उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment)　　　　2016-2017

कम्प्यूटर विज्ञान म ंस्नातकात्तर
Master of Compute Science

विषय　　　　　: कम्प्यूटर साइंस　　　　　विषय कोड : एम.एस.सी.-सी.एस

Subject　　　 : Computer Science　　　 Subject Code : MSC - CS

कोर्स शीर्षक　 :　　　　　　　　　　कोर्स कोडः एम.एस.सी.-सी.एस.-01

Course Title : Discretes Mathematical Structure.　　Course Code : MSC.CS-01

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - 　दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note:　Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory.

1. (i) How many bit strings of length 10 contain at most four one's at least four one's exactly four one's.
   (ii) Determine the number of positive integers n where 15 n 100 and n is not divisible by 2, 3 or 5.
2. (i) If R be the relation in the natural numbers N defined by R = {(x, y) xϵN, yϵN, x-y) is divisible by 5}. Prove that R is an equivalence relation.
   (ii) Show that in any Boolean algebra, (a + b)(a' + c) = ac + a'b + bc.
3. (i) Prove that a given connected graph G is Eulerian if and only if all the vertices of G are of even degree.
   ii)-Prove that, in any graph the number of odd degree vertices are even.

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory.

4. Find the number of ways in which 5 boys and 5 girls can be seated in a row if the boys and girls are to have alternate seats.
5. What is the smallest number of people in a group, so that it is guaranteed that three of them will have their birthday in the same month?
6. Express the statements "Some student in this class has visited Mexico" and "Every student in this class has visited either Canada or Mexico" using predicates and quantifiers.
7. Is the following argument valid? If you do every problem in this book, then you will learn discrete mathematics. You learned discrete mathematics.
8. (i)Use the karnaugh map to simplify: f(w,x,y,z)= wy + w'yz + xy'z + x'yz
   (ii) Prove that if a$^\wedge$b=a$^\wedge$c and a$^\vee$b = a$^\vee$c then b=c for all a,b,c in a distributive lattice (L,$^\wedge$,$^\vee$).
8. Let G be a simple connected planar graph with 13 vertices and 19 edges. Then, the number of faces in the planar embedding of the graph is?

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विषय : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक :   कोर्स कोडः एम.एस.सी.-सी.एस.-02
Course Title : Introduction to Programming language   Course Code : MSC.CS.-02
Through 'C'

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory.

1. Write a C program for matrix multiplication. [6]

2. Write a C program to read the contents of a file and store it in another file. [6]

3. Write a C program to calculate factorial of a number using recursion. [6]

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory.

4. Write a C program to take marks of 5 subjects as input and calculate percentage. [2]

5. Define storage classes in C. [2]

6. Write a C program to add two numbers using pointers. [2]

7. What is the difference between a compiler and an interpreter? [1]

8. Give any two differences between call by value and call by reference? [2]

9. Write a C program to exchange the values of two variables, say x and y without using a third variable. [3]

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अधिन्यास (Assignment) | 2016-2017

कम्प्यूटर विज्ञान में स्नातकोत्तर
Master of Compute Science

विषय : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject : Computer Science   Subject Code : MSC - CS

कोर्स शीर्षक :   कोर्स कोडः एम.एस.सी. सी.एस -03

Course Title : Digital Computer Fundamentals and Assembly Language Programming   Course Code : MSC.CS-03

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory.

1. What is the difference between combinational and sequential circuit? Explain with appropriate example.

2. Explain the following addressing modes with an example and suggest a use for those addressing modes:
   i. Register Indirect   ii. Auto increment   iii. Indirect address
   iv. Base address   v. Indexed address

3. Explain the interrupt driven mode of data transfer and the DMA driven data transfer, elaborating on how they are accomplished and their relative merits and demerits.

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory.

4. What is the difference between isolated I/O and memory mapped I/O?

5. What do you mean by memory hierarchy? Why registers are present in CPU?

6. What do you mean by instruction cycle and interrupt cycle? When will be any interrupt processed during the instruction cycle?

7. Discuss and Differentiate Hardware and Micro-programmed control unit.

8. Explain the differences among microoperation and microprogram? Write down the micro operations involves in fetch cycle.

9. Write assembly language program to compare values of the three variables and print them in descending order as: Largest = %d, Medium = %d, Smallest = %d.

