What is project planning? Explain the importance of project planning. [4]

   c) Define Resource Schedule. What are key difference between Resources Leveling and Resources Smoothing? [1+3]

4. a) Differentiate between quality assurance and quality control. Explain the different types of cost associated with quality. [8]

   b) You have a project that is schedule to be completed in 10 days at a budgeted cost of Rs. 100,000. After the completion of 6 days, you do an analysis and you determined the job is 70% of work is complete and the expenditure is Rs. 65,000. Based on this data, is your work performance is on track? Perform EVA and comment on your own performance. [6]

5. Why risk analysis is important during project planning? What might be the different types of risk in a project? What are the strategies for risk response planning? [2+4+4]

6. a) Explain capital structure planning. [3]

   b) A project has a capital structure consisting of 4000 ordinary share @ Rs. 100 per share and loan capital of $ 600,000 @ 10% interest per year. It wants to raise additional capital of $1 million and has two option: [5]

      i) 4000 ordinary share @ Rs. 100 per share and loan capital of 6000,000 @ 10% interest per year;

      ii) 2000 ordinary share @ Rs. 100 per share, Rs. 300,000 preference share @ 12% dividend per year; and loan capital of 500,000 @ 12% interest per year.
      Select best option if EBIT = Rs. 350,000 and tax rate = 30%.

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TRIBHUVAN UNIVERSITY
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2079 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, BAG, BGE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering (*CE 701*)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What are different bases and the type on that bases of project classification? [6]
   b) Describe with suitable example considering running project of Nepal. How the different operating/Task environment making these project more complex and uncertain? [6]
2. a) What is project proposal? Explain step by step procedure for developing a project proposal. [2+6]
   b) Why project appraisal is necessary? Distinguish between the technical and financial proposal of a project. [2+4]
3. a) Draw a network diagram for a road project having information as in table. Find out ES, EF, LS, LF, TF, FF and Int F, Ind F and then analysis the situation of the project starting critical path, project completion time and critical activities. [12]

S.N.	Activity	Duration(days)	Predecessor
1	A	6	-
2	B	4	-
3	C	5	-
4	D	2	A,B
5	E	4	C,D
6	F	2	D
7	G	5	D
8	H	8	D
9	I	5	G
10	J	6	E,G

   b) Explain in brief about Gantt chart, link barchart and milestone chart with example. [8]
4. a) Define quality. Distinguish between Quality Assurance and Quality Control. List out different factors disturbing Quality of the projects in Nepal. [2+2+2]
   b) Er. Jack has to complete 450 cum brickwork in canal construction in 40 days. According to contract agreement, the cost per cum brickwork is Rs. 16000. After the brickwork is started, the monitoring team visited the project in 20 days; they found that only 30% of the total cum brickwork is completed. The actual cost per cum expensed is Rs. 16500. Based on the above statement, find Cost Variance, Schedule Variance, Cost Performance Index and Schedule Performance Index and also analyze the situation and analyze the situation of the project. [6]
5. a) Describe different sources of Risk. [6]
   b) Explain different methods of Qualitative and Quantitative analysis of Risk. [6]
6. a) What are the difference source of project Finance to establish the construction company? ABC project has total capital of Rs. 6,00,000, that consists of 2,000 shares @ Rs 100; 2,50,000-perference share at 16% interest and remaining borrowed from bank as loan @ 15% interest. Earnings before interest and tax in a year is Rs. 1, 25,000. Calculate earnings per share and book value of share if tax is 30%. [1+4]
   b) Explain the concept of project finance. [5]

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Exam.	**Back**		
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Programme	BCE, BEL, BAG, BGE	**Pass Marks**	32
Year / Part	IV / I	**Time**	3 hrs.

Subject: - Project Engineering *(CE 701)*

- Candidates are required to give their answers in their own words as far as practicable.
- *Attempt **All** questions.*
- *The figures in the margin indicate **Full Marks**.*
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1. a) What is project environment? How can you say that the project operates under the dynamic environment? Explain with an example. (3)
   b) What are the major activities that are required to be carried out during the initiation phase of a project? [2+5]
2. a) Explain the procedure for developing project proposal. [5]
   b) Explain in brief about different techniques of project formulation. [6]
3. a) In which situations we have to use Bar chart, CPM and PERT for scheduling of the project. [6]
   b) Draw the network diagram and Compute EST, EFT, LST, LFT, TF, FF, IF and interfering floats of each activities of a project having precedence relationship is given below. The time duration are in days. (6) [2]

Activity	A	B	C	D	E	F	G	H	I	J
Predecessors	-	A	A	A	B	D	C	G	E	F, H, I
Duration	10	12	8	6	10	8	4	10	6	4

(8) [12]

