

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

अधिन्यास (Assignment)

2016-2017

कंप्यूटर अनुप्रयोग में स्नातकोत्तर डिप्लोमा(पीजीडीसीए)

Post Graduate Diploma In Computer Application (PGDCA)

विषय : कम्प्यूटर

विषय कोड : पीजीडीसीए

Subject : Computer

Subject Code : PGDCA

कोर्स शीर्षक :

कोर्स कोड : पीजीडीसीए

Course Title: Discrete Mathematics

Course Code: PGDCA-1.1

अधिकतम अंक : 30
Maximum Marks: 30

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

Section - A

खण्ड - अ

अधिकतम अंक : 18
Maximum Marks: 18

- Determine whether the relation R on the set of all Web pages is reflexive, symmetric, antisymmetric, and/or transitive, where $(a, b) \in R$ if and only if
 - everyone who has visited Web page a has also visited Web page b.
 - there are no common links found on both Web page a and Web page b.
 - there is at least one common link on Web page a and Web page b.
 - there is a Web page that includes links to both Web page a and Web page b.
- Let $P(x)$ be the statement "x can speak Russian" and let $Q(x)$ be the statement "x knows the computer language C++." Express each of these sentences in terms of $P(x)$, $Q(x)$, quantifiers, and logical connectives. The domain for quantifiers consists of all students at your school.
 - There is a student at your school who can speak Russian and who knows C++.
 - There is a student at your school who can speak Russian but who doesn't know C++.
 - Every student at your school either can speak Russian or knows C++.
 - No student at your school can speak Russian or knows C++.
- How many positive integers between 100 and 999 inclusive
 - are divisible by 7?
 - are odd?
 - have the same three decimal digits?
 - are not divisible by 4?
 - are divisible by 3 or 4?
 - are not divisible by either 3 or 4?
 - are divisible by 3 but not by 4?
 - are divisible by 3 and 4?

Section - B

खण्ड - ब

अधिकतम अंक : 12
Maximum Marks: 12

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

- 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.
- 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?
- 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.
- 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) Give a direct proof of the theorem “If n is an odd integer, then n^2 is odd.”
(ii) Prove that if n is an integer and $3n + 2$ is odd, then n is odd.
9. How many license plates can be made using either two or three uppercase English letters followed by either two or three digits?

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कोर्स शीर्षक :

कोर्स कोड : पीजीडीसीए

Course Title: Problem Solving and Programming through C

Course Code : PGDCA-1.2

अधिकतम अंक : 30
Maximum Marks: 30

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

Section - A

खण्ड - अ

अधिकतम अंक : 18
Maximum Marks: 18

- Write short notes on the following:
 - Minimum Spanning Tree
 - Indexed File Organization
- Write a C program to read the contents of a file and store it in another file.
- Write a C Program to implement Bubble Sort.

खण्ड ब

Section- B

अधिकतम अंक : 12
Maximum Marks: 12

- Calculate the sum of first hundred natural numbers using recursion.
- List the difference between a structure and a union.
- Explain Breadth First Search algorithm for graph traversal.
- Discuss the implementation of lists using pointers.

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कोर्स शीर्षक :

कोर्स कोड : पीजीडीसीए

Course Title: COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE PROGRAMMING Course Code:PGDCA-1.3

अधिकतम अंक : 30
Maximum Marks: 30

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

Section - A

खण्ड - अ

अधिकतम अंक : 18
Maximum Marks: 18

1. Discuss and Differentiate Hardware and Micro-programmed control unit with their advantages and disadvantages.
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. Design of a Synchronous Modulus-Six Counter Using SR Flip-Flop The modulus six counter will count 0, 2, 3, 6, 5, and 1.

खण्ड ब

Section- B

अधिकतम अंक : 12
Maximum Marks: 12

4. Differentiate RISC Vs CISC.
5. Distinguish between horizontal and vertical microprogram control unit.
6. What is instruction cycle? When will be any interrupt processed during the instruction cycle?
7. Explain the differences among microoperation and microprogram? Write down the micro operations involves in fetch cycle.
8. Briefly describe what are Special purpose registers and General purpose registers in CPU.
9. Write an assembly language program to find factorial of 10 using loop.

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कोर्स शीर्षक :

कोर्स कोड : पीजीडीसीए

Course Title: System Analysis and Design

Course Code : PGDCA-1.4

अधिकतम अंक : 30

Maximum Marks: 30

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

Section - A

खण्ड - अ

अधिकतम अंक : 18

Maximum Marks: 18

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

अधिकतम अंक : 12

Maximum Marks: 12

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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कोर्स शीर्षक :

कोर्स कोड : पीजीडीसीए

Course Title: Data Communication and Computer Networks

Course Code : PGDCA-1.5

अधिकतम अंक : 30

Maximum Marks: 30

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

Section - A

खण्ड - अ

अधिकतम अंक : 18

Maximum Marks: 18

1. What is ATM layered Architecture? Also compare ATM Layered Architecture with OSI Model.
2. What do we mean by Multiplexing? Explain the three different types of multiplexing techniques.
3. Explain the TCP/IP reference model with the help of a diagram. Give brief description of each layer of the model.

