Uva Wellassa University

Faculty of Management

Uva Wellassa University

Degree of Bachelor of Business Management in Hospitality Tourism and Events Management

SECOND YEAR SECOND SEMESTER EXAMINATION –AUGUST/SEPTEMBER 2011

HTE 232 -2 Quantitative Techniques

Instructions to candidates:

No. of pages : Six (06)
No. of questions : Two (02) Structured
: Four (04) Essay
Time allocation : One (01) Hour and Forty (40) minutes
Marks allocated :85 Marks
Question paper is not to be removed from examination hall.

Index Number:

Part C – Essay Questions

Answer **only three (03)** questions from Part C **including question 1.**

Marks allocation for part C: Fifty (50)

1.

a. A company makes three products X, Y and Z. Each product must be processed on two machines M_1 and M_2. The total machine time available weekly on each machine is 100 hours. The company can earn profit of Rs.40 per unit on X, Rs.30 per unit on Y and Rs.45 per unit of Z. product X requires 1 hour of machine time from M_1 and 3 hours of machine time from M_2. Product Y requires 2 hours of M_1 and 1 hour on M_2. Product Z requires 2 hours of machine time from each machine.
Products X and Y each needs one unit of a special component and there are only 150 of those units available for a week.

There is an agreement with a trade association to produce no more than 60 units of product X in the period.

i. Formulate this production problem as linear programming model

[5 marks]

ii. Setup the initial simplex tableau

[5marks]

b. Consider the following linear programming problem.

Maximize: $Z = 3X_1 + 1X_2$

Subject to: $6X_1 + 4X_2 \leq 48$

$3X_1 + 6X_2 \leq 42$

$X_2 \geq 2$

$X_1 \geq 0$

Graphically solve the problem. Using your results, demonstrate that "the optimal solution to a linear programming problem is feasible, but a feasible solution is not necessarily optimal"

[10 marks]

[Total marks=20 marks]

2. The owner of Nilwala and Lakeside hotels have recorded the number of guest who would return and those who would not return to Sri Lanka. 71% of the guests who stayed at Nilwala hotel said that they will come again and 58% of the guests who stayed at Lakeside hotel said that they will come again. Out of 500 guests, 230 of them stayed at Nilwala Hotel and rest of them stayed at Lakeside Hotel.

   a. Find the probability that a randomly selected guest will return to Sri Lanka.

   b. In a sample of 10 guests, what is the probability that more than 8 will return to Sri Lanka?

[15 marks]

3. In Blue Heaven Resort area, the number of vacant motel rooms follows a Poisson distribution. The expected vacancy rate is 6 rooms per night.

   a. Find the probabilities that on a given night the number of vacant rooms will be none, at most 1.

   b. Determine the probability that more than 30 rooms will vacant in night during a one -week period.

[15 marks]

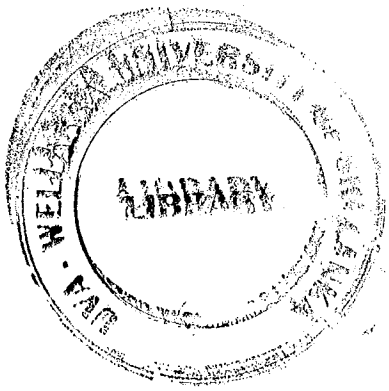
4. The manager of Jiffy Joe's fast-food Restaurant is interesting to know the relationship between ethnic origins and food preference. Table 02 shows the preference of spicy food in different ethnic origins.

Table 02: Preference of Spicy food

Ethnic origins	Preferred bland (not spicy) food	Preferred spicy food
Africans	25	15
Asians	20	80
Westerns	40	20

Does this evidence suggest that there is an association between ethnic origins and food preference? Use α=0.05.

[15 marks]



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