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अधिन्यास (Assignment)   2016-2017

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विषय   : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject   : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक   :   कोर्स कोडः एम.एस.सी.-सी.एस.-05
Course Title : Theory of Computation   Course Code : MSC.CS-05

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट -   दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory.

1.   (i) Construct the deterministic finite automata for accepting the set of all strings with three consecutive 0's.
     (ii) Distinguish NFA and DFA with examples.

2.   Let G be the grammar
     S->aB|bA
     A->a|aS|bAA
     B->b|bS|aBB
     for the string baaabbabba. Find leftmost derivation, rightmost derivation and parse tree.

3.   (i)What are P, NP, NP-complete, and NP-hard?
     (ii)How to prove that a given problem is NP complete?
     (iii) What is polynomial time reduction

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory.

4.   Give regular set for the following expression: 1(01)*(10)*1
5.   For the grammar G defined by S->AB, D->a,A->Aa,A->bB,B->Sb, give derivation tree for the sentential form **babab**.
6.   Give an example of a language accepted by a PDA but not by DPDA.
7.   Mention the difference between decidable and undecidable problems with examples of each.
8.   What is meant by halting problem and post correspondence problem?
9.   Mention any two undecidability properties for recursively enumerable languages.

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विषय	: कम्प्यूटर साइंस	विषय कोड : एम.एस.सी.-सी.एस
Subject	: Computer Science	Subject Code : MSC - CS
कोर्स शीर्षक	:	कोर्स कोडः एम.एस.सी.-सी.एस.-06
Course Title	: System Analysis and Design	Course Code : MSC.CS-06

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. Explain the following:
   a) Project   b) Project scheduling   c) Critical Path
   d) Milestones   e) Checkpoints   f) Project review.
2. What is strategic planning? Relate strategic planning to management control and operational control.
3. With respect to purchasing and inventory control systems explain any three of the following:
   a) Why do retail outlets carry inventory   b) Inventory carrying cost.
   c) Procurement lead time   d) Bill of material.

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory

4. Differentiate between decision table and decision tree.

5. What are the attributes of good analyst?

6. Explain the system development life cycle.

7. Distinguish between hierarchical structure and network structure.

8. Define Bench Mark?

9. What is brain storming?

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Master of Compute Science

विषय	: कम्प्यूटर साइंस	विषय कोड :	एम.एस.सी.-सी.एस
Subject	: Computer Science	Subject Code :	MSC - CS
कोर्स शीर्षक	:	कोर्स कोडः	एम.एस.सी.-सी.एस.-07
Course Title	: Software Engineering	Course Code :	MSC.CS-07

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. What is Risk Management and what will risk management do for any business? How does software risk management related to Software process improvement?

2. Define Software Development life cycle (SDLC). What is spiral model? List the advantage and disadvantage of waterfall model.

3. What is Software Testing? What are the various characteristics of a good testable software?

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory

4. What is the difference between the verification and validation process?

5. What are the different testing levels?

6. What is Cohesion ? What are the different type of Cohesion?

7. What is (SQA)? What are the component of Software Quality Assurance (SQA).

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अधिन्यास (Assignment)   2016-2017

कम्प्यूटर विज्ञान म स्नातकात्तर
Master of Compute Science

विषय	: कम्प्यूटर साइंस	विषय कोड : एम.एस.सी.-सी.एस
Subject	: Computer Science	Subject Code : MSC - CS
कोर्स शीर्षक	:	कोर्स कोडः एम.एस.सी.-सी.एस.-08
Course Title :	Object oriented programming C++	Course Code : MSC.CS-08

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट -   दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1.   List the features of Object oriented programming.

2.   Highlight the difference between pure virtual functions and virtual function.

3.   Write a program using a try block to detect and throw an exception if the condition "divide by zero" occurs.

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory

4.   What is dynamic memory allocation?

5.   What are the applications of "this" pointer?

6.   Declare an abstract class **"Shape"** with methods **'area'** & **'volume'**. Refine this super class to subclasses like **"cone"**, **"cylinder"** & **"Rectangular Box.** Then, Calculate area and volume for the subclasses.

