Examinations Commencing from 7th January 2021 to 20th January 2021

Program: <u>Computer Engineering</u>

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: <u>CSDLO5013</u> and Course Name: <u>Advanced Algorithm</u>

Time: 2 hour

_

Max. Marks: 80

R16_Comp_V_Advanced Algorithm_Sample QP

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which of the following are the types of amortized analysis?
Option A:	Potential, Accounting, Integration
Option B:	Aggregate, Potential, Integration
Option C:	Aggregate, Accounting, Integration
Option D:	Potential, Accounting, Aggregate
2.	Select binomial-heap property from following options.
Option A:	All trees must have same nodes.
Option B:	Roots of binomial trees are linked in decreasing degree.
Option C:	Order of degree is not important.
Option D:	Roots of binomial trees are linked in increasing degree
_	
3.	Apply master's method to solve the given recurrence:
	$T(n)=3T(n/4) + n \log n$
Option A:	$T(n)=\Theta(n^2)$
Option B:	$T(n) = \Theta(\log n)$
Option C:	$T(n)=\Theta(n)$
Option D:	$T(n) = \Theta(n \log n)$
	Which of the following variable provides a convenient method for converting
7.	between probabilities and expectations?
Option A.	Indicator variable
Option B [.]	Random variable
Option C:	Indicator random variable
Option D:	Temporary variable

