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MOTILAL JHUNJHUNWALA COLLEGE
OF
ARTS, SCIENCE AND COMMERCE
VASHI, NAVI MUMBAI - 400703
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QUESTION PAPERS
III SEMESTER AND ATKT EXAMINATION
S.Y. B.SC. INFORMATION TECHNOLOGY
OCTOBER : 2015

<u>REGULAR</u>		<u>ATKT</u>	
<u>SUBJECT</u>	<u>MARKS</u>	<u>SUBJECT</u>	<u>MARKS</u>
LOGIC DESCRETE MATHEMATICS	75	NIL	NIL
MODERN OPERATING SYSTEM	75	NIL	NIL
COMPUTER GRAPHICS	75	NIL	NIL
OBJECT ORIENTED PROGRAMMING	75	NIL	NIL
ADVANCED SQL	75	NIL	NIL

ICLES' MOTILAL JHUNJHUNWALA COLLEGE, VASHI
SEMESTER EXAMINATION SEPTEMBER 2015

Sub: LDM
Class: SYIT

B.Sc.(IT) Sem III

Time: 2.30hr
Marks: 75

Note:

All the following Questions are compulsory.

Q1. Solve any two. (10M)

- a) Let A, B and C be finite sets with $|A| = 6$, $|B| = 8$, $|C| = 6$, $|A \cup B \cup C| = 11$, $|A \cap B| = 3$, $|A \cap C| = 2$ and $|B \cap C| = 5$, find $|A \cap B \cap C|$
- b) If $U = \{1,2,3,4,5,6,7,8,9\}$, $A = \{1,2,4,6,8\}$, $B = \{2,4,5,9\}$, Compute $A \cup B$.
- c) Determine the number of integers between 1 to 250 that are divisible by 2 or 3 or 5 or 7
- d) Define partition of a set.

Q2. Solve any two (10M)

- a) Let R be the relation on $A = \{1,2,3\}$, $R = \{(1,1), (1,2), (2,3)\}$
Find Reflexive closure of R
- b) Draw diagram of a relation R on A where $A = \{1,2,3,4\}$
 $R = \{(1,1), (1,2), (2,4), (3,2), (3,4)\}$
- c) Let $A = \{1,2,3,4\}$, $R = \{(1,1), (1,4), (2,2), (3,4), (3,5), (4,1)\}$. Find Transitive closure of R
- d) Find matrix form of a relation R on A where $A = \{1,2,3,4,5\}$,
 $R = \{(1,2), (2,2), (3,4), (4,5)\}$

Q3. Solve any two. (10M)

- a) If 13 students are selected from a class, prove that at least two of them must have their birthday on the same month of a year.
- b) A function $f: \mathbb{R} - \{7/3\} \rightarrow \mathbb{R} - \{4/3\}$ is defined as $f(x) = (4x - 5)/(3x - 7)$ Show that the Function is bijective.
- c) Prove that if 7 colours are used to paint 50 bicycles, then 8 of them must have same colour.
- d) Check whether 'f' is a function from $A = \{1, 2, 3\}$ to $B = \{a, b, c\}$
 $f = \{(1, a), (2, b), (3, c)\}$

Q4. Solve any two. (10M)

- a) Draw the picture of the graph G where $V(G) = \{A, B, C, D\}$,
 $E(G) = [\{A, B\}, \{B, C\}, \{B, D\}, \{C, D\}]$
- b) Consider the graph G where $V(G) = \{A, B, C, D\}$, $E(G) = [\{A, B\}, \{B, C\}, \{B, D\}, \{C, D\}]$
Find the degree of and parity of each vertex.
- c) Define minimum Cost spanning tree using kruskal algorithm and give suitable example.
- d) Define Hamiltonian path. State necessary and sufficient condition for a graph to have Hamiltonian path.

Q5. Solve any two. (10M)

- a) Prove that set G $\{1, -1, i, -i\}$ is an abelian group w.r.t multiplication. Is it cyclic?
- b) Let $G = \{0, 1, 2, 3, 4, 5\}$. Prepare the composition table w.r.t '+6'
- c) Consider (2,5) encoding function e defined as i.e. $e: B^2 \rightarrow B^5$
 $e(00) = 00000$