7.   What is Inheritance? Explain the different forms of inheritance with the help of example.

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Master of Compute Science

विषय	: कम्प्यूटर साइंस	विषय कोड : एम.एस.सी.-सी.एस
Subject	: Computer Science	Subject Code : MSC - CS
कोर्स शीर्षक	:	कोर्स कोडः एम.एस.सी.-सी.एस.-09
Course Title :	**Computer Networks**	Course Code : MSC.CS-09

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट -   दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. Write short notes on the following: [6]

    a. Hub

    b. Repeater

    c. Switch

2. What do we mean by Multiplexing? Explain the three different types of multiplexing techniques   . [6]

3   Explain the OSI reference model with the help of a diagram. Give brief description of each layer of the

    model.   [6]

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory

4. Briefly explain the use of Bridges   . [2]

5. List the protocols used for host to host communication in the transport layer of TCP/IP model. What are the important differences between these two protocols?   [3]

6. Differentiate between mutlicast addressing and Unicast addressing.   [2]

7. What is a parity bit? What is it used for? Explain with example.   [2]

8. What do we mean by class addressing and class-less addressing? Give the range of IP addresses used in different classes in class addressing mode.   [3]

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Master of Compute Science

विषय   : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject   : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक   :   कोर्स कोडः एम.एस.सी.-सी.एस.-11
Course Title : System Software   Course Code : MSC.CS-11

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट -   दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all
          questions. All questions are compulsory

1.   Explain the function of the following with reference to the UNIX file system: [6]
     a) Boot Block
     b) Super Block
     c) Data Block

2.   a) What are the components of the context of process? What are the steps for a context switch? [3]
     b) Write Short notes on the following: [3]
        i. grep
        ii. ps
        iii. cmp

3.   What do you mean by operating system? What are the major functions of an operating system? [6]

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all
        questions. All questions are compulsory

4.   Write short notes on the following: [4]
      a. Assembler
      b. Compiler

5.   What are the basic functions of shell? Explain the different types of shells used in UNIX OS. [3]

6.   What do we mean by multi programming? Explain how demand paging helps in achieving multi-
      programming. [3]

7.   What do we mean by thrashing? [2]

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विषय : कम्प्यूटर साइंस विषय कोड : एम.एस.सी.-सी.एस
Subject : Computer Science Subject Code : MSC - CS
कोर्स शीर्षक : कोर्स कोडः एम.एस.सी.-सी.एस.-12
Course Title : Object Oriented Analysis and Design Course Code : MSC.CS-12

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. What do you mean by "Object Oriented". Explain the characteristics of object-oriented approach.

2. Differentiate between

   (a) Class diagram & Instance diagram

   (b) Links & association

3. Explain Aggregation & Generalization in detail with suitable example.

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory

4. Describe how class diagram, object diagram and generalization are represented with UML Diagram.

5. What do you mean by the State Diagram and the Event Trace Scenario? Draw the Event Trace Scenario for a Phone Call and the State Diagram for Phone Line.

6. What is the relationship between cohesion and coupling? Identify the type of coupling in the following. How can it overcome?

7. How does object relational database differ from object databases?

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अधिन्यास (Assignment)   2016-2017

कम्प्यूटर विज्ञान म॑ स्नातकात्तर
Master of Compute Science

विषय   : कम्प्यूटर साइंस   विषय कोड   : एम.एस.सी.-सी.एस
Subject   : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक   :   कोर्स कोडः एम.एस.सी.-सी.एस.-13
Course Title : Object Oriented Analysis and Design   Course Code : MSC.CS-13

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट -   दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1.   Solve the following system of equation by Gauss Elimination method: [6]
     $4x_1 + x_2 + x_3 = 4$
     $x_1 + 4x_2 — 2x_3 = 4$
     $3x_1 + 2x_2 - 4x_3 = 6$

2.   Use Lagrange's interpolation to find the value for x=3 in the following table: [6]
     x: 3.2 2.7 1.0 4.8
     f(x): 22.0 17.8 14.2 38.3

3.   The equations of two lines of regression are as follows: [6]
     $2x + 3y-8 = 0$ and
     $x + 2y-5 = 0$
     Obtain the value of correlation coefficient and variance of y given that the variance of x is

खण्ड - ब
Section—B

Maximum Marks : 12
अधिकतम अंक : 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words. Answer all questions. All questions are compulsory

4.   Which of the iterative methods for solving linear system of equations converge faster? Why?   [2]

5.   If $\pi = 227$ is approximated as 3.14, find the absolute error and relative error respectively.   [2]

6.   A student obtained the mean and the standard deviation of 100 observations as 40 and 5.1. It was later found that one observation was wrongly copied as 50, the correct figure being 40. Find the correct mean and the S.D.   [3]

7.   A card is drawn from a well shuffled pack of playing cards. Find the probability that it is either a diamond or a king.   [3]