5. The worst case of the hiring problem involves Option A: hiring a single candidate Option D: hiring recandidate Option D: hiring recordidate 6. Decreasing a key algorithm of binomial heap performs which operation? Option A: Replaces the existing key value with given smaller value. Option A: Replaces the existing key value with given larger value. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option B: Black Height Option D: Red Depth Option D: Red Depth Option D: Red Depth Option D: Red Depth Option A: Black Depth Option A: Level sum of last level Option A: Level sum of last level Option A: Level sum of alst level Option B: Level sum of alst level Option B: Level sum of alst level Option C: Level sum of cach level multiplied by number of levels Option B: The root is black. Option B: The root is black. <t< th=""><th></th><th></th></t<>		
Option A: hiring a single candidate Option C: hiring new candidate Option D: hiring every candidate 6. Decreasing a key algorithm of binomial heap performs which operation? Option A: Replaces the existing key value with given smaller value. Option B: Replaces the existing key value with given larger value. Option C: Replaces the existing key value from root list. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option B: Black Depth Option C: Red Height Option A: Black Depth Option A: Level sum of first level Option A: Level sum of first level Option C: Level sum of ach level multiplied by number of levels Option C: Level sum of each level multiplied by number of levels Option B: The root is black. Option B: The root is black. Option B: The root is red. 9. Which of the following statements about red-black tree is false? Option B: The root is red.	5.	The worst case of the hiring problem involves
Option B: hiring few candidates Option C: hiring no candidate Option D: hiring every candidate 6: Decreasing a key algorithm of binomial heap performs which operation? Option A: Replaces the existing key value with given smaller value. Option D: Replaces the existing key value with given larger value. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option D: Red Height Option D: Red Depth Option D: Red Depth Option A: Level sum of first level Option B: Level sum of ast level Option D: Level sum of ast level Option A: Level sum of cach level multiplied by number of levels Option B: Level sum of ast level Option B: The root is red. 9. Which of the following statements about red-black tree is false? Option B: The root is red. 0ption D: Recognize order of given binomial tree. 0ption D: Recognize order of given binomial tree. <	Option A:	hiring a single candidate
Option C: hiring no candidate Option D: hiring every candidate 6. Decreasing a key algorithm of binomial heap performs which operation? Option A: Replaces the existing key value with given smaller value. Option D: Replaces the existing key value with given paraller value. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option D: Red Depth 0ption D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option D: Level sum of middle level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: I is a binary tree. Option D: Recognize order of given binomial tree. 9. Which of the following statements about red-black tree is false? Option A: I is a binary tree. Option D: The root is red. 10. Recognize order of given binomial tree. 90 Which of the	Option B:	hiring few candidates
Option D: hiring every candidate 6. Decreasing a key algorithm of binomial heap performs which operation? Option A: Replaces the existing key value with given larger value. Option D: Replaces the existing key value with given larger value. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option D: Red Depth Option D: Red Depth 0ption D: Red Depth 0ption A: Black Depth 0ption B: Kevel sum of first level 0ption A: Level sum of first level 0ption B: Level sum of last level 0ption D: Level sum of ach level multiplied by number of levels 9. Which of the following statements about red-black tree is false? 0ption A: It is a binary tree. 0ption C: Every leaf (NLL) is black. 0ption D	Option C:	hiring no candidate
6. Decreasing a key algorithm of binomial heap performs which operation? Option A: Replaces the existing key value with given smaller value. Option D: Replaces the existing key value from root list. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option B: Black Height Option D: Red Height Option D: Red Height Option D: Red Height Option C: Red Height Option D: Red Height Option C: Red Jepth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option C: Level sum of last level Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option C: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a)	Option D:	hiring every candidate
6. Decreasing a key algorithm of binomial heap performs which operation? Option A: Replaces the existing key value with given smaller value. Option D: Replaces the existing key value from root list. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option D: Red Height Option C: Red Height Option C: Red Height Option A: Black Depth 0ption A: What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of fast level Option D: Level sum of last level Option D: Level sum of alst level Option D: Level sum of ach level multiplied by number of levels Option D: Level sum of ach level multiplied by number of levels Option A: It is a binary tree. Option C: Level sum of ach level multiplied by number of levels Option A: It is a binary tree. Option C: Every leaf (NIL) is black. Option D: The root is lack. Op		
Option A: Replaces the existing key value with given larger value. Option B: Replaces the existing key value from root list. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option D: Red Height Option D: Red Height Option C: Red Height Option C: Red Height Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option C: Level sum of middle level multiplied by number of levels Option D: Level sum of middle level multiplied by number of levels Option A: It is a binary tree. Option C: Ever lean (NLL) is black. Option D: The root is black. Option C: Every leaf (NLL) is black. Option C: Every leaf (NLL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. Image: Imag	6.	Decreasing a key algorithm of binomial heap performs which operation?
Option B: Replaces the existing key value with given larger value. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option D: Red Height Option D: Red Depth 0ption D: Red Depth 0ption A: Black Depth 0ption A: What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? 0ption A: Level sum of first level Option D: Level sum of first level Option D: Level sum of middle level multiplied by number of levels Option A: I tis a binary tree. Option B: The root is black. Option B: The root is black. Option C: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (5) (5) (6) (5) (7) B[3] Option B: B[4]	Option A:	Replaces the existing key value with given smaller value.
Option C: Replaces the existing key value from root list. Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option D: Red Height Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option D: Level sum of last level Option D: Level sum of ach level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order	Option B:	Replaces the existing key value with given larger value.
Option D: Deleting node from given binomial heap. 7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option D: Red Height Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option D: Level sum of last level Option D: Level sum of each level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order of given binomial tree. Image: State order ord	Option C:	Replaces the existing key value from root list.
7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option B: Black Depth Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option B: Level sum of first level Option D: Level sum of ast level Option D: Level sum of ast level Option D: Level sum of each level multiplied by number of levels Option A: Level sum of each level multiplied by number of levels Option A: It is a binary tree. Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. Image: Image: Image Im	Option D:	Deleting node from given binomial heap.
7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option B: Black Depth Option D: Red Height Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option C: Level sum of last level Option D: Level sum of alst level Option D: Level sum of each level multiplied by number of levels Option A: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (b) (a) (c) (a)	-	
7. Number of black nodes on any path from the node to leaf isof that node. Option A: Black Height Option B: Black Depth Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option B: Level sum of first level Option C: Level sum of ast level Option D: Level sum of each level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (b) (a) (c) (c) (c) </th <th></th> <th></th>		
Option A: Black Height Option D: Black Depth Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option B: Level sum of last level Option D: Level sum of last level Option C: Level sum of ach level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. Image: Coption A: B[3] Option B: B[4]	7.	Number of black nodes on any path from the node to leaf isof that
Option A: Black Height Option B: Black Depth Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option B: Level sum of last level Option D: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a)		node.
Option B: Black Depth Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option B: Level sum of alst level Option C: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. 10. Recognize order of given binomial tree. 10. Soft Soft Soft Soft Soft Soft Soft Soft	Option A:	Black Height
Option C: Red Height Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option D: Level sum of last level Option D: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels Option A: It is a binary tree. Option D: Which of the following statements about red-black tree is false? Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (b) (a) (b) (a) (b) (a) (c) (a) (b) (a) (c) (a) </th <th>Option B:</th> <th>Black Depth</th>	Option B:	Black Depth
Option D: Red Depth 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option B: Level sum of last level Option C: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Every leaf (NIL) is black. Option D: The root is black. Option D: Recognize order of given binomial tree. 10. Recognize order of given binomial tree. (a) (a) (b) (a) (b) (a) (b) (a) (c) (a)	Option C:	Red Height
8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option B: Level sum of last level Option D: Level sum of each level multiplied by number of levels Option A: It is a binary tree. Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. 10. B[3] Option A: B[4]	Option D:	Red Depth
 8. What will be the function f(n) if level sum cost in every level of the recursion tree is geometrically increasing? Option A: Level sum of first level Option C: Level sum of ast level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: The root is black. Option D: The root is red. 10. Recognize order of given binomial tree. Option A: B[3] Option A: B[4] 		
is geometrically increasing? Option A: Level sum of first level Option B: Level sum of last level Option C: Level sum of each level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Devery leaf (NLL) is black. Option D: 10. Recognize order of given binomial tree. (a) (a) (b) (c)	8.	What will be the function $f(n)$ if level sum cost in every level of the recursion tree
Option A: Level sum of first level Option B: Level sum of last level Option C: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (b) (a) (b) (a) (b) (a) (c) (a) <th></th> <th>is geometrically increasing?</th>		is geometrically increasing?
Option B: Level sum of last level Option C: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (b) (a) (c) (a)	Option A:	Level sum of first level
Option B: Level sum of last level Option C: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: Every leaf (NIL) is black. Option D: The root is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (b) (a) (c) (a)		
Option C: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: The root is black. Option D: The root is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (a) (a) (a) (a) (b) (a) (b) (b) (c) (c) (c)	Option B:	Level sum of last level
Option C: Level sum of middle level multiplied by number of levels Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option D: The root is black. Option D: The root is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (a) (a) (a) (a) (b) (a) (b) (a) (b) (a) (b) (a) (c)		
Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. (a) (a) (a) (a) (a) (a) (b) (a) (b) (a) (b) (a) (b) (a) (b) (a) (c)	Option C:	Level sum of middle level multiplied by number of levels
Option D: Level sum of each level multiplied by number of levels 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. 30 23 22 48 31 17 45 32 24 50 50 50 Option A: B[3] Option B: B[4] 50	_	
9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option B: The root is black. Option D: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. 09 (3) (3) (3) (3) (3) (3) (3) (3) (4) (4) (5) (5) (5) (5) (5) (5) (5) (5) (5) (5) (6) (5) (7) (7) (8) (1) (7) (7) (8) (1) (7) (1) (7) (1) (8) (1) (9) (1) (9) (2) (1) (2) (1) (2) (2) (3) (3) (2) (4) (3) (5) (2)	Option D:	Level sum of each level multiplied by number of levels
 9. Which of the following statements about red-black tree is false? Option A: It is a binary tree. Option B: The root is black. Option D: The root is red. 10. Recognize order of given binomial tree. 10. 8 (3) (2) (2) (2) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	-	
Option A: It is a binary tree. Option B: The root is black. Option C: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. 10. Recognize order of given binomial tree. 10. Recognize order of given binomial tree. 10. 8 20 00 45 32 45 32 30 33 30 34 30 35 30 32 45 32 45 32 45 32 45 32 45 32 45 32 46 39 47 39 39 31 45 32 46 32 47 39 48 31 49 30 49 30 49 30 49 30 49 30 <	9.	Which of the following statements about red-black tree is false?
Option B: The root is black. Option C: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. 10. 8 10. 8 10. 9 10. 8 10. 9 10. 9 10. 9 10. 9 10. 9 10. 9 10. 9 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10. 10 10.	Option A:	It is a binary tree.
Option C: Every leaf (NIL) is black. Option D: The root is red. 10. Recognize order of given binomial tree. 30 23 29 10 43 32 24 50 Option A: B[3] 50 50 Option B: B[4] 50 50	Option B:	The root is black.
Option D: The root is red. 10. Recognize order of given binomial tree. 10. 8 10. 10. </th <th>Option C:</th> <th>Every leaf (NIL) is black.</th>	Option C:	Every leaf (NIL) is black.
10. Recognize order of given binomial tree. 10. Recognize order of given binomial tree. 10. 10. <th>Option D:</th> <th>The root is red.</th>	Option D:	The root is red.
10. Recognize order of given binomial tree. 10. Recognize order of given binomial tree. 10. 10. 10. </th <th></th> <th></th>		
Option A: B[3] Option B: B[4]	10.	Recognize order of given binomial tree
Option A: B[3] Option B: B[4]		Recognize order of given onionnal tree.
8 29 44 30 23 48 50 45 52 24 50 Option A: B[3] 50 Option B: B[4]		6
00 03 02 03 01 043 02 03 01 01 05 05 05 01 01 0ption A: B[3] 01 01 01 0ption B: B[4] 01 01 01		
Option A: B[3] Option B: B[4]		
(45) (52) (59) (55) (59) (59) Option A: B[3] (50) Option B: B[4] (50)		
Option A: B[3] Option B: B[4]		(45) (32) (24) (50)
Option A: B[3] Option B: B[4]		55
Option A: B[3] Option B: B[4]		
Option B: B[4]	Option A:	B[3]
	Option B:	B[4]

