

UNIT 1- CONSTRUCTION PLANNING

Basic concepts in the development of construction plans-choice of Technology and Construction method-Defining Work Tasks- Definition- Precedence relationships among activities-Estimating Activity Durations-Estimating Resource Requirements for work activities-coding systems.

PART A

1. Name any two coding systems used in the construction industry. BT-2 Understanding

2.

Prepare a flow chart representing the role of planning in different stages.

BT-5 Evaluating

3. Write any two objectives of planning. BT-3 Applying

4. Explain briefly the precedence relationship among activities. BT-4 Analyzing

5. What are the necessities of planning? BT-3 Applying

6. List out the significance of coding system. BT-1 Remembering

7. Discuss about the construction planning. BT-2 Understanding

8. State activity precedence with an example. BT-1 Remembering

9. Differentiate activity and event. BT-5 Evaluating

10. List out the uses of coding system. BT-1 Remembering

11. Define work task. BT-1 Remembering

12. Classify the different project planning techniques. BT-4 Analyzing

13. Describe the significance of choice of technology. BT-2 Understanding

14. List out project planning techniques? BT-1 Remembering

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15. Identify the various resources used for construction project. BT-1 Remembering

16. Explain the process involved in planning. BT-6 Creating

17. Write short notes on choice of construction method. BT-3 Applying

18. How will you estimate the activity duration? BT-2 Understanding

19.

Explain the basic concepts involved in development of construction plan.

BT-4 Analyzing

20.

Summarize the learning curve and define the different phases of learning.

BT-6 Creating

PART B

S.No

QUESTIONS

BT

LEVEL

COMPETENCE

1.

Explain in detail about the estimation of activity durations and importance of learning curves.

BT-6 Creating

2.

Define construction planning. Explain in detail about the basic concept involved in the development of construction plan.

BT-1

Remembering

3.

Prepare a generalized report on stages of planning by different agencies.

BT-5 Evaluating

4.

Define the precedence relationship among various activities and justify the relationship.

BT-1 Remembering

5.

Describe the importance of coding system of activities with examples.

BT-2 Understanding

6. List out the factors deciding activity durations. BT-1 Remembering

7.

Explain the procedure to formulate activity network with suitable example.

BT-4 Analyzing

8.

i. Write down the importance of construction planning. (7)

ii. What are the steps involved in planning? (6)

BT-3 Applying

9.

How do you specify precedence relationship in activity on node and activity on branch network?

BT-2 Understanding

10. How will you estimate the resources for work activities? BT-2 Understanding

11. i. Define WBS (3) BT-1 Remembering

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ii. Draw a typical WBS tree diagram for residence building construction. (10)

12.

i. Describe the role of planning in the different stages of a Project? (7)

ii. Mention the types of plan and objectives of planning? (6)

BT-4 Analyzing

13.

Explain with reference to a high rise building comparing cast-insitu and precast construction methods for the RCC structure.

BT-4 Analyzing

14.

Define construction planning. Explain in detail about the basic

concept involved in the development of construction plan.

BT-1

Remembering

PART – C

1. Describe in detail the relationship between choice of technology – construction method and the project time frame and budget limitations.

BT- 2 Understanding

2. What are the different methods to estimate the time duration of activities?

BT-1

Remembering

3. Demonstrate the precedence definition for site preparation and foundation work. BT-3 Applying

4. Prepare work breakdown and activity network for a tunnelling project by defining the precedence relationship.

BT-5 Evaluating

UNIT II- SCHEDULING PROCEDURES AND TECHNIQUES

Relevance of construction schedules-Bar charts - The critical path method-Calculations for critical path scheduling-Activity float and schedules-Presenting project schedules-Critical path scheduling for Activity-on-node and with leads, Lags and Windows-Calculations for scheduling with leads, lags and windows-Resource oriented scheduling-Scheduling with resource constraints and precedences -Use of Advanced Scheduling Techniques-Scheduling with uncertain durations-Crashing and time/cost trade-offs -Improving the Scheduling process – Introduction to application software.