8.   What is the expected number of heads appearing when a fair coin is tossed three times?   [2]

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment) 2016-2017

कम्प्यूटर विज्ञान में स्नातकोत्तर
Master of Compute Science

विषय : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक :   कोर्स कोडः एम.एस.सी.-सी.एस.-14
Course Title : Accounting & Finance Managements   Course Code : MSC.CS-14

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. What are the purposes of accounting information? Explain
   लेखांकन सूचनाओं के उद्देष्य क्या हैं? समझाइये।

2. What do you mean by Balance Sheet? How does it differ from profit and loss Account?
   आर्थिक चिट्ठा क्या है? यह लाभ हानि खाते से किस प्रकार भिन्न है?

3. Examine the role of accounting concepts in the preparation of financial statements.
   वित्तीय विवरणों को तैयार करने में लेखांकन अवधारणाओं की भूमिका का परीक्षण कीजिये।

Section- B
खण्ड–ब

अधिकतम अंक : 12
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. Why do we prepare the trial balance?
   तलपट हम किस लिये बनाते हैं?

5. Distinguish between management accounting and financial accounting?
   प्रबन्धीकीय लेखांकन एवं वित्तीय लेखांकन में विभेद कीजिए।

6. What do you mean by working capital?
   कार्यषील पूँजी से आप क्या समझते हैं?

7. Differentiate between 'Fixed Cost' and 'Variable Cost'
   'स्थिर लागत' एवं 'परिवर्तनषील लागत' में विभेद कीजिये।

8. State the importance and limitations of profit and loss account.
   लाभ हानि खाते के महत्त्व एवं सीमाओं को बताइये।

9. What is cash cycle?
   रोकड़ चक्र क्या है?

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment)　　　　2016-2017

कम्प्यूटर विज्ञान म स्नातकात्तर
Master of Compute Science

विषय	: कम्प्यूटर साइंस	विषय कोड : एम.एस.सी.-सी.एस
Subject	: Computer Science	Subject Code : MSC - CS
कोर्स शीर्षक	:	कोर्स कोडः एम.एस.सी.-सी.एस.-15
Course Title	: **Probability and Distribution**	Course Code : MSC.CS-15

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. State and prove lindeberg levy central limit theorem

2. Discuss about the weak law of large numbers

3. State and prove Chauchy Schwartz inequality

Section- B
खण्ड—ब

अधिकतम अंक : **12**
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. State and prove Jensen inequality.

5. State and prove Kolmogorov inequality

6. Discuss about the Zero one law.

7. Discuss about the random variable and its type.

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment)   2016-2017

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विषय : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक :   कोर्स कोडः एम.एस.सी.-सी.एस.-16
Course Title : Database Management System   Course Code : MSC.CS-16

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. The musical company wants to store information about the musicians who perform on its albums. Each musician has a musician id, a name, an address and a phone number. Some musicians may have the same address and some of them may have more than one phone number. Each musician may play several instruments and an instrument and may be played by several musicians. Each instrument has name and a musical key. The album recorded has a title, a copyright date, a format and an album identifier. Each album has a number of songs where a song has a title and an author. Each song may be performed by several musicians and a musician may perform a number of Bongs. One of the musicians of the song acts as a producer. A producer may produce several albums.
   (i) Draw an E-R diagram.
   (ii) Transform the E-R diagram to a Relational Schema.
2. Explain how transactions are possible in distributed database.
3. What is Deadlock? What are different ways of preventing Deadlock.
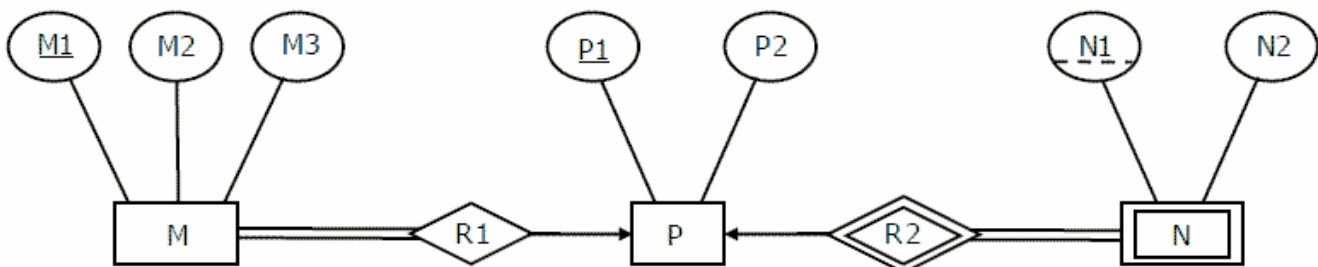
Section- B
खण्ड—ब

अधिकतम अंक : 12
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. Consider the following ER diagram.