4. a) Discuss Cost control, Cost Control Cycle and method of Cost Control in brief. [1+2+3]
   b) A construction work had to be completed in 10 days with 50 labor days at Rs 1000 per day i.e., with total cost of Rs 50,000. At the end of third day, only 25% work was completed with the use of 18 labor days at Rs 800 per day. Perform EVA and comment on its performance. (6) [8
5. Why project risk management is necessary? What are the different nature of risk? Discuss on the major types of risks that might occur in planning and implementing the hydropower project? [2+4+
6. Define capital budgeting and its importance. A firm has equity capital consisting of 5000 ordinary share @ Rs 100 per share and Rs. 3,00,000 preference share at 12% interest per year and Rs. 2,00,000 loan at 10% interest per year. If firm's earnings before interest and tax is Rs. 3,50,000 and tax rate applicable is 25%. Determine earning per share and book value. (6) [3+
7. Write short notes on: (3) [3×
   a) Feasibility Study
   b) Project Proposal
   c) SWOT analysis

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TRIBHUVAN UNIVERSITY
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Examination Control Division
2078 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, BAG, BGE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE 701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
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- ✓ *Assume suitable data if necessary.*

1. a) Define Project and describe it's characteristics in brief. [6]

   b) Discuss Project Risk Management. As a project manager how will you manage risk in a Project? [6]

2. What is project appraisal? Discuss on the content and the procedure for developing a good proposal? [2+10]

3. Find all components of CPM from the following information using AOA method. [14]

S.N.	Activity	Predecessors	Duration (week)
1	A	-	3
2	B	-	2
3	C	A	4
4	D	B	3
5	E	B	3
6	F	C	3
7	G	C, D	2
8	H	E	5
9	I	F, G, H	3

4. a) Define project Schedule control. Explain about schedule control cycle. How to keep project on schedule? Explain it. [6]

   b) A company has signed fixed cost contract to installed 1000 new parking meters at cost of Rs. 20,00,000. Old parking meters have to be removed from their stands and replaced with new ones. The cost of doing this is Rs. 2000 per meter. It is estimated that 25 meters is installed each day. On the review date at day 18 only 400 meters has been installed and it was found that actual cost of work performed equals to Rs. 10,00,000. Find out all the parameters of earned value analysis and comment on the performance status of this project. [8]

5. a) Why risk response planning is important in project? What are the response strategies for negative risk? [6]

   b) What do you mean by Project Procurement management? Explain different process adopted for procurement in construction project? [6]

6. Describe Capital Budgeting Process. A project has total capital of Rs. 10,00,000 which consist of Rs. 4,00,000 preference share @12%, 2,50,000 debt@10% and 3500 ordinary share @ Rs. 100. If the earnings before interest and tax is Rs. 8,00,000. Determine EPS and book value of share value of share if tax rate applicable is 20%. [3+4]

7. Write short notes on: [3×3]

   a) Project management and its function
   b) Resource leveling and its process
   c) Quality control and its techniques

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, BAG, BGE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE 701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Discuss citing project characteristics. How a project can be differentiated form other permanent systems? [5]
2. Mention project life cycle and discuss various activities carried out in each phase of a project. [6]
3. Define bilateral, multilateral and joint venture project. Explain the major elements that influence the external environment of a project. [3+4]
4. Explain the necessity of an appraisal in a project. Explain in detail the techniques of project formulation. [4+4]
5. What is dummy activity? Write down the use of critical path in a CPM network diagram. Find all the components of CPM from the following information. Use AOA method. [1+3+13]

S.N.	Activity	Duration (week)	Predecessor
1	A	1	-
2	B	3	-
3	C	2	A, B
4	D	5	B
5	E	3	B
6	F	1	C, D
7	G	3	D
8	H	4	D, E
9	I	5	F, G, H

6. Define resource leveling and smoothing? Prepare a 4 level WBS of any engineering project of yours interest. [2+4]
7. As a project manager how will you control the project during implementation phase? Explain with an aid of project control cycle. [6]
8. A project has a planned budget of Rs. 30,00,000 and schedule of 24 months. During its implementation you have monitored the following data: Perform EVA and comment on the performance and also the draw S-curve to forecast the final completion budget and schedule. [8]

Months	5	10	15	20
Work completed	20%	45%	60%	70%
Actual Expenditure (Rs)	7,00,000	13,00,000	20,00,000	24,00,000

Or,

How EVA is used in controlling cost of a project during project implementation. Explain EVA with 3 different examples requiring different approach in control.

9. Define project risk management. What is qualitative and quantitative risk analysis? What are the major steps that you take in managing risks? [2+6+4]
10. What is capital budgeting? Explain its features. [2+3]

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Ashwin

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE, BEL, BAG, BGE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE 701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Define project. Explain the how technology and capital can be transferred in a joint venture project with a suitable example? [2+4]
   b) Differentiate between a goal and objective of the project. Explain goal setting criteria of a project with a suitable example. [2+6]
2. a) Write down three number of objectives and three number of limitations of any project proposal. Explain a good project proposal should give answer of which types of questions. [3+3]
   b) Differentiate between project appraisal and project formulation. Explain in details about techniques of project formulation. [2+4]
3. a) Define Work break down Structure (WBS) with example specifying levels and code. [8]
   b) Draw network diagram. Compute EST, EFT, LST, LFT, TF, FF, interfering float and independent float. Write down the significance of calculating total float in network analysis. [16]

Activity	A	B	C	D	E	F	G	H	I
Predecessor	-	A	A	A	B	C	D	C, E	F, G
Successor	B, C, D	E	F, H	G	H	I	I	-	-
Duration (day)	5	4	2	3	2	1	3	1	2

4. a) Define monitoring, evaluation and controlling. What are the major difficulties faced by a project manager in implementing the project control system in Nepal. [3+5]
   b) 50 units of plantation have to be done in 3 weeks period. Per unit cost of plantation is estimated as Rs 2500 of which progress monitoring was done 1 week after the work was started. Only 20 units of plantation was found completed and the account record showed that the actual expenditure per unit was Rs 2500. Perform EVA and comment on the performance. [6]
5. a) Define project risk. Write down tools and techniques used for risk identification in a project. As being a engineering student, how do you carry out risk response planning. [2+4+4]
   b) Is preference shares are sources of project finance? Explain it. Explain about the determinants of capital structure decision made in any business firm. [2+4]

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 Chaitra

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCE, BEL, BAG, BGE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE 701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
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- ✓ *Assume suitable data if necessary.*

1. a) What is project? Explain its dimensions and characteristics. [2+5]
   b) Explain different environments within which a project need to be conducted. [5]

2. a) Why project appraisal is necessary for initiating a project? What are the major aspects that needed to be considered for carrying out the appraisal of a hydropower project? Discuss. [2+6]
   b) Explain in detail the procedure for developing the project proposal. [6]

3. a) Why schedule is important in planning a project? Find all the components of CPM from the following information. Use AOA method. [3+14]

S.N	Activity	Duration (month)	Predecessor	Successor
1	A	1	-	C, D
2	B	3	-	E
3	C	2	A	F, G
4	D	2	A	H
5	E	5	B	I, J, K
6	F	1	C	I
7	G	3	C	I, J, K
8	H	3	D	I, J, K
9	I	5	E, F, G, H	L
10	J	1	E, G, H	L
11	K	4	E, G, H	M
12	L	1	I, J	-
13	M	2	K	-

   b) Prepare a bar chart of an irrigation project mentioning at least 6 activities. Also show the milestones in a chart. [7]

4. a) What is project control cycle? Explain it with elements of control. [2+4]
   b) Perform EVA on the basis of following given information of "Earthquake Affected Monasteries Reconstruction Project" (EMRP) which was monitored after 6 months of its implementation. State controlling statements on the basis of your evaluation. [8]

Descriptions of project	Standard (Budget/Plan) information	Descriptions of project	Monitored information regarding progress (Completed)
1. Number of monasteries to be reconstructed	753 units	1. Reconstructed monasteries	179 units
2. Reconstruction project to be completed in	30 months	2. Average expended reconstruction cost per unit	Rs. 7.8 millions
3. Average reconstruction cost per unit	Rs. 9.3 millions		

5. a) Define risk, its types and sources. As a project manager how would you rectify the possible risk on your project? Give your answer considering all possible steps falls under Risk Management. [10]
   b) What are the sources of project finance? A project has an initial investment of Rs. 3,00,000 which gives annual return of Rs. 50,000 for 8 years. The salvage value after 8 years will be Rs. 10,000. Make your investment decision based on ARR, Payback period, IRR and Profitability index (PI) method. [2+4]

05 TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

Examination Control Division

2075 Ashwin

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE, BEL, BGE, B. Agri.	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Explain the importance of project appraisal. Differentiate between technique and finance proposal of a project. [8]

   b) Discuss the techniques of project formulation. [8]

2. a) Explain project appraisal and its importance. [8]

   b) Describe the essence of writing a good proposal. [8]

3. a) Draw CPM network diagram and compute ES, EF, LS, TF, FF, Int.F and IF from the information given below. Also compute project duration and mark the critical path. [12]

Activity	A	B	C	D	E	F	G	H	I
Duration (week)	5	4	0	6	7	8	6	3	2
Predecessor	-	-	A	A	B,C	B,C	D,E	F	GH

   b) Write the advantages of Bar chart. [4]

4. a) What would be the impact on project due to unmanaged risk in project? Write down risks in project in different phases of project life cycle. [8]

   b) Explain and justify that risk transfer and risk reduction are techniques of risk response planning in any project. [8]

5. a) Explain project control cycle and write the factors to be considered during quality control of a project. [8]

   b) Describe project finance. Capital structure of a firm consists of 500 ordinary share @ Rs 100/share and 300 preference share @ Rs 100/share at 15% interest per year. Firm has a loan of 30,000 @ 12% per year firms earning before interest and tax is 40,000. Determine earning per share and book value. Tax rate = 40% [8]

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05 TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

Examination Control Division

2074 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, BGE B. Agri.	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Describe that the specified job/task is a project? Write the major activities carried out in the implementation phase of a project? [4+4]

   b) Explain in detail the project operates in dynamic environment. [8]

2. a) Write various analysis to be carried out for project appraisal. [8]

   b) Explain in details about the contents of writing a good project proposal. [8]