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PART A

Q.NO

QUESTIONS

BT

LEVEL

COMPETENCE

1. Write down the significance of critical path? BT-3 Applying

2.

Prepare a network for the given activity.

Event Immediate predecessor Event Immediate predecessor

1 - 6 3,5

2 1 7 3,4

3 2 8 3,7

4 2 9 7

5 2 10 3,6,8,9

BT-1 Remembering

3. Compare CPM and PERT BT-6 Creating

4. Define the terms: - i) Dummy activity ii) EST iii) EFT BT-1 Remembering

5. Define and differentiate between float and slack. BT-1 Remembering

6. How will you create an activity node and activity event. BT-1 Remembering

7. How you will estimate the expected time for an activity. BT-2 Understanding

8. Define the terms: - i) LFT ii) LST BT-1 Remembering

9. List the types of networks. BT-2 Understanding

10.

What are the three time estimates used for determining the

activity duration in pert procedure?

BT-4 Analyzing

11. What are the steps involved in schedule chart? BT-1 Remembering

12. List out the factors affecting scheduling. BT-5 Evaluating

13. Discuss about the constraints in scheduling. BT-2 Understanding

14. Explain the terms total float and independent float. BT-6 Creating

15. Write down the necessity of resources oriented scheduling. BT-3 Applying

16. Distinguish between crash cost and crash time. BT-5 Evaluating

17. Discuss about the purpose of numbering events? BT-2 Understanding

18. Explain resource leveling and crashing. BT-4 Analyzing

19. State the reason why resource oriented scheduling is necessary. BT-3 Applying

20. Define activity cost slope. BT-4 Analyzing

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PART B

Q.NO

QUESTIONS

BT

LEVEL

COMPETENCE

1.

The duration of activities of a project is as follows. Draw the PERT network diagram. Identify various paths. Identify the critical path. Tabulate the computations. Evaluate the project time?

Activity 1-2 1-3 2-4 2-5 4-7 5-7 7-8 3-6 6-8

Duration

in days

5 10 1 6 12 3 4 7 6

BT-6 Creating

2.

Explain in relation to network analysis, the terms critical activity, non-critical activity, independent float and free float?

BT-4 Analyzing

3.

Draw the network and design the critical path and calculate the ES, EF, LS and LF of the project whose activities are as follows.

ACTIVITY DURATION IN DAYS

PRECEDING

ACTIVITY

A-B 7 -

B-C 10 A-B

B-D 15 A-B

C-D 7 B-C

C-E 12 B-C

D-E 3 B-D,C-D

E-F 5 C-E,D-E

BT-5 Evaluating

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4.

The activities of a project are listed below, draw the network diagram and find out the critical path. Find the completion time of the project. Calculate EST, EFT, LST, LFT and mark in the diagram calculated total float and free float, Tabulate the details.

Activity item Duration in days

Activities immediately

Preceding Following

ng

A 3 - B,C

B 4 A D

C 6 A D

D 3 B, C D,E

E 6 C G

F 4 D I

G 5 E H,J

H 3 G I

I 6 F,H L

J 4 G K

K 4 J L

L 4 I,K -

BT-3 Applying

5.

1. Draw the project network and identify the critical path. (5)

2. Calculate all the activity times (EST, EFT, LST and LFT) (5)

3. Calculate TOTAL FLOAT and FREE FLOAT for all the activities. (3)

Activity A B C D E F G H I J K

Predecessor

or

-- A A B B E C,G C,G F,H D,I,J

Duration

(Days)

10 1

2

8 1

2

6 5 8 8 10 6 12

BT-4 Analyzing

6.

The details of a network are given below, where the durations are in days. Find the critical path and project completion time.

BT-2 Understanding

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Activity A B C D E F G H I

Predecessor -- A A B,C B,C D,E D,E F,G

Duration (Days) 4 3 8 7 9 12 2 5 6

7.

Calculate the critical path and all the floats by constructing activity on branch network?

Activity A B C D E F G

Predecessor - A A A D C,E D,F

Duration (Days) 3 6 16 10 8 5 3

BT-3 Applying

8.

