

**SUBJECT CODE NO:- P-8043**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**M.E.(Comp.Sci.&Engg.) Examination MAY/JUNE-2016**  
**Advanced Algorithm**  
**(Revised)**

[Time: Three Hours]

[Max Marks:80]

“Please check whether you have got the right question paper.”

N.B i) Attempt any two questions from each section.

SECTION: A

Q.1 a) What is greedy algorithm? Solve the following activity selection problem. 10

i	1	2	3	4	5	6	7	8	9	10	11
S <sub>i</sub>	1	3	0	5	3	5	6	8	8	2	12
f <sub>i</sub>	4	5	6	7	8	9	10	11	12	13	14

b) How to measure performance of an algorithm. Compute complexity of binary search and bubble sort. 10

Q.2 a) Explain hiring problem using indicator random problems. 10

b) Explain rod cutting problem using dynamic programming. 10

Q.3 a) Sort the given set of numbers using Quick sort: 10

40 10 15 20 35 45 25 15 45 10

Comment on complexity.

b) Write an algorithm to sort elements using radix sort and compute the complexity of the algorithm. 10

SECTION: B

Q.4 a) Discuss iterative FFT. 08

b) Multiply the polynomial 06

$$A(x) = 7x^3 - x^2 + x - 10$$

$$B(x) = 8x^3 - 6x + 3$$

c) Discuss EUCLID's GCD algorithm. 06

Q.5 a) Draw a state transition diagram for the string matching automation where P= ababaca and text T= ababa ba caba. 08

b) Find a position tree for bb a bb \$. 05

c) Write Rabin-Karp algorithm. 07

Q.6 a) Prove that feedback edge set problem in NP-complete. 05

b) Prove that clique problem is NP-complete. 05

c) Find DHC for the following expression: 10

$$(x_1 + \bar{x}_2 + x_4)(x_2 + x_3 + x_4)(x_1 + \bar{x}_3 + \bar{x}_4)$$