Jaypee Institute of Information Technology, Noida

Test – 1 Examination
Special Semester (June-July 2021)
Course Name: Theoretical Foundation of Computer Science
Course Code: 15B11CI212
Maximum Marks: 20
Maximum Time: 01 Hr.

Imp Note:
1. This is a paper and pen examination. Answers have to be written on papers only in your own handwriting. No answers to be given on google form.
2. On the top of each page of your answer sheet, write your Name, Enrollment No., Batch, Date of Exam, Course Name, Course Code and Page No
4. Solve the questions in the same order as given in paper.
5. Answers should be uploaded collectively at the end of the examination in the form of one single PDF file.
6.Save the pdf file with name:
Regular Students: Batch_EnrollmentNumber_TFCS
Backlog Students: Backlog_EnrollmentNumber_TFCS
7. Keep your webcams open for the entire duration of exam
  * Required

1.   Email *

_____

2.   Enrollment Number *

_____

3.   Name *

_____

4.   Batch *

_____

5.   Mobile Number *

_____

6.   Email (e.g. abc@mail.jiit.ac.in) *

_____

Detailed
Instructions

Note:
1. You need to answer all questions in your own handwriting on papers/pages.

2. Scan all the papers/pages of your answers and create a single PDF file

3. Each page of the single PDF file must contain following details: Name, Enrollment No., Batch, Date of Exam, Course Name, Course Code, and Page No

4. Following Nomenclature should be used for PDF file

Regular Students: Batch_EnrollmentNumber_TFCS
Backlog Students: Backlog_EnrollmentNumber_TFCS

5. Upload the Single PDF file (named as per the nomenclature given in point 4) at the end of the examination in the last block of this section.

6. Click Submit tab/button (available at the end of this section) to submit your Single PDF file

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Q1. [CO1] [1 Marks] Assuming Set A and Set B contain n and m elements respectively. Which of the following(s) holds true for functions?
i. For an injective function from B to A, $n >= m$.
ii. For a surjective function from A to B, $n >= m$.

Q2. [CO1] [1 Marks] Given sets A={a,b,c,d} and B={1,2,3,4,5}. The total number of functions from A➔B, which are not injective is _____.

Q3. [CO1] [1 Marks] Given sets Let A={1,2,3} and B={a,b,c,d,e}. The total number of functions from A➔A which are bijective is _____.

Q4. [CO1] [1 Marks] Given a series as: 0, 2, 5, 26, 96, 387, 1519…
Find the recurrence relation.

Q5. [CO1] [1 Marks] The relation S on the set of positive integers Z^+ is defined as $S = \{(a,b) \mid b = a^2+a+1$. Find the S^2.

Q6. [CO1] [1 Marks] No. of Equivalence Relations on a set {a,b,g,c,d,a,b,f} is _____.

Q.7 [CO1] [1 Marks] Is (Set A) x (Set B) equal to (Set B) x (Set A) or Not? Justify your answer.

Q.8 [CO1] [1 Marks] $|P((S \times T) \cup (T \times S))| = |P((S \times T) \cup (S \times T))|$ if and only if ____ OR____OR _____.

Q.9 [CO1] [1 Marks] For Two finite sets A and B, where $|A|=m$ and $|B|=n$. The total number of subsets of set A is 2016 more than the total number of subsets of set B. The values of m and n are _____ and _____respectively.
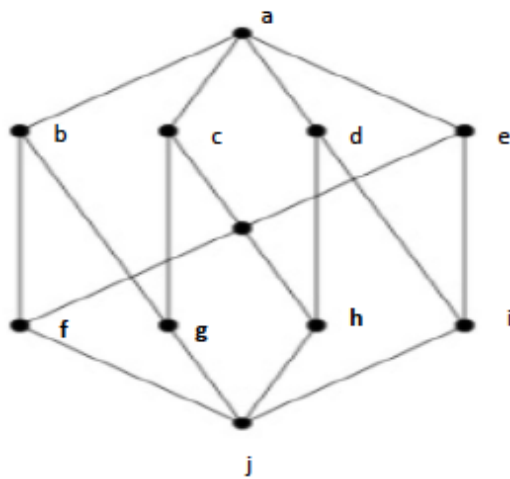
Q10. [CO1] [1 Marks] A–$B^C$is equal to the set difference of _____.

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Q11. [CO1] [3 Marks] There are 7 Students each of them are from different batches (B1,B2,B3,B4,B5,B6,B7) and 3 hostel rooms named H1,H2,H3. How many ways are there to allocate hostel rooms to these 7 students such that each hostel room has at least 1 student?

Q12. [CO1] [2 Marks] Let there are 3 flags x,y,z of size 1 foot, 1 foot, and 2 feet. Find a recurrence relation for the number of ways to arrange given 3 types of flags on flagpole of n feet height.

Q13. [CO1] [1+2+2 Marks] Consider the given diagram

i.   Find the maximum and minimum element.
ii.   Find the UB, LB, LUB and GLB of set {f,c,g,i} and {b,c,d}.
iii. State whether given Hasse diagram is lattice or not? justify your answer with explanation.

9.   Upload the single PDF file (named as per the nomenclature stated in the Note section) containing your answers *

Files submitted: