SRINIX COLLEGE OF ENGINEERING, BALASORE

1ST INTERNAL EXAMINATION-2020-21

Semester-6TH

ANSWER ANY TWO QUESTIONS												
owing Assignm	nent prol	olem. Cell	values rep	oresent cos	st of assigr	۱in						
I and IV.												
		machines										
		Ι	II	III	IV							
jobs	A	10	12	19	11							
	В	5	10	7	8							
	С	12	14	13	11							
	D	8	15	11	9							

g job A, B, C and D to the 1.Solve the follo machines I, II, III

(i) An equation with = sign (ii) inequality with \geq sign

ANSWER ALL QUESTIONS

(1) Define Surplus variable used in Simplex Method.

- (iii) Inequality with \leq sign (iv) any one of the above
- (3) What do you mean by IPP ?

PART-B :

- (4) What do you mean by Unbalanced Transportation Problem ?
- (5) What is degenerate feasible solution in a TP with m-sources and n -destination ?

(2) a) For any primal and its dual

Subject-OE

Full Mark-30

PART-A :

(iii) Primal will have an optimum solution if and only if dual does too. (iv) All the above. **b**) A constraint in a LPP is expressed

(i) Optimum value of the objective function is same. (ii) Both primal and dual cannot be feasible.

Branch-all

Time-01.30Hrs

[2X5=10]

[5X2=10]

2.Find the initial solution of the following TP by using **North-West Corner Rule**. The following table represents the unit cost matrix.

From					
	City-1	City-2	City-3	City-4	Supply
Plant-1	8	6	10	9	35
Plant-2	9	12	13	7	50
Plant-3	14	9	16	5	40
Demand	45	20	30	30	

3. Use the Graphical method to solve the following LP problem

 $Minimize \ Z{=}20X_1 + 10X_2$

Subject to constraints,

 $X_1+2X_2 \ \leq \ 40$

 $3X_1+X_2\ \geq\ 30$

 $4X_1 + 3X_2 \geq 60$

And

 $X_1, X_2 \geq 0$

PART-C : <u>ANSWER ANY ONE QUESTIONS</u> [10X1=10]

1. A company sells two different products A and B. The company makes a profit of Rs- 40 and 30 per unit respectively on the two products. The products are produced by a common production process and are sold intwo different markets. The production process has a capacity of 30000 man- hours. It takes 3 hours to produce a unit of product A and 1 hour to produce a unit of product B. The market has been surveyed and company officials found out the maximum units that can be sold for product A and B are 8000 and 12000 respectively. Formulate the standard LPP.

2. Consider a self-service store with one cashier. Assuming nine customers arriveon an average in every five minutes and the cashier can serve 10 of them in five minutes. Find

- (i) the expected number of customers in the queue.
- (ii) the expected number of customers in the system
- (iii) the average time a customer spends in the system
- (iv) the average time a customer wait before being served
- (v) The probability of having more than 10 customers in the system.