KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

Hiranya Kumar Bhuyan School of Science & Technology

Home Assignment

Master of Computer Application

Discrete Mathematics

3rd Semester, 2018

Total Marks 50

A. Answer the following questions- **(2 X 3= 6)**

1. Find the power set of the following sets : (a) $A=\{a,b,c\}$ (b) $A=\{1,2\}$
2. When is a statement formula said to be in the normal form ?
3. What is chain of inference ?

B. Answer the following questions- **(4 X 3= 12)**

1. Determine whether each of the following form is a tautology or a contradiction or neither :
   (a) $(P \wedge Q) \rightarrow (P \vee Q)$
   (b) $(P \rightarrow Q) \wedge (P \wedge \sim Q)$
2. Find (i) fog (ii) gof (iii) fof (iv) gog where $f(x)=x^2+3x+2$; $g(x)=2x-3$ are functions from R to R.
3. Draw Hasse diagram for $\{\rho(A), \subseteq\}$ where (i) $A=\{a,b\}$ (ii) $A=\{a,b,c\}$

C. Answer the following questions- **(6 X 2= 12)**

1. Show that the set G of all positive rationals forms a group under the composition ' ¿ ' defined by $a*b=\frac{ab}{3}$ for all $a,b \in G$.

2.Write the adjancy matrix is of (i) K_4 (ii) $K_{2,3}$

D. Answer the following questions- **(10 X 2= 20)**

1. Determine whether the following set together with the binary operation is a semigroup, a monoid or neither. If it is a monoid, specify the identity. If it is a semi group or a monoid determine whether it is commutative.
   (a) $S=\{1,2,3,6,9,18\}$ where $a*b=LCM(a,b)$.
   (b) Z,the set of integers,where $a*b=a+b-ab$.

2. Define Eulerian graph & Hamiltonian graph. 2+2+2+2+2=10

Give an example of a graph which is

(i) Eulerian but not Hamiltonian .

(ii) Hamiltonian but not Eulerian

(ii) Both Eulerian and Hamiltonian
(iii) Non Eulerian and Hamiltonian

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KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

Hiranya Kumar Bhuyan School of Science and Technology

HOME ASSIGNMENT FOR

MASTER OF COMPUTER APPLICATION (MCA)

and

MASTER OF INFORMATION TECHNOLOGY (M.Sc.IT)

THIRD SEMESTER, 2018

COURSE: OPERATING SYSTEM
(MCA-10/ M.Sc.IT-10)

Total Marks: 50

[Assignments *are required to be written in your own language. Copying in toto from the learning materials will carry less score*]

A. Answer the following three questions: **2 X 3 = 6**

Q1. What are three objectives of operating system?

Q2. What are the different states of a process?

Q3. What are the different types of thread?

B. Answer the following three questions: **4 X 3 = 12**

Q1. Define race condition. Give an example of race condition.

Q2. Describe the two encryption techniques in brief.

Q3. Describe the buddy system of memory management.

C. Answer the following two questions: **6 X 2=12**

Q1. Give the steps involved in transferring data through DMAC.

Q2. Explain the Least Recently Used algorithm using example.

D. Answer the following two questions: **10 X 2 = 20**

Q1. Explain the conditions necessary for deadlock. Describe any two strategies used for handling deadlock.

Q2. Using example explain contiguous and linked allocation scheme.

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COURSE: FORMAL LANGUAGES AND AUTOMATA

(MCA-11/M.Sc.IT-11)

Total Marks: 50

[Assignments *are required to be written in your own language. Copying in toto from the learning materials will carry less score*]

A. Answer the following three questions: **2 X 3 = 6**

Q1. What is Church's thesis?
Q2. What is predictive parsing?
Q3. Differentiate between P and NP class.

B. Answer the following three questions: **4 X 3 = 12**

Q1. Describe the different types of parsing.
Q2. Design a DFA to accept the following language:
L = { w | w is of odd length and begins with 11 }
Q3. Define ambiguity of grammar.

C. Answer the following two questions: **6 X 2 = 12**

Q1. Construct a context free grammar which generates palindrome for binary numbers.
Q2. What is parse tree? Show that the following grammar is ambiguous:
S → aB | ab
A → aAB| a
B → ABb | b

D. Answer the following two questions: **10 X 2 = 20**

Q1. Describe the Chomsky classification of languages.
Q2. Design a Turing machine that accepts a string containing even number of 0s.

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COURSE: COMPUTER GRAPHICS

(MCA-12/ M.Sc.IT-12)

Total Marks: 50

[Assignments *are required to be written in your own language. Copying in to from the learning materials will carry less score*]

A. Answer the following three questions: 2 X 3 = 6

Q1. Give the main difference between random scan system and raster scan system.
Q2. Define spatial redundancy and temporal redundancy.
Q3. What is spline? Give two applications of spline.

B. Answer the following three questions: 4 X 3 = 12

Q1. How is intensity code for grayscale measured?
Q2. What are virtual reality environments? Explain the three main phases in brief.
Q3. Explain the concept of anti aliasing.

C. Answer the following two questions: 6 X 2=12

Q1. A triangle is having the vertices A(0,0), B(1,2) and C(5,2). Magnify the triangle to twice its size while keeping C(5,2) fixed.
Q2. Give the program to draw a circle using Brasenham's circle drawing algorithm.

D. Answer the following two questions: 10 X 2 = 20

Q1. Explain the pseudocode for Sutherland-Hedgman.
Q2. Explain the various types of Bezier curves and surfaces.

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Assignment Guidelines

A. Guidelines to Co-ordinators:

1. Assignments are parts of teaching-learning process and compulsory.

2. The spirit behind this is to help learners to understand the subject and prepare themselves better for the term-end examination.

3. Assignment responses are to be evaluated and feedbacks are required to be communicated to the learners, by giving back the assignments with evaluator's comments. Such assignments are to be collected at the time of issuing admit cards and be stored in the centre's office till the end of next semester.

4. Assignment marks are to be sent to the Controller of Examinations as soon as the examination routines are published.

5. Keeping the above points in mind Co-ordinators will fix the time/date of submission of assignments by the learners as may be convenient to follow the guidelines in true spirits.

B. Guidelines to learners:

1. As soon as the SLMs are received the learners will write the assignments in their own handwriting (assignment questions may be downloaded from the website, if necessary) to be submitted to Co-ordinators as per the dates fixed for the purpose. Timely submission of assignments at the Study Centres will help in quick processing of results of respective learners. Otherwise this will create unnecessary delay in declaration of results.

2. Writing of assignment (work) and submission of the same in time is compulsory.

Registrar

N.B. The learners will have to collect receipt after submitting the assignment with the signature and seal of the collector of study centre and will have to keep with him/her till the declaration of result.

✂□…….....……

Receipt

Received the assignment from Mr/Ms …….Enrollment number ……of **3rd Semester MCA/MSCIT** on ……2018.

Date: Signature of collector with seal

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