3. a) Draw CPM network diagram and compute EST, EFT, LST, LFT, TF, FF, Int.F and IF from the information given below. Compute project duration and mark the critical path. [12]

Activity	A	B	C	D	E	F	G	H	I
Duration (week)	3	2	0	4	7	5	8	6	1
Predecessor	-	-	A	A	B,C	B,C	D,E	F	G,H

   b) Explain total float and independent float. [4]

4. a) Explain project control cycle and write the factors that should be considered during the quality control of a project. [4+4]

   b) 50 units of plantation have to be done in 4 weeks period. Per unit cost of plantation is estimated as Rs. 200 of which progress monitoring was done 3 weeks after the work was started. Only 60% work was found completed and the account record showed that the actual expenditure for plantation per unit was Rs. 300. Perform EVA and comment on works. [8]

5. a) Define risk and its types. How could you manage risk in a project effectively? Justify with risk management cycle. [2+6+2]

   b) What are the sources of project finance? A firm has equity capital consisting of 5000 ordinary share@ Rs 100 per share and Rs. 3,00,000 preference share at 12% interest per year and Rs 2,00,000 loan at 10% interest per year. If firm's earning before interest and tax is Rs 3,50,000 and tax rate applicable is 25% determine earning per share and book value. [6]

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01 TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

Examination Control Division

2074 Ashwin

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE, BEL, BGE, B.Agri.	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Define Project. Describe Joint Venture Project and Possibility of Technology Transfer through it. [1+4]

   b) What is Project Environment? How does political environment affect project in Nepal? [1+4]

2. a) Describe the importance of project appraisal. Explain the difference between Economic Appraisal and Financial Appraisal. [2+4]

   b) Define Project Proposal. Differentiate between Technical Proposal and Financial proposal. How does client evaluate the proposal for awarding the contract of Construction and Consulting works? [1+2+3]

3. a) Define Project plan. Explain the advantages of planning Engineering Projects. [1+3]

   b) Define Total Float, Free Float and independent float. Draw a CPM network and Find EST, EFT, LST, LFT, TF, FF, IntF and IndF. Show critical path also. [16]

Activity	A	B	C	D	E	F	G	H	I	J
Successor	B, C, D	E	F, H, I	G	H	J	I	J	J	
Duration-Days	2	3	4	5	4	3	2	1	2	3

   c) Define resource schedule. Differentiate between resource levelling and resource smoothening. [4]

4. a) Define Monitoring and Evaluating. Explain project control cycle with suitable example. [1+5]

   b) Define quality. Differentiate between quality assurance and quality control. As a site engineer what steps would you follow to control quality? [1+2+3]

5. a) Define project risk. Differentiate between internal and external risks. What are the sources of internal risks in Nepal in the present context? Explain internal risks for the implementation of hydropower project in Nepal. [1+2+2+2]

   b) Define Risk Management. Describe the steps of risk management. [1+4]

6. a) Define Project Finance. What are the features of sound and appropriate capital structure? A company has total Capital of Rs 1500000 which consists of Rs. 400000 shares, Rs. 200,000 preference share issued at 12% interest per year and Remaining loan issued @ 8% interest. Calculate EPS if earnings before interest and tax in a year is Rs 300,000 and tax rate is 20%. [1+2+2]

   b) Define Capital Budgeting and explain its importance. What are the methodologies of evaluating projects financially and Which method is most reliable? [1+2+2]

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01 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2073 Shrawan

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BCE, BEL, BGE, B. Agri	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Discuss project phases and life cycle giving examples of activities carried out in different phases and stages of life cycle. [10]

OR

Classify project and discuss its characteristics in detail including the importance of good project environment.

2. Define project proposal. A well prepared project proposal should give answer of what types of question, explain it. Discuss elaborately about different aspect to be considered in feasibility study of a road project. [2+2+5]

3. a) List down planning tools used in any project. Milestones chart is improved version of a bar chart, Justify it, with example. Explain WBS. [2+4+2]

   b) Draw a network diagram and find out EST, EFT, LST, LFT, TF, FF independent float, interfering float, project completion time of a building project having following details. What is the significance of critical path in the network analysis? [13]

Immediate Predecessor	-	-	-	A	A	B	C	C	D	E,F,G	H
Activity	A	B	C	D	E	F	G	H	I	J	K
Duration (Weeks)	10	12	9	8	5	13	6	4	15	7	9

4. a) What is the difference between evaluation and controlling? Discuss about elements of project control. [5]

   b) For a particular project budgeted cost of work schedule was Rs. 9,50,000 and budgeted value of the work performed was Rs.8,00,000 at a point of reporting date i.e at 20 weeks from starting date. But, the actual cost of work performed was Rs. 10,00,000 and the project completion time is 45 weeks. The project having estimated cost of Rs. 50,00,000. Based on above information, draw features of that project and comment on each parameter of earned value analysis. [7]

5. a) How risk can be identified and analyzed for a rural road project. Explain the procedure. [5]

   b) What are the methods that could be used in risk management after identifying major risk. Justify giving suitable example how risk transfer is taken as risk response planning. [5]