(i) Define and differentiate between CPM and PERT. (7)

(ii) Compare "Precedence network analysis and critical path method? (6)

BT-1 Remembering

9.

Determine the minimum cost and optimum duration for the following project. The data of each activity of network is given in the table. Indirect cost is Rs.4000/week.

ACTIVITY

NORMAL CRASH

TIME

(month)

COST(Rs)

TIME

(month)

COST(Rs)

0-1 3 5000 2 5500

1-3 14 10000 11 13000

1-2 7 6000 4 9000

2-3 9 11000 6 18000

3-4 4 9000 3 12000

4-5 3 6000 2 7800

BT-2 Understanding

10. Explain in detail about resource oriented scheduling? BT-1 Remembering

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11.

A project of five activities, whose activity relationships, activity durations (normal and crash) and activity costs (normal and crash) are given in the following table. Estimate the optimum cost and time. Indirect cost is Rs80/ per day.

ACTIVITY

NORMAL CRASH

TIME

(WEEKS)

COST(Rs)

TIME

(WEEKS)

COST(Rs)

10-20 3 12000 2 16000

10-30 6 18000 3 24000

20-40 2 20000 1 23000

30-40 4 16000 2 21000

40-50 5 30000 4 35000

BT-3 Applying

12.

Discuss about the various methods of presenting project schedules.

BT-1 Remembering

13.

i) Discuss about direct cost and indirect cost? (7)

ii) What are the constraints of scheduling? Explain how each constraint affects scheduling? (6)

BT-2 Understanding

14.

Describe the techniques used for scheduling a project with uncertain duration? Explain any one of them in detail?

BT-4 Analyzing

PART – C

1. Define crashing of activities, rules for crashing and draw the corresponding graphs and explain direct cost, indirect cost(overhead cost), crashing cost and total cost.

BT-1 Remembering

2. The following table shows the activity needed to compute the project with their normal time and the shortest time in which the activity can be completed for a building contract and the cost per day for reducing the time of each activity. The contract includes a penalty clause of Rs.100 per day over 17 days. The overhead cost per day is Rs.160

ACTIVITY

NORMAL

TIME (DAYS)

SHORTEST

TIME (DAYS)

COST

REDUCTION

PER DAY

1-2 6 4 80

1-3 8 4 90

1-4 5 3 30

BT- 2 Understanding

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2-4 3 3 -

2-5 5 3 40

3-6 12 8 200

4-6 8 5 50

5-6 6 6 -

i. Cost completing the 8 activities in normal time is Rs.6500. Estimate the normal duration of the project, its cost and its critical path

ii. Estimate the optimum duration of the project and their corresponding cost using cost time function.

3. The details of a network are given below where the duration is in days.

ACTIVITY t₀ t_m t_p

1-2 2 5 8

1-3 1 4 7

2-3 0 0 0

2-4 2 4 6

2-6 5 7 12

3-4 3 5 10

3-5 3 6 9

4-5 7 6 10

4-6 2 5 8

5-6 2 4 6

Describe the critical path, float and project completion time?

BT- 2 Understanding

4. Prepare a CPM network from the list of operations and time for each operation. Prepare a table giving ES, EF, LS, LF times and total float for each operation. Mark on the diagram the critical path and also the minimum time required for the completion the project.

Activ A B C D E F G H I J K L M N O

Dur

(wks)

3 5 4 7 6 11 6 4 3 6 5 7 5 3 2

Prece - A A B B C D E, F C G H, I I H, I K L

Succ B, C D, E F, I G H H I K K, L M N O N - -

BT-5 Evaluating

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UNIT 3- COST CONTROL MONITORING AND ACCOUNTING

The cost control problem-The project Budget-Forecasting for Activity cost control - financial

accounting systems and cost accounts-Control of project cash flows-Schedule control-Schedule and Budget updates-Relating cost and schedule information.