How many tables are needed to represent M, N, P, R1, R2?

5. Consider the relation R(A,B,C,D,E,G) with functional dependencies given by {AB->C, AC->B, AD-> E, B->D, BC->A, E-> G}. Consider the decomposition of R into {AB, BC, ABDE,EG}.
   a) Is this decomposition lossy or lossless? Explain why?
   b) Is this decomposition is dependency preserving or not? Explain why?

6. The employee information in a company is stored in the relation.
   Employee:(name,sex,salary,deptName)
   Assume name is primary key and consider the following SQL query:
   SELECT deptName FROM Employee WHERE sex='M' GROUP BY deptName
   HAVING AVG(salary)> (SELECT AVG(salary) FROM Employee);
   What is the output of above SQL query?

7 . Consider the following database schedule with two transactions, T1, T2 and T3
   S1 = r1(X); r2(z); r3(x); r1(z); r2(Y); r3(y);w1(x) c1;w2(z);w3(y),w2(y);c2;c3;
   S2= r3(X); r1(x); w3(x); r2(x); w1(Y); r2(y);w2(x);c1;c2;c3;
   where $r_i(K)$ denotes a read operation by transaction T_i on a variable Z, $w_i(K)$ denotes a write operation by T_i on a variable K and c_i denotes commit operation by transaction T_i. Are these schedule   recoverable? If yes which type of recoverable schedule it is? Explain why?

8. Explain different type of locking protocols for concurrency control. Which concurrency control protocols ensure both conflict serialzability and freedom from deadlock?

9. Consider two Functional dependencies set F and G
   F={A->B, AB->C, D->AC, D->E}
   G={A->BC, D-> AE}
   Answer the following questions with the explanation.
   a)Is F⊂G (G cover F) ?
   b) Is F ⊃D (F cover G)?
   c) Is F ≡G (F cover G and G cover F)?

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अधिन्यास (Assignment)   2016-2017

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Subject	: Computer Science	Subject Code : MSC - CS
कोर्स शीर्षक	:	कोर्स कोडः एम.एस.सी.-सी.एस.-17
Course Title :	Operating System	Course Code : MSC.CS-17

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. Explain Real Time operating system, Semaphore and Deadlock Avoidance.
2. Explain the structure of UNIX and Windows Operating Systems.
3. How PCB (Process Control Block) helps in process management? Explain the structure of PCB.

Section- B
खण्ड—ब

अधिकतम अंक : 12
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. Explain the concepts of segmentation and paging with the help of neat diagram.
5. Consider a logical address space of 8 pages of 1024 words each, mapped on to a physical memory of 32 frames. How many bits are there in the logical and physical address respectively?
6. Mention the major attributes and operations of a file.
7. Consider the following set of processes:

Process	Arrival time	Processing time
P_1	0	7
P_2	3	2
P_3	4	3
P_4	4	1
P_5	5	3

Find out the average waiting time and average turnaround time for

(a) FCFS   (b) SJF

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Subject	: Computer Science	Subject Code : MSC - CS
कोर्स शीर्षक	:	कोर्स कोडः एम.एस.सी.-सी.एस.-18
Course Title	: **Core Java**	Course Code : MSC.CS-18

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. How Access Control Mechanism is implemented in Java?. What Method does subclass inherit from superclass.
2. Write down a java program to display number in word format, for Example: 123 will be shown as "One Two Three".
3. What is an applet?. List the methods you must extend to design an applet. What is the purpose of <PARAM …..> tag in Applet?

Section- B
खण्ड—ब

अधिकतम अंक : **12**
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. Write down C++ features that are not supported by Java.
5. What is multithreading? Explain with example for removing the synchronicity behavior of a thread.
6. What is the difference between Overloading and Overriding? Is it possible to override a inner classes.
7. (a) What is Servelet ? What are the different methods for running the Servelets?

   (b) Why servlet is preferred over CGI script. Write the life cycle of a servlet.