6. Define the term project finance and what are the sources of financing in any project? Write down and explain about the determinants of capital structure decision to be undertaken for investment proposal. [3+5]

7. Write short notes on: (any two) [5×2]

   i) Cost-benefit analysis
   ii) Resource leveling
   iii) PMIS
   iv) Project software

01 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2072 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, BGE, B. Agri.	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Define project. Explain the characteristics of project with appropriate examples. [1+4]
   b) How project goal or objectives are set? Explain goal setting criteria. [5]
2. a) What are the objectives of project appraisal? Explain Financial and Technical Appraisal in detail. [2+4]
   b) Define project proposal. Discuss cost benefit analysis for a road project. [2+4]
3. a) Define planning and scheduling. Prepare a Linked Bar-chart for a construction project with at least 10 activities. [2+4]
   b) Define Critical Activities and Float. Draw a CPM network [AOA or AON] and find EST, EFT, LST, LFT, TF, FF, IntF and IndF. [2+5+6]

Activity	A	B	C	D	E	F	G	H	I	J	K	L
Predecessor	-	-	A	A,B	B	C,D	D	D	E,H	E,H	F,G,I	L
Duration Days	1	3	2	4	3	5	1	2	6	3	2	4

   c) What is WBS? Discuss importance of WBS. [4]
4. a) Define Monitoring and Control. Explain why project controlling is difficult in Nepal. [3+3]
   b) What is EVA? A construction work had to be completed in 10 days with 50 labour days at Rs 1000 per day i.e with total cost of Rs 50,000. At the end of third day, only 25% work was completed with the use of 18 labour days at Rs 800 per day. Perform earned value analysis and comment on the performances. [1+5]

OR

Define quality. Explain how quality can be controlled in construction of urban roads. [6]

5. a) Define Project Risk. How risk can be analysed? Explain with example of hydropower project. [1+4]
   b) How risk can be managed? Explain how you manage three risks in hydropower project you identified above. [5]
6. Define Capital Budgeting decision. Explain its importance. Calculate Explain ARR of a project with initial cost of Rs. 100000 and salvage value of Rs 20000 after 5 years. Stream of income in year 1 to year 5 are Rs. 15,000; 20,000; 25,000; and 20,000 Tax rate is 25%. Assume suitable method of depreciation. [1+2+2]
7. Write short notes on: (any two) [4×2]
   i) Project life cycle
   ii) Planning software MS project
   iii) Elements of project control
   iv) Environmental analysis for project formulation

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01 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2072 Kartik

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BCE, BEL, B.Agri.	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ ***All** questions carry equal marks.*
- ✓ *Assume suitable data if necessary.*

1. a) Explain Work Breakdown Structure as a tool of project planning and state the importance of project planning.

   b) Draw the CPM network diagram (or Precedence diagram) from the following activity relationships: Compute total minimum project time of completion, critical activities and ES, EF, LS, LF, TF, FF, IntF and IndF.

Activity	A	B	C	D	E	F	G	H	I
Duration	3	5	5	6	2	3	4	2	6
Predecessor	-	A	A	A	B,C	C	D,E,F	D	G,H
Successor	B,C,D	E	E,F	G	G	G	I	I	-

   Also mark the critical path in the network diagram.

2. a) Define project and explain it's characteristics in brief. What are the major differences between project management and traditional management? Explain about the external environment of the project.

   b) Define project formulation and project appraisal. Write the procedure for developing a project proposal. What are the drawbacks of cost-benefit analysis of project formulation?

3. a) Why project planning is necessary to operate any project in dynamic environment? Linked bar chart is one of planning tool in project scheduling, justify this statement with suitable example. Is there limitations of this chart?

   b) Find out the expected time of each contractor to complete a given project having following details. Also, find out which contractor you prefer for operation and why?

Contractor	t_o	t_l	t_p
A	5	7	13
B	6	11	12
C	3	5	7

4. a) Discuss "monitoring, evaluation and control" is a must to succeed in a project. Explain project management information system and justify "the right information at the right time reduces the risk of wrong decision".

   b) Explain the term 'project finance' and describe features of sound capital structures. Write down and explain with example what are the factors to be considered to take capital structure decision.

5. a) Define risk management planning. Explain in details about internal and external risks in project. Justify giving suitable example how risk reduction is taken as risk response planning.

   b) A project has total capacity of $1,000,000 which consists of 4,000 shares @ $100; $300,000 preference shares @ 18% interest; and remaining loan @15% interest. Earning before income and tax in a year is $200,000. Compute the Earning per Share (EPS) and Book Value of Share, if Tax Rate is 20%.