PART A

Q.NO

QUESTIONS

BT

LEVEL

COMPETENCE

1. What is meant by contingencies and define income? BT-1 Remembering
2. What are the project cost budget monitoring parameters? BT-3 Applying
3. List out the sources of cash inflow and cash outflow. BT-1 Remembering
4. Differentiate financial and managerial accounting. BT-2 Understanding
5. Explain the term project budget. BT-6 Creating
6. List out the classification of cost control. BT-1 Remembering
7. Write down the advantages of financial accounting. BT-3 Applying
- 8.

Explain the objectives of cost accounting and necessity for project management.

BT-4 Analyzing

9. Differentiate between fixed cost and variable cost. BT-2 Understanding
10. Classify the types of accounting system. BT-3 Applying
11. Compare cost committed from cost exposure. BT-6 Creating
12. Explain schedule control. BT-4 Analyzing
13. Name the controls considered before start of the projects. BT-1 Remembering
14. Define project cash flow. BT-1 Remembering
- 15.

Compare percentage completion method and completed contract method

BT-4 Analyzing

16. Distinguish between budget cost and revised cost. BT-2 Understanding
17. Create the S-curve and mention its uses. BT-5 Evaluating

18. List out the components of cash flow status report. BT-1 Remembering

19. Rewrite the formula for schedule control. BT-5 Evaluating

20.

Discuss about the account payable journal and accounts receivable journal.

BT-2 Understanding

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PART B

Q.NO

QUESTIONS

BT

LEVEL

COMPETENCE

1.

i. Describe the stages of work at which cost control is affected.

(7)

ii. Classify the cost control systems and explain it. (6)

BT-1 Remembering

2. Brief about the project budget? BT-1 Remembering

3. Explain in detail about the cash flow control in a project. BT-4 Analyzing

4.

List out the various categories of cost involved in a project.

Explain it in detail.

BT-1 Remembering

5. Describe about on Schedule control.

BT-3

Applying

6. Explain the elements of cash flow status report. BT-2 Understanding

7. Illustrate the main points in determination of cash flow. BT-6 Creating

8.

Suppose that a company began six jobs in a year, completing three jobs and having three jobs still underway at the end of the year. Details of the six jobs are shown in the table given below.

Evaluate the company's net profit.

Net Profit on Completed Contracts (amounts in thousands)

Job 1

Job 2

Job 3

Total Net Profit on Completed

Jobs

1436

356

-738

1054

Status of Jobs underway

Original control price

Contract changes (change
orders)

Total cost to date

Payments received or due to
date

Estimated cost to complete

Job 4

4200

400

3600

3520

500

Job 5

3800

600

1710

1830

2300

Job 6

5630

-300

620

340

5000

BT-5 Evaluating

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9. Describe the Forecasting for activity cost control. BT-2 Understanding

10.

How will you calculate the net profit using percentage of completion method and completed contract method

BT-4 Analyzing

11.

Define budget and describe its importance for a construction project and explain how the cost and time trends monitored using S curve.

BT-2 Understanding

12. Write a brief notes on relating cost and schedule information. B T - 3 A p p l y i n g

13.

Explain the terms,

i. Measurement of cost performance (7)

ii. Investment appraisal (6)

BT-4 Analyzing

14.

Describe the following ,

i. control estimate (7)

ii. cost planning (6)

BT-1 Remembering

PART – C

1. Fill the table below. It lists 8 different financial transactions for a construction project. Classify them as Direct cost, Indirect cost, Overhead cost, Cash inflow and outflow.

5.No Financial component Cash inflow,
outflow

Direct cost ,

Indirect cost,

Overhead cost

1. Mobilization advance

given by client

2. Expenditure for worker

accident treatment

3. Raw materials purchase

4. Payment for advertisement

5. Monthly salaries and

wages

6. Hire charges for

machineries

7. Deposit paid to client

BT- 2 Understanding

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while getting the work

8. Constructing the

temporary office at site

2. Explain the different components of accounting system and methods of accounting.

BT-6 Creating

3. Discuss how the cost control for a construction project is carried out.

BT- 2 Understanding

4. Describe the cash flow statement for a contractor company for residential project showing the various inflow and outflow components for 6 months duration.