Option C:	B[5]
Option D:	B[6]
11.	The flow from vertex u to vertex v is the negative of the flow in reverse direction"
	is called as
Option A:	Capacity constraint
Option B:	Skew Symmetry
Option C:	Flow conservation property
Option D:	Residual Capacity
12.	Algorithm PUSH(u, v) is applicable if,
Option A:	v is overflowing, $cf(u, v) > 0$, and $h[u] = h[v] + 1$
Option B:	u is overflowing, $cf(v, u) > 0$, and $h[u] = h[v] + 1$
Option C:	u is overflowing, $cf(u, v) > 0$, and $h[u] = h[v] + 1$
Option D:	u is overflowing, $cf(u, v) > 0$, and $h[v] = h[u] + 1$
13.	An augmenting path is a:
Option A:	simple cyclic path between source and sink which pass through only positive
	weighted edges.
Option B:	simple acyclic path between source and sink which pass through only positive
	weighted edges.
Option C:	simple cyclic path between source and sink which pass through only negative
	weighted edges.
Option D:	simple acyclic path between source and sink which pass through only negative
	weighted edges.
14	Find the net flow ecross the out in the given figure A
14.	The the net now across the cut in the given figure A.
	$\begin{array}{c} 4/4 \\ 10/10 \\ S \\ 9/10 \\ C \\ 9/9 \\ 9/9 \\ Fig. A cut(S, T) in flow network \end{array}$
Option A:	1.01
<u> </u>	
Option B:	19
Option B: Option C:	21 19 7