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01 TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

Examination Control Division

2071 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, B.Agri.	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Define Project. Elaborate Labor intensive, Capital Intensive, Joint Venture and Multilateral projects. Explain various elements of task environment. [2+4+4]

2. a) What is project appraisal? Explain marketing, management and environmental appraisal. [2+6]

   b) Define project proposal. Explain in brief about procedure for developing a project proposal. [2+6]

3. a) Draw the network diagram of the given project having following activities. Obtain project duration, critical path, TF, FF and interfering float. Prepare the resource aggregation chart and allocate the mason using early start schedule. [8+5]

Activity	Duration (days)	Mason (per day)
1-2	3	1
2-3	3	2
2-4	4	4
2-5	2	2
3-10	3	2
4-6	2	3
4-7	4	3
5-9	4	4
6-8	2	2
7-9	4	1
8-9	3	2
9-11	3	4
10-11	2	2
11-12	2	1

   b) Discuss on Work Breakdown Structure. [3]

4. a) Define Monitoring and Evaluation. Explain project control cycle. [2+4]

   b) Why cost control is important? A contractor agreed to build 50 doghouses in 90 days at a price of $1000 per unit. 20 days later, the contractor has finished 10 doghouses with an actual cost of $8500. What is the status of the project? [2+4]

   c) What is PERT? Discuss with example. [4]

5. Define Risk. Explain various sources of project risks. Describe important steps of risk management. [2+5+5]

6. a) What is capital structure planning? Discuss with examples. [5]

   b) What is capital budgeting decision? Explain its importance. Discuss Net present value used in capital budgeting decision. [5]

OR

What are the sources of financing large projects?

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01 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2070 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, B.Agri.	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Differentiate between labour intensive and capital intensive projects with example? Explain project Goal setting ~~critical~~ criteria with an aid of suitable example. [3+5]

2. Define project formulation and project appraisal. Describe procedure for developing a project proposal. [2+2+8]

3. a) Explain Bar chart with its advantages and limitations. [8]

   b) Define the term planning and explain the features of good project planning? Find all the components of CPM from the following information: [4+12]

S.N	Activity	Duration	Predecessor	Successor
1	A	3	-	D
2	B	6	-	E,G,I
3	C	2	-	F
4	D	2	A	G
5	E	1	B	H
6	F	3	C	I
7	G	7	B, D	-
8	H	3	E	-
9	I	4	B, F	-

4. a) Justify the statement "quality costs more, but lack of quality costs even more" giving examples of total quality cost included to achieve good quality. [6]

   b) A construction company is planned to fix 100 units of precast window in 20 days with a budget of 25 lakhs. The progress status was reviewed on 10 days from date of start of fixing and only 40 units were fixed with the expenses of 9 lakhs. Find out all the parameters of earned value analysis and comment on its performance. [6]

5. Define risk and risk management. Explain about internal risk of any construction project that is facing by a Nepalese construction company. Explain with suitable example risk transfer. [2+8+2]

6. a) Define Capital Structure. XYZ company has total capital of Rs.10,00,000 which consists of 40% share and 60% loan issued @ 12% interest. It requires Rs.20,00,000 more to invest in a project and is considering for following three options. [1+6]
   i) Rs.8,00,000 share and Rs.12,00,000 loan @14% interest
   ii) Rs.5,00,000 share; Rs.7,00,000 preference share @15% interest and Rs.8,00,000 loan @14% interest and
   iii) Rs.10,00,000 share and Rs.10,00,000 preference share @ 15% interest.
   Which is the best option based on Earning Per Share Calculation if the Earning before interest and tax in a year is Rs.5,00,000 and tax applicable is 30%

   b) Define Capital Budgeting decision. Explain ARR or return on Equity. Recommend appropriate measures that Government should take to attract private sector in Hydropower projects. [1+2+2]

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02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2070 Chitra

Exam.	**Old Back (2065 & Earlier Batch)**		
Level	BE	**Full Marks**	80
Programme	BCE, BEL,BEX,BCT,BME	**Pass Marks**	32
Year / Part	IV/ I	**Time**	3 hrs

Subject: - Project Engineering *(EG706CE)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a. Define Project. Write five characteristics of a Project and explain any two of them. [2+3+3]
   b. What is plan? Why planning is important in project? Write systematic process of project planning. [2+3+3]
2. a. Draw a Gantt Chart of a project having at least 10 activities. Write its advantages. [6+2]
   b. Define the terms Dummy activity, Total Float, Free Float and independent float. [2+2+2+2]
3. a. Draw a CPM network. Find EST, EFT, LST, LFT, TF, FF. [4+6]

Activity	A	B	C	D	E	F	G	H	I
Predecessor	-	-	A	B	B	B, C	D	E	F, G, H
Duration	2	4	5	5	3	4	2	5	3

   b. Explain basic requirements of linear programming. [6]
4. a. Define Monitoring, Evaluating and Control. Explain Project Control Cycle. [4+4]
   b. Why cost control is necessary in a project? What is earned value? Explain EVA approach of cost control. [2+2+4]
5. a. What are the sources of project finance? Explain any four determinants of capital structure planning. [2+6]
   b. Why capital budgeting is important? Determine the feasibility of the following projects using any two methods. MARR is 15% [2+6]

Initial investment	Annual Income	Annual O & M	Useful Life	Salvage Value
1,00,00,000	25,00,000	4,50,000	5 years	40,00,000

