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Eighth Semester B.E. Degree Examination, June/July 2011
Decision Support System

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions selecting
at least TWO questions from each part.**

PART – A

- 1 a. Give reasons for need for computerized decision support system. (06 Marks)
b. Briefly explain decision support frame works. (08 Marks)
c. Explain with block diagram, the decision making & modeling process. (06 Marks)
- 2 a. Briefly explain decision making design phase. (08 Marks)
b. HCM corporation makes PC's. A decision must be made:
How many PC's be produced next at Chennai plant?
i) Two types of PC's are BB₁ – requires 200 days labour Rs. 10,000 materials, BB₂ –requires 500 days labour & Rs. 15,000 materials.
ii) Profit contribution: B₁ is Rs. 8000 & BB₂ is Rs. 12,000.
iii) Plant has capacity of 2,00,000 working days Rs. 80 lacks in materials budget/month.
iv) Market requires 100 units of BB₁ & at least 200 units of BB₂ be produced each month.
For above problem give model to maximize the company's profit by determining how many units of BBI & BBL be produced each month. (12 Marks)
- 3 a. What is DSS? Give characteristics & capabilities of DSS. (08 Marks)
b. Distinguish DSS from management source & MIS. (06 Marks)
c. Briefly explain DSS classifications. (06 Marks)
- 4 a. Explain DSS development methodology using prototyping and give reasons why prototyping is used in DSS development. (10 Marks)
b. Briefly state & explain DSS development platform. (06 Marks)
c. List advantages & risks of user developed DSS. (04 Marks)

PART – B

- 5 a. Explain Time/Place frame work that support computer supported co-operative work. (06 Marks)
b. What is groupware? Briefly describe popular groupware system. (06 Marks)
c. Explain standard GSS process. (08 Marks)
- 6 a. Explain structure of Experts system with a block diagram. (08 Marks)
b. How expert system works. (06 Marks)
c. Give benefits & limitations of Expert system. (06 Marks)
- 7 a. Define knowledge engineering. What are steps involved in knowledge engineering process? (08 Marks)
b. Name & explain three techniques of automated knowledge acquisition method. (06 Marks)
c. What is machine learning? Briefly explain induction table. (06 Marks)
- 8 a. Explain process of case based reasoning with flow chart & give advantages of core based reasoning. (08 Marks)
b. Explain in detail ES development life cycle with a block diagram. (12 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Mathematical Induction

Mathematical induction is a method for proving that a statement is true for all natural numbers. It consists of two main steps: the base case and the inductive step.

Base Case: Prove that the statement is true for the smallest natural number, usually 1.

Inductive Step: Assume the statement is true for a natural number n (the inductive hypothesis). Then, prove that the statement is true for $n+1$.

If both steps are completed, the statement is true for all natural numbers.

Example 1: Proving $1 + 2 + \dots + n = \frac{n(n+1)}{2}$

Base Case: For $n=1$, the left side is 1 and the right side is $\frac{1(1+1)}{2} = 1$. The statement is true.

Inductive Step: Assume the statement is true for n . We need to show it is true for $n+1$.

Left side for $n+1$: $1 + 2 + \dots + n + (n+1)$

Right side for $n+1$: $\frac{(n+1)(n+1+1)}{2} = \frac{(n+1)(n+2)}{2}$

Using the inductive hypothesis, we know $1 + 2 + \dots + n = \frac{n(n+1)}{2}$. Adding $(n+1)$ to both sides gives:

$$\frac{n(n+1)}{2} + (n+1) = \frac{n(n+1) + 2(n+1)}{2} = \frac{(n+1)(n+2)}{2}$$

This matches the right side for $n+1$. Therefore, the statement is true for $n+1$.

Example 2: Proving $2^n > n$ for all $n \geq 1$

Base Case: For $n=1$, $2^1 = 2 > 1$. The statement is true.

Inductive Step: Assume $2^n > n$. We need to show $2^{n+1} > n+1$.

From the inductive hypothesis, $2^n > n$. Multiplying both sides by 2 gives $2^{n+1} > 2n$. Since $2n > n+1$ for $n \geq 1$, we have $2^{n+1} > 2n > n+1$.