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PES UNIVERSITY

PES University, Bangalore

(Established under Karnataka Act No. 16 of 2013)

UE17CS311

DEC 2020: END SEMESTER ASSESSMENT (ESA) B.TECH. V SEMESTER

UE17CS311: ADVANCED ALGORITHMS

Time: 3 Hrs | Answer All Questions | Max Marks: 100

NOTE: **State any assumptions made.**

1.	a)	Explain asymptotic notation for algorithm analysis	6
	b)	What are randomized algorithms? Give an algorithm for randomized hire assistant	6
	c)	What is amortized analysis? Explain accounting method of amortized analysis for binary counter	8
2.	a)	Construct the bad character shift and good suffix shift table for the pattern "EXAMPLE"	6
	b)	Write down the algorithm for pattern matching using Rabin Karp Algorithm	6
	c)	Construct Finite Automata State diagram for the pattern "ababbabba" over the alphabet {a,b}	8
3.	a)	Develop Euclid and extended Euclid algorithm for computing the GCD of 2 numbers	8
	b)	What is the use of public key cryptosystem? Explain RSA algorithm for asymmetric cryptosystem.	6
	c)	Consider an RSA keyset with p=11 q=29 n=319 and e=3. What is the value of 'd'? what is the encryption of the message M=100.	6
4.	a)	What is dynamic programming? List the steps for developing a dynamic programming algorithm	8
	b)	Find the longest common subsequence among the strings "abcdaf" and "acbcf"	6
	c	What is matrix chain multiplication? Give an algorithm for matrix chain order	6
5.	a)	Explain point value representation of polynomials. Prove that For any set $\{(x_0, y_0), (x_1, y_1), \ldots, (x_{n-1}, y_{n-1})\}$ of n point-value pairs, there is a unique polynomial $A(x)$ of degree-bound n such that $y_k = A(x_k)$ for $k = 0, 1, \ldots, n - 1$.	10
	b)	Explain Fast multiplication of polynomials in co-efficient form and write the procedure for multiplication of two polynomials using FFT.	10