6. Write Short notes on (Any four) [4X4]
   a. SMART objectives
   b. Resource leveling
   c. Feedback Control
   d. Types of Budgets
   e. EIA
   f. WBS

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02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2070 Ashad

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BCE, BEL, B.Agri.	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering *(CE701)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Differentiate between Bilateral, Multilateral and Joint Venture project with example? Discuss the external environment in which a project is operated. [4+6]
2. Define concept of project appraisal. Explain about contents of technical and financial proposal. Also explain input analysis of project formulation. [2+7+3]
3. a) Construct the CPM network for a project with following activities: [16]

Activities	A	B	C	D	E	F	G	H	I	J
Predecessor	-	-	A,B	B	A	C	E,F	D,F	G,H	I
Days	4	7	4	3	2	1	6	5	8	9

Find:

i) Critical path
ii) Project completion time
iii) EST, EFT, LST, LFT, Total float,
Free float (F_F), independent float (I_dF) and Interferring float (If)

b) Define the terms resource histogram, resource levelling limited resource allocation and work break structure. [2+2+2+2]

4. a) Write the concept of Monitoring, Evaluation and Controlling and also explain project control cycle. [3+4]

b) Why cost control is important in project? 15 houses were to be completed in three months with per unit cost of Rs 25,00,000/-. In one month 4 houses were completed with total expenditure of Rs 96,00,000/- use earn value analysis to find the status of the project. [3+4]

5. Define 'risk'. Explain various sources of project risk. Elaborate risk response planning. [1+5+4]
6. Define the term project financing. Explain features of capital structure planning. A project has total capital of Rs 5,00,000 which consists of 2000 shares @ Rs 100, 1,50,000 preference share 18% interest and remaining loan @ 14% interest. Earning before interest and tax in a year is Rs 1,00,000. Calculate EPS and book value of share if tax rate is 25%.[2+4+4]

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02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2068 Baishakh

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCE, BEL, BEX, BCT, BME	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Define a project and classify it? Name the characteristics of a project and describe what you mean by temporary team/organization in a project. [8]

   b) Name project life cycle and explain how you set goals in a project by giving example of one goal and verifying the same with the criteria of goal setting. [8]

2. For a project, following durations are given: [16]

SN	Activity	Durations	Precedence	Successor
1	A	5	–	E
2	B	6	–	F
3	C	7	–	G
4	D	8	–	H
5	E	9	A	I, J
6	F	7	B	I, J
7	G	5	C	I, J
8	H	3	D	I, J
9	I	4	E, F, G, H	–
10	J	5	E, F, G, H	–

Find EST, EFT, LST, LFT, TF, FF. Show critical path and find duration.

3. a) Define PERT and discuss its uses. Project A and B have t_0, t_m and t_p as 5, 8, 12 and 6, 8, 11 respectively. Find Mean and Standard Deviation. Which project is better and more certain? [8]

   b) What are Gantt chart and discuss about resource allocation and smoothing. [8]

4. a) Differentiate Monitoring and Controlling by explaining Project Control Cycle. Explain the concept of Earned Value Analysis used for controlling cost. [8]

   b) Define Work Breakdown Structure? Write its importance and use. [8]

5. a) Explain the importances of Budgeting. Name different types of budgets and explain Capital Budgeting decision and Budgeting process. [8]

   b) Describe Socio Economic survey and also social and ordinary cost benefit analysis. [8]

6. Write short notes on: (any two) [8+8]

   a) Environmental problems and type of impacts
   b) Project Management Information System (PMIS)
   c) Linear Programming
   d) Goal setting in a project

7. Write short notes on: [4×4]

   a) WBS and its uses
   b) Feedback Control System
   c) Manpower Levelling
   d) Cashflowability and Capital Structure

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03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2067 Ashadh

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCE, BEL, BEX, BCT, BME	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Explain project family tree with suitable example. Explain also criteria of goal setting in any project. [4+4]

   b) List out different phases of project life cycle. Explain in details what are the activities to be done in implementation phase of project life cycle. [8]

2. Define forward and backward pass in the network analysis. Draw the network diagram and compute EST, EFT, LST, LFT, TF, FF, IF and interferring floats for each activities of the project having precedence relationship as shown below. Also find out critical path. [4+12]

Activity	A	B	C	D	E	F	G	H	I	J	K	L
Duration (days)	10	9	7	9	8	5	11	6	9	12	10	8
Predecessors	---	---	A	A	B	B	D, E	C, G	H	G	G, F	K

3. a) Explain with examples closed system and open system of control. Justify the statement "Quality costs more, but lack of quality costs even more". [8]

   b) Define Project Management Information System (PMIS), stating objectives of PMIS. Explain the various choice of information channel in a project. [8]

4. a) Why project planning is necessary in any project? List out the planning tools used in project management. Write down the limitations of conventional bar chart showing suitable example of a bar chart. [4+4]

   b) Explain earned value analysis graphically showing favourable and unfavourable cases of variance. For a particular project, budgeted cost of work schedule was 9,50,000 and budgeted value of the work actually completed or earned value was 8,00,000 at a point of reporting date i.e. at 20 weeks from starting date. The completion time of project is 45 weeks. Based on above details, draw features of that project and comment on the schedule performance. [4+4]