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment)   2016-2017

कम्प्यूटर विज्ञान म स्नातकात्तर
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Subject   : Computer Science   Subject Code : MSC - CS

कोर्स शीर्षक   :   कोर्स कोडः एम.एस.सी.-सी.एस.-20

Course Title : **Computer Graphics**   Course Code : MSC.CS-20

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट -   दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1.   Explain DDA line drawing algorithm with Example.   [4]

2.   Describe the matrix formulation of 2D Translation, Scaling and Rotation.   [5]

3.   Explain Bresenham's circle generating algorithm.   [5]

4.   Derive the equation for reflection on y = -x.   [4]

Section- B
खण्ड—ब

अधिकतम अंक : **12**

Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

5.   What are the 2 type of projections? Describe using figures   .   [2]

6.   Define refresh buffer/frame buffer.   [2]

7.   What is pixel?   [2]

8.   Define aspect ratio.   [2]

9.   List the properties of Bezier Curves.   [2]

10. Discuss shear 2D transformation in brief.   [2]

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment) 2016-2017

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Master of Compute Science

विषय : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक :   कोर्स कोडः एम.एस.सी.-सी.एस.-21
Course Title : Design and Analysis Of Algorithms   Course Code : MSC.CS-21
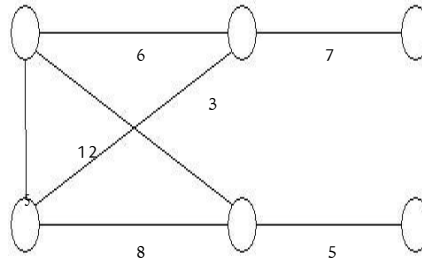
अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. (a) Solve the recurrence relation by iteration
   $T(n) = T(n-1) + n_4$

   (b) Suppose we are comparing implementations of insertion sort and merge sort on the same machine. For inputs of size n, insertion sort runs in $8.n2$ steps, while merge sort runs in $64\ n\ lg\ n$ steps. For which values of n does insertion sort beat merge sort?

2. (a) Find the minimum spanning tree using Prims algorithm for the following graph.

   (b) Using Dynamic Programming Approach, find the minimum number of scalar multiplications to multiply the chain of matrices given below.
   M1 * M2 * M3
   10 *20   20*50   50*1

3. Explain P, NP, NP-Complete and NP-Hard class problems.

Section- B
खण्ड—ब

अधिकतम अंक : 12
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. Define Generic Random Access Machine. What assumptions does it have?

5. State the significance of θ, Ω and O notations.

6. Explain principle of Optimality.

7 . Explain Satisfiability Problem?

8   . Explain why the statement, "The running time of algorithm A is at least $O(n^2)$," is meaningless.

9.   Find the optimal solution using greedy criterion for a knapsack having capacity 50 kg. The list of items having values and weight as are shown in the table:

Item	I_1	I_2	I_3	I_4	I_5
Profit	10	20	24	9	8
weight	8	14	34	5	4

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment) | 2016-2017

कम्प्यूटर विज्ञान म स्नातकात्तर
Master of Compute Science

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Subject : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक :   कोर्स कोडः एम.एस.सी.-सी.एस.-23
Course Title : Artificial Intelligence   Course Code : MSC.CS-23

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. (a) Explain water jug problem using state space tree.

   (b) Explain minmax algorithm with example.

2. (a) Explain unification algorithm used for reasoning under predicate logic with an example.

   (b) Describe in detail the steps involved in the knowledge Engineering process.

3. (a) Explain the method of handling approximate inference in Bayesian Networks.

   (b) Explain AO* algorithm with an example

ख Section- B
खण्ड—ब

अधिकतम अंक : 12
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. List down the characteristics of intelligent agent.

5. What do you mean by local maxima with respect to search technique?

6. What factors determine the selection of forward or backward reasoning approach for an AI problem?

7. What are the limitations in using propositional logic to represent the knowledge base?

8. What are the differences and similarities between problem solving and planning?

9. Explain the concept of learning from example.

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment)   2016-2017

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विषय	: कम्प्यूटर साइंस	विषय कोड : एम.एस.सी.-सी.एस
Subject	: Computer Science	Subject Code : MSC - CS
कोर्स शीर्षक	:	कोर्स कोडः एम.एस.सी.-सी.एस.-24
Course Title	: Parallel Computing	Course Code : MSC.CS-24

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. Explain the Flynn's Taxonomy in detail.

