B.Sc. 5th Semester (Honours) Examination, 2020(CBCS)

Subject: Statistics

Course: DSE -2

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
The notations or symbols have their usual meaning.

Time: 2 hrs **Full Marks: 40**

Operations Research

Answer any **eight** from the following: **8X5=40**

1. Describe the procedure for solving an LPP problem graphically.
2. Show that, $S = \{(x_1, x_2) \in R^2 : x_1 + x_2 \geq 2\}$ is a convex set.
3. What is slack and surplus variable? Discuss with an example.
4. Find the initial feasible solution using the least minimum cost method from the given table. Cost supply and demand data are as follows.

Origin (Surplus Area)	Destination (Shortage Area)			Supply
	1	2	3	
1	50	100	100	110
2	200	300	200	160
3	100	200	300	150
Demand	140	200	80	420

5. Solve the following assignment problem (Original Table)

40	60	60	70
10	60	70	30
20	50	40	20
30	20	10	40

6. Solve the following 2×3 game graphically (using rough sketch)

Player A	Player B		
	1	3	11
	8	5	2

7. Write down the importance of game theory.
8. Write a short note about the ABC inventory system.
9. Write the form of the EOQ model and discuss its importance.
10. Write down the advantages and limitations of game theory.

OR

Financial Statistics

Answer any eight from the following: 8X5=40

1. What is a geometric random walk? Why is it different from the general random walk?
2. Show that, $V(X) = E\{V(X|Y)\} + V\{E(X|Y)\}$ where X and Y are two random variables.
3. Establish the relation between spot price, forward price and future price.
4. Discuss Cox-Ross-Rubinstein approach to option pricing.
5. State Ito's lemma and explain its usage is finance.
6. Explain the utilization of stochastic differential equations in the context of option pricing.
7. Define discrete time process and continuous time process with an example.
8. What is the Wiener process? Is the process stationary?
9. What do you mean by strike price and option price? Are they related?
10. What is stochastic integration? Is it different from ordinary integration?