5. a) List out various errors in drawing a network diagram. Find out the expected time of each engineer mentioned below. Which engineer you will choose and why? Who is more certain in completing the job? [4+4]

Types	t_o	t_m	t_p
NTC Engineer	5	9	12
NCell Engineer	4	5	9

   b) Describe environmental impact analysis. Explain in brief about shadow pricing, market externalities, market imperfection and social cost benefit analysis. [8]

6. a) Define budgeting? List out different types of budget. Explain the essential and purpose of budgeting for a new project. [8]

   b) Define capital structure planning. Explain in brief cash flowability, leverage ratio, flexibility and marketability of the company. [8]

7. Write short notes on: (any four) [4×4]
   a) Environmental problems in Nepal
   b) WBS with example specifying levels
   c) Material scheduling
   d) Linear programming
   e) Resource allocation and smoothing
   f) Budgetary control

02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2066 Bhadra

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCE, BEL, BEX, BCT, BME	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any Five questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. a) Define project. Explain the different characteristics of project. [8]

   b) Define project life cycle phases. Explain, with example, the typical life cycle phases of a project. [8]

2. A project has the following schedule, construct the network diagram and compute EST, EFT, LST, LFT, TF, FF, IF and interfering floats for each activities and find critical path. [16]

Activities	A	B	C	D	E	F	G	H	I	J	K	L
Predecessors	None	None	A	B	B	C, D	E	E	G, H	H	I, J	E, F
Time	8	2	1	9	4	5	6	3	3	5	2	3

3. a) What do you mean by project planning? Explain the importance of work break down structure for project planning. [6]

   b) Define, monitoring, evaluation and control. Explain briefly quality control, cost control and schedule control in the project. [4+6]

4. a) What are the differences between CPM and PERT? Find the te (time estimates for x and y where t_0, t_m, t_p is 4, 6, 8 for x and 3, 5, 6 for y. Also find which is more certain by using S.D. and variance. [8]

   b) Define E.I.A. What are the environmental problems in Nepal and how do you improve them? [8]

5. a) Why capital structure planning is important for business firm? Explain in brief the determinants of capital structure planning. [2+6]

   b) Rank by using payback method, present worth, IRR and B/C ratio method. [8]

Item	Initial Investment	Annual Cash Flow	Life in years
1	Rs. 60000	12000	15
2	Rs. 88000	22000	22
3	Rs. 2150	1500	3
4	Rs. 20500	4500	10

6. a) Define Project Management Information System (PMIS). Why PMIS is important for effective coordination of project activities? [8]

   b) Define budget, sales budget, production budget, cash budget, fixed budget and flexible budget. [8]

7. Write short notes on any four: [4×4]

   a) Resource allocation and smoothing
   b) Earned value analysis
   c) Steps in capital budgeting
   d) SMART criteria
   e) Socio-economic Analysis (Social Cost Benefit Analysis)

03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2065 Shrawan

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCE, BEL, BEX, BCT, BME,	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Project Engineering

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Explain project, characteristics of a project. Explain goal setting (SMART). [8]
   b) Explain monitoring, evaluation and controlling and project life cycle. [8]
2. a) Explain CPM and PERT and their uses. [5]
   b) Draw the network. Find EST, EFT, LST, LFT, TF, EF and IF. [11]

SN	Activity	Duration	Predecessor	Successor
1	A	5	—	B, C, D
2	B	4	A	E
3	C	2	A	F, H
4	D	3	A	G
5	E	2	B	H
6	F	1	C	I
7	G	3	D	I
8	H	1	C, E	—
9	I	2	F, G	—

3. a) Describe the purpose of budget, project budget, operation budget, sales budget, cash budget and advantages of budget. [10]
   b) Explain budgetary control, objectives, advantages and essential conditions for applying a budget. [6]
4. a) Describe the elements of cost control, system of control and feed back control system. [8]
   b) Describe in detail the work-break-down structure. [8]
5. a) Explain capital budgeting, needs and importance steps and capital budgeting process. [8]
   b) Explain EIA. Describe different environmental problems and types of environmental impacts and method of identification and comparison by check list method. [8]
6. a) Draw Bar-chart and explain its advantages and disadvantages. Also find t_e, and variance when t_o, t_m and t_p are 6, 8, 12. [8]
   b) Explain earned value analysis. When 125 cub.m. of concrete is to be done in 10 days at the cost of Rs. 1,250,000 at the end of the third day managed to complete 40 cub.m. of concrete with expenses of Rs. 3,75,000. Find EVA and comment the performance. [8]
7. Write short notes on any four: [4×4]
   a) Linear Programming
   b) Socio-economic Survey and SCBA
   c) Capital Structure Planning and Debt Equity Ratio
   d) Resource Allocation and Smoothing
   e) PMIS

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