BT-1 Remembering

UNIT 4- QUALITY CONTROL AND SAFETY DURING CONSTRUCTION

Quality and safety Concerns in Construction-Organizing for Quality and Safety-Work and Material Specifications-Total Quality control-Quality control by statistical methods -Statistical Quality control with Sampling by Attributes-Statistical Quality control by Sampling and Variables-Safety.

PART A

Q.NO

QUESTIONS

BT

LEVEL

COMPETENCE

1. Define quality circle BT-1 Remembering
2. List the important items to be inspected during the construction BT-1 Remembering
3. List out the safety measures BT-1 Remembering
4. Define accident BT-1 Remembering
5. List the applications of quality circle BT-1 Remembering
6. Define injury frequency rate BT-1 Remembering
7. Distinguish the health and safety BT-2 Understanding
- 8.

How will you interpret the quality control when chance cause and assignable cause exists in a process??

BT-2 Understanding

9. Discuss the various causes of accident BT-2 Understanding
10. Summarize the sampling by attributes BT-2 Understanding

11. Classify the statistical sampling methods for quality control BT-3 Applying

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12.

Examine how the quality control is important in a construction project

BT-3 Applying

13. Show the various charts used in statistical quality control BT-3 Applying

14. Explain producer's risk and consumer's risk BT-4 Analyzing

15. Explain the total quality control BT-4 Analyzing

16. Differentiate sampling by attributes and sampling by variables BT-4 Analyzing

17. Prepare a list of duties of quality circle? BT-5 Evaluating

18. How will you prepare yourselves for the safety audit? BT-5 Evaluating

19.

What are the charts would you recommend for statistical quality control?

BT-6 Creating

20. How do you assess the injury frequency rate? BT-6 Creating

PART B

Q.NO

QUESTIONS

BT

LEVEL

COMPETENCE

1. Describe the statistical quality control with sampling by attributes. BT-1 Remembering

2.

Describe the total quality management and collect the details about the statistical quality control with sampling by variables.

BT-1 Remembering

3.

Define accidents and the causes for accidents at construction sites

and the various costs are associated with accidents.

BT-1 Remembering

4. Discuss the importance of quality and safety in construction BT-2 Understanding

5. Summarize the safety requirements of construction industry. BT-2 Understanding

6. Classify the different methods of statistical quality control BT-3 Applying

7.

Explain the problems associated with the safety of a construction site

BT-4 Analyzing

8. Explain the importance of safety. BT-4 Analyzing

9.

Prepare a list of human factors which causes an accidents and mention the various causes of accident

BT-5 Evaluating

10.

Summarize the following:

(i) Statistical quality control by sampling (7)

(ii) Safety in construction (6)

BT-6 Creating

11. Define and differentiate between QA and QC with example BT-1 Remembering

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12.

List the safety precautions for the high rise RCC cast-in-situ construction

BT-3 Applying

13.

Define and differentiate between statistical quality control with sampling of attributes and statistical quality control with sampling of variables

BT-2 Understanding

14. Give detail about the measurement of safety. BT-4 Applying

PART – C

1. Discuss about the accident prevention programme and provide the general safety programme for a construction project

BT- 2 Understanding

2. Describe the quality assurance techniques. BT- 2 Understanding

3. “Indian construction industry requires a comprehensive legislation for the quality, safety and welfare of its workman” Analyse the above statement and comment on it.

BT-6 Creating

4. Create a brief report on residential project for quality analysis and safety elements which is carried out on the site.

BT-5 Evaluating

UNIT 5- ORGANISATION AND USE OF PROJECT INFORMATION

Types of project information-Accuracy and Use of Information-Computerized organization and use of Information -Organizing information in databases-relational model of Data bases-Other conceptual Models of Databases-Centralized database Management systems-Databases and application programs-Information transfer and Flow.

PART A

Q.NO

QUESTIONS

BT

LEVEL

COMPETENCE

1. Name the PIMS components BT-1 Remembering

2.

List the types of project information in respect of a construction project.

BT-1 Remembering

3. Define relational database BT-1 Remembering

4. List out the information set for the progress of the project BT-1 Remembering

5.