खण्ड ब

Section- B

अधिकतम अंक : 12

Maximum Marks: 12

4. What is the difference between baseband and broadband communication system? [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 multicast addressing and Unicast addressing. [2]
7. How BGP is different from other distance vector routing protocols? [2]
8. What are the services provided by ISDN? List the advantages of ISDN. [3]

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कोर्स शीर्षक :

कोर्स कोड : पीजीडीसीए

Course Title : Introduction to Database Management System

Course Code : PGDCA-2.1

अधिकतम अंक : 30
Maximum Marks: 30

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

Section - A

खण्ड - अ

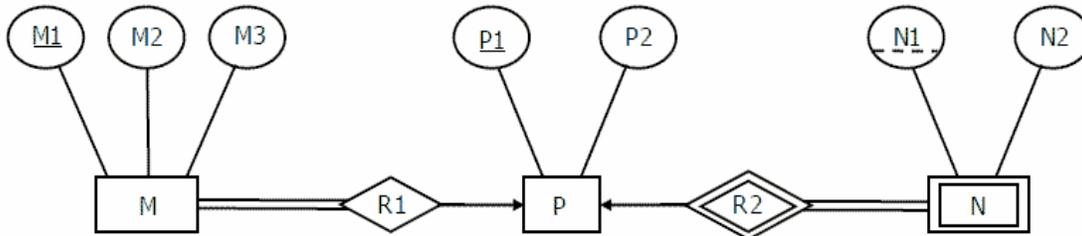
अधिकतम अंक : 18
Maximum Marks: 18

- 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 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 songs. One of the musicians of the song acts as a producer. A producer may produce several albums.
 - Draw an E-R diagram.
 - Transform the E-R diagram to a Relational Schema.
- Explain how transactions are possible in distributed database.
- What is Deadlock? What are different ways of preventing Deadlock.

खण्ड ब
Section- B

अधिकतम अंक : 12
Maximum Marks: 12

- Consider the following ER diagram.



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

- 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
 $S_1 = r_1(x); r_2(z); r_3(x); r_1(z); r_2(y); r_3(y); w_1(x)$
 $c_1; w_2(z); w_3(y); w_2(y); c_2; c_3;$
 $S_2 = r_3(x); r_1(x); w_3(x); r_2(x); w_1(y); r_2(y); w_2(x); c_1; c_2; c_3;$
 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 serializability and freedom from deadlock?
9. Consider two Functional dependencies set F and G
 $F = \{A \rightarrow B, AB \rightarrow C, D \rightarrow AC, D \rightarrow E\}$
 $G = \{A \rightarrow BC, D \rightarrow AE\}$
 Answer the following questions with the explanation.
- a) Is $F \subset G$ (G cover F) ?
 b) Is $F \supset G$ (F cover G)?
 c) Is $F \equiv G$ (F cover G and G cover F)?

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कोर्स शीर्षक :

कोर्स कोड : पीजीडीसीए

Course Title: Object Oriented Technology and
Java programming

Course Code : PGDCA-2.2

अधिकतम अंक : 30
Maximum Marks: 30

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

Section - A

खण्ड - अ

अधिकतम अंक : 18
Maximum Marks: 18

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?

खण्ड ब

Section- B

अधिकतम अंक : 12
Maximum Marks: 12

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 Servlet ? What are the different methods for running the Servlets?
(b) Why servlet is preferred over CGI script. Write the life cycle of a servlet.

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कोर्स शीर्षक :

कोर्स कोड : पीजीडीसीए

Course Title: Software Engineering

Course Code : PGDCA-2.3

अधिकतम अंक : 30
Maximum Marks: 30

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

Section - A

खण्ड - अ

अधिकतम अंक : 18
Maximum Marks: 18

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

अधिकतम अंक : 12
Maximum Marks: 12

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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कोर्स कोड : पीजीडीसीए

Course Title: Operating System Concept and
Network Management

Course Code: PGDCA-2.4

अधिकतम अंक : 30
Maximum Marks: 30

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

Section - A

खण्ड - अ

अधिकतम अंक : 18
Maximum Marks: 18

- (a) What is a fire wall? How does it secure the system? Explain the limitations of firewall.
(b) Explain two approaches used to improve system performance by overlapping input, output and processing in CPU.
- (a) What is packet switching ? What are the two approaches for packet switching?
(b) What is meant by trust relationship?
- (a) Explain the importance of Kerberos and Domain Controllers in maintaining trust relationships.
(b) What are the standard user groups in 7 windows 2000? Explain the access privileges of each.

खण्ड ब

Section- B

अधिकतम अंक : 12
Maximum Marks: 12

- Write the Linux/ Unix commands for the following :
 - List all the files in a directory that have 3 characters in their name.
 - Show if a user is logged on, their real name and mail status
 - Tell the system to continue running a process, even if the user logs out.
- List and explain the three file systems