Reg. No. :

Question Paper Code : X 85354

M.E./M.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
Second Semester
Construction Engineering and Management
CN 5203 – COMPUTER APPLICATIONS IN CONSTRUCTION ENGINEERING AND PLANNING
(Regulations 2017)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. What are the advantages of computer aided cost estimation ?
2. How is BIM used in construction ?
3. State the principle of optimality.
4. What is branch and bound technique ?
5. What are the drawbacks of deterministic inventory models ?
6. Define shortage cost in inventory.
7. What are the limitations of PERT and CPM ?
8. State the rules of constructing a project network.
9. What is meant by simulation ?
10. What are the advantages of ERP system ?

PART – B **(5×13=65 Marks)**

11. a) Discuss about the computer applications to planning the project.

(OR)

b) Discuss the role of database software in system management.

12. a) Explain the important characteristics of the construction industry situations in which linear programming method can be successfully applied. Illustrate the application of this technique with an example.

(OR)

b) i) Explain the steps involved in dynamic programming and its applications to material transportation with illustrations. **(6)**

ii) Describe branch and bound algorithm for finding optimal solutions of optimization problems. **(7)**

13. a) Discuss the role of inventory in the organization of strategic management.

(OR)

b) How does stock vary with time in a typical inventory system ? Draw a diagram and explain the parameters involved.

14. a) Draw a typical PERT network for a construction project and explain the elements.

(OR)

b) Explain the methods followed in the construction engineering for project planning and scheduling with an example.

15. a) How would simulation be useful in the appraisal of projects ? Discuss.

(OR)

b) What are ERP system ? Discuss in detail the applications of any commonly used software package for ERP.

PART – C **(1×15=15 Marks)**

16. a) Solve the following linear programming problem

Maximize $Z = -3x_1 - x_2$

Subject to $x_1 + x_2 \geq 1$

$2x_1 + 3x_2 \geq 2$

$x_1, x_2 \geq 0$

(OR)

b) What is a critical path ? Explain an algorithm for determining the critical path in a network. Indicate how a program may be developed to implement the algorithm.

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