15.	The algorithm which uses a technique of package wrapping to compute the
	convex hull is known as
Option A:	Incremental method
Option B:	Divide and conquer method
Option C:	Graham scan method
Option D:	Jarvis's March method
16.	The time complexity of convex hull is
Option A:	O(n)
Option B:	O(log n)
Option C:	O(n log n)
Option D:	O(n^2)
17.	If the cross product between vector p1 and vector p2 (p1 X p2) is positive, then
Option A:	Vector p1 is counterclockwise from vector p2 with respect to the origin (0,0).
Option B:	Vector p1 is clockwise from vector p2 with respect to the origin $(0,0)$.
Option C:	The boundary condition arises.
Option D:	It can be concluded that cross product is wrong.
18.	Minimum Vertex Cover problem belongs to which of the class?
Option A:	Р
Option B:	NP
Option C:	Linear
Option D:	Dynamic
10	Extra hit in red black tree is for
Option A^{\cdot}	Address
Option R:	Height
Option C:	Index
Option D:	Color
Option D.	
20	Those problems are solvable in polynomial time?
Option A^{\cdot}	
Option 71.	P
Option B:	NP
Option C:	NP Complete
Option D:	NP Hard

Solve any Four out of Six5 marks each
Give amortized analysis by aggregate analysis method for the working of
binary 4-bit counter.
Explain a hiring problem.
Solve the given recurrence by recursion tree method to find asymptotic
bound.
$T(n) = 2T(n/4) + n^2$
Write Relabel-to-front algorithm.
Apply Graham Scan algorithm to identify the set of points required to form
a convex hull.
рб •
• p5
• p7 p4 p3
• p2
•
p8 •p1
• 0q
Write an algorithm for Extracting the node with the minimum key in
Binomial Hean

O3 .	Solve any Two Questions out of Three10 marks each
(20 Marks)	
А	Apply Ford Fulkerson algorithm to find maximum flow for the given flow network.
В	Construct binomial heap with keys 2,4,17,1,8,15,20.
С	Show Red-Black tree after inserting keys 5,10,15,25,30,35