List out the advantages and disadvantages of centralized database management system

BT-1 Remembering

6. Define decision support system BT-1 Remembering

7. Discuss the different stages in construction BT-2 Understanding

8. Summarize a few lines about the PIMS BT-2 Understanding

9. Describe the database management program BT-2 Understanding

10.

Estimate how the centralized DBM is more advantages over standalone system.

BT-2 Understanding

11. Examine the performance specifications BT-3 Applying

12. Examine how the accuracy is necessary in information BT-3 Applying

13. Show the importance of network code specifications BT-3 Applying

14. Explain the integrated system design BT-4 Analyzing

15. How will you analyze the network data model? BT-4 Analyzing

16. Compare the organized information and unorganized information BT-4 Analyzing

17. Prepare a list of other conceptual models of databases BT-5 Evaluating

18. How will you generalize the information transfer and flow BT-5 Evaluating

19. Why do you recommend the object oriented data representation? BT-6 Creating

20.

Compare the relational model of data bases and conceptual models of databases

BT-6 Creating

PART B

Q.NO

QUESTIONS

BT

LEVEL

COMPETENCE

1. Describe the database management system. BT-1 Remembering

2.

Elaborate in detail about the various sets of information collected in regard to construction project information.

BT-1 Remembering

3.

List out the various functions of different managers and the software required for their requirements.

BT-1 Remembering

4.

Discuss in detail about the computerized organization and use of information in a project.

BT-2 Understanding

5. How will you interpret the database approach to contractor's BT-2 Understanding

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account and explain it briefly. Mention its advantages and disadvantages also.

6. Briefly explain the hierarchical models for organizing databases. BT-3 Applying

7.

Illustrate a typical flow chart of an integrated accounting system for the generation of financial reports and explain them briefly.

BT-3 Applying

8.

Explain the information transfer and flow in organizing project information.

BT-4 Analyzing

9.

Describe the network models for organizing project information

databases.

BT-5 Evaluating

10 Bring out the benefits of computerized information system. BT-6 Creating

11

Describe the importance of information system in the effective management of construction.

BT-1 Remembering

12

Explain the any two types of DBMS based on Information Systems followed in construction industry

BT-4 Analyzing

13

Discuss in detail about various quality control by statistical methods.

BT-2 Understanding

14

Explain the main functions of Project Management Information System? What are the major components of it?

BT-4 Analyzing

PART – C

1. Design an organization chart for the medium size construction company and explain it briefly.

BT-5 Evaluating

2. Discuss the problems in information system management. BT- 2 Understanding

3. Explain how you will assess the information in an organized manner using computers.

BT- 2 Understanding

4. Illustrate a frame based data storage hierarchy system adopted in construction industry.

BT-3 Applying

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VALLIAMMAI ENGINEERING COLLEGE
DEPARTMENT OF CIVIL ENGINEERING
CE 6005 – CONSTRUCTION OF PLANNING AND SCHEDULING
QUESTION BANK

TOTAL NO. OF QUESTIONS IN EACH PART

PART-A 100

PART-B 70

PART-C 20

TOTAL 190

S.no

UNIT

NO.

BT1 BT2 BT3 BT4 BT5 BT6

Total

Question

1

Unit-1

Part-A 6 4 3 3 2 2 20

Part-B 4 3 2 3 1 1 14

Part-C 1 1 1 - 1 - 4

2

Unit-2

Part-A 6 4 3 3 2 2 20

Part-B 4 3 2 3 1 1 14

Part-C 1 2 - - 1 - 4

3

Unit-3

Part-A 6 4 3 3 2 2 20

Part-B 4 3 2 3 1 1 14

Part-C 1 2 - - 1 4

4

Unit-4

Part-A 6 4 3 3 2 2 20

Part-B 4 3 2 3 1 1 14

Part-C - 2 - - 1 1 4

5

Unit-5

Part-A 6 4 3 3 2 2 20

Part-B 4 3 2 3 1 1 14

Part-C - 2 1 - 1 - 4

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