

**University of Mumbai**  
**Examination 2020 under cluster 4 (PCE)**

Program: BE Computer Engineering

Curriculum Scheme: Rev2016

Examination: Third Year Semester V

Course Code: CSDL05013 and Course Name: Advanced Algorithm

Time: 1 hour

Max. Marks: 50

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Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	Which of the following method take different operations ,different charges in amortized analysis?
Option A:	Aggregate method
Option B:	Accounting method
Option C:	Potential method
Option D:	Both Aggregate and Accounting method
Q2.	In an _____, the time required to perform a sequence of data-structure operations is averaged over all the operations performed in
Option A:	Array Analysis
Option B:	Amortized Analysis
Option C:	Queue Analysis
Option D:	Both Array and Amortized Analysis
Q3.	A _____ is a variable that takes on any of a range of values according to a probability distribution.
Option A:	Random variable
Option B:	Sample variable
Option C:	Independent variable
Option D:	Dependent variable
Q4.	In all the paths of the RB tree, there should be same number ----- nodes.
Option A:	Black and Red

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Option B:	Red
Option C:	Red and Black
Option D:	Black
Q5.	There should not be two consecutive -----nodes in RB tree
Option A:	Brown
Option B:	Red
Option C:	Black
Option D:	Black and Red
Q6.	--- is use to find maximum matching in an undirected bipartite graph
Option A:	Ford-Fulkerson algorithm
Option B:	Prim's algorithm
Option C:	Kruskal's algorithm
Option D:	Dijkstra's algorithm
Q7.	The push-Relabel algorithm is also called as
Option A:	push flow
Option B:	Relabel flow
Option C:	preflow push
Option D:	push preflow
Q8.	For collinear vectors the cross product has .....value.
Option A:	zero
Option B:	positive
Option C:	negative

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Option D:	imaginary
Q9.	Which of the following areas do closest pair problem arise?
Option A:	computational geometry
Option B:	graph coloring problems
Option C:	numerical problems
Option D:	string matching
Q10.	Euler's circuit problem belongs to.....class.
Option A:	Partition
Option B:	NP
Option C:	P
Option D:	Complete
Q11.	Those problems which produce output "YES" or "NO" for given input are known as.....
Option A:	Optimization problem
Option B:	Decision problems
Option C:	Definite problem
Option D:	Indefinite problem
Q12.	The running time of quick sort depends on the selection of. Select one:
Option A:	Selection of pivot elements
Option B:	Number of input
Option C:	Number of passes
Option D:	Arrangements of the elements

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Q13.	What is order of tree after merging two tree of order k?
Option A:	$2*k$
Option B:	$k+1$
Option C:	$k*k$
Option D:	$k+\log k$
Q14.	A Binomial Heap follows ----- property
Option A:	Max-heap
Option B:	Min Heap
Option C:	Min-Max Heap
Option D:	Max-Min Heap
Q15.	For the binomial tree $B_k$ the height of tree is -----
Option A:	$2K$
Option B:	$k+1$
Option C:	$K$
Option D:	$K-1$
Q16.	A simple acyclic path between source and sink which pass through only positive weighted edges is called?
Option A:	critical path
Option B:	residual path
Option C:	augmenting path
Option D:	maximum path
Q17.	-----set of edges in a graph is chosen in such a way, that no two edges in that set will share an endpoint.

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Option A:	Directed
Option B:	Undirected
Option C:	flow
Option D:	bipartite
Q18.	<p>RANDOMIZE-IN-PLACE(A)  <math>n=A.length</math>  For <math>i=1</math> to <math>n</math>  Swap <math>A[i]</math> with <math>A[RANDOM(1,n)]</math>  The above procedure RANDOMIZE-IN-PLACE(A) computes , Select one:</p>
Option A:	a different random permutation
Option B:	a uniform deliberate permutation
Option C:	a uniform random permutation
Option D:	a different deliberate permutation
Q19.	Which data set is managed by sweeping algorithm?
Option A:	sweep line status
Option B:	event point schedule
Option C:	weep line status
Option D:	sweep line status and event point schedule
Q20.	NP Complete problems belongs to.....class
Option A:	NP
Option B:	NP-Hard
Option C:	NP & NP- Hard both
Option D:	P
Q21.	$T(n) = 16T(n/4) + n^2$ then $T(n) =$
Option A:	$\Theta(n \log n)$

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Option B:	$\Theta(n^3 \log n)$
Option C:	$\Theta(n^4 \log n)$
Option D:	$\Theta(n^2 \log n)$
Q22.	This algorithm maintains list of vertices
Option A:	Ford Fulkerson
Option B:	Bipartite algorithm
Option C:	Push Relabel
Option D:	Relabel to front
Q23.	When RB tree is better than AVL tree and B-trees?
Option A:	many searches, managing more items
Option B:	many inserts, many searches and managing more items
Option C:	sorting, sorting and retrieval
Option D:	retrieval, sorting and retrieval respectively
Q24.	Which is the correct technique for finding a maximum matching in a graph
Option A:	BFS traversal
Option B:	Finding the shortest traversal path
Option C:	Shortest path traversal
Option D:	Heap order traversal
Q25.	For two directed segments p1 and p2 with same origin p0, If $(p1-p0) \times (p2-p0)$ is positive then.....
Option A:	P0p1 is clockwise from p0p2
Option B:	P0p1 is counter clockwise from p0p2
Option C:	p0p2 is clockwise from P0p1

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Option D:	collinear

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	B
Q3.	A
Q4	D
Q5	B
Q6	A
Q7	C
Q8.	A
Q9.	A
Q10.	C
Q11.	B
Q12.	A
Q13.	B
Q14.	B
Q15.	C
Q16.	C
Q17.	D
Q18.	C
Q19.	D
Q20.	C
Q21.	D
Q22.	D
Q23.	B
Q24.	A
Q25.	A