Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

ME-703(A)-CBGS

B.Tech., VII Semester

Examination, December 2020

Choice Based Grading System (CBGS)

Operation Research and Supply Chain

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Write the definition of operation research. 7
   b) Write the definition of solution, basic solution. 7

2. a) What is Linear programming problem? 7
   b) How will you construct a mathematical model. 7

3. a) Write down any two scopes of operation research. 7
   b) Define LPP in the mathematical form. 7

4. a) A firm manufactures two products A and B on which the profits earned per unit are Rs 3 and Rs 4 respectively. Each product is processed on two machines M1 and M2. Product A requires one minute of processing time on M1 and two minutes on M2 while B requires one minute on M1 and one minute on M2. Machine M1 is available for not more than 7 hours, while machine M2 is available for 10 hours during any working day. Formulate the number of units of products A and B to be manufactured to get maximum profit. 7

b) Solve the following LP problems graphically 7

Minimize $Z = 3x_1 + 2x_2$

Subject to $5x_1 + x_2 \geq 10$

$x_1 + x_2 \geq 6$

$x_1 + 4x_2 \geq 12$

$x_1 , x_2 \geq 0$

5. a) Write steps for North-West Corner Method. 7

b) Differentiate between CPM and PERT. 7

6. a) If the inter-arrival time and service time in a public telephone booth with a single-phone follow exponential distributions with means of 10 and 8 minutes respectively, Find the average number of callers in the both at any time. 7

b) Customers arrive at a one-man barber shop according to a Poisson process with mean inter-arrival time of 12 minute, Customers spend an average of 10 min in the barber's chair. What is the expected number of customers in the barber shop and in the queue? How much time can a customer expect to spend in the barber's shop? 7

7. a) Explain saddle point by giving suitable example. 7

b) Describe the Transition From Development To Production of product. 7

8. a) Define inventory explain with giving suitable examples. 7

b) Explain Classical EOQ model. 7

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