2. Explain the major issues of concern in the effective utilization of a parallel computer architecture.

3. Consider a program that requires 78% of the total time to perform parallel operation while the remaining time is used for serial operations. The program consists of 25,000 operations each taking 2.5ms to complete, with 2,000 operations being done sequentially. Calculate the speedup achieved.

Section- B
खण्ड–ब

अधिकतम अंक : 12
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. Define: speedup, Amdahl's law.

5. Explain cube-connected cycles and de Bruijn networks.

6. Explain the RAM and the PRAM models.

7. Define the transformation used in a shuffle network giving an example using eight processors.

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment)   2016-2017

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विषय   : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject   : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक   :   कोर्स कोडः एम.एस.सी.-सी.एस.-25
Course Title : **Correlation, Regression &**Statistical inference   Course Code : MSC.CS-25

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट -   दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. : State and prove Rao- Blackwell theorem.
2. State and prove Cramer- Roo inequality
3. State and prove Neyman- Pearson lemma.

रूSection- B
खण्ड–ब

अधिकतम अंक : **12**
Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. Write short notes on   (a) MP tests   (b) UMP tests
5. Discuss about the CRK bound.
6. Discuss in short (a) BAN estimator (b) CAN estimator
7. Discuss about the Bhattacharya bound.

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास **(Assignment)**   **2016-2017**

कम्प्यूटर विज्ञान मं स्नातकात्तर
Master of Compute Science

विषय   : कम्प्यूटर साइंस   विषय कोड : एम.एस.सी.-सी.एस
Subject   : Computer Science   Subject Code : MSC - CS
कोर्स शीर्षक   :   कोर्स कोडः एम.एस.सी.-सी.एस.-26
Course Title : Mathematical Analysis   Course Code : MSC.CS- 26

> अधिकतम अंक : 30
> Maximum Marks: 30

Section - A
खण्ड - अ

> अधिकतम अंक : 18
> Max. Marks: 18

नोट -   दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1.   State and prove Baire's theorem.

2. Write a note on Convergence of the sequence.

3. Discuss about the Riemann Stieltjes integrals.

ख Section- B
खण्ड—ब

> अधिकतम अंक : 12

Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4.   Write short notes on (a) Metre Space (b) Compact spaces and compact Sets

5. Write short notes on Fourier series.

6. Discuss about the bounded variation and continuity.

7.   Write a note on the Completeness and Compactness.

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment) 2016-2017

कम्प्यूटर विज्ञान म स्नातकात्तर
Master of Compute Science

विषय : कम्प्यूटर साइंस विषय कोड : एम.एस.सी.-सी.एस
Subject : Computer Science Subject Code : MSC - CS
कोर्स शीर्षक : कोर्स कोडः एम.एस.सी.-सी.एस.-27
Course Title : Operation Research Course Code : MSC.CS-27

अधिकतम अंक : 30
Maximum Marks: 30

Section - A
खण्ड - अ

अधिकतम अंक : 18
Max. Marks: 18

नोट - दीर्घ उत्तरी प्रश्न । प्रश्नों के उत्तर 800 से 1000 शब्दों में लिखें । सभी प्रश्न अनिवार्य हैं ।

Note: Long Answer Questions. Answer should be given in 800 to 1000 words. Answer all questions. All questions are compulsory

1. Solve the following LPP by using simplex method:

   Maximize $Z = 2x_1 + 3x_2$

   Subject to the constraints

   $x_1 + x_2 \leq 30$, $x_2 \geq 3$,
   $0 \leq x_2 \leq 12$, $x_1 - x_2 \geq 0$,
   $0 \leq x_1 \leq 20$.

2. Explain the role of duality theory in sensitivity analysis.

3. (i) Briefly describe the steps for solving a transportation problem.

   (ii) Solve the following assignment problem:

	I	II	III	IV	V
A	1	3	2	3	6
B	2	4	3	1	5
C	5	6	3	4	6
D	3	1	4	2	2
E	1	5	6	5	4

Maximum Marks: 12

Note: Short Answer Questions. Answer should be given in 200 to 300 words each. Answer all questions. All questions are compulsory.

4. Explain the terms: a) Feasible solution b) Basis c) Alternative optima

5. Draw a flowchart for the computational procedure for a LPP using simplex method.

6. What are the basic characteristics of a queuing system?

7. What is the importance of Poisson and Exponential distribution in Queuing theory?

8. Write short note on traveling salesman problem.

9. Briefly describe the steps for solving a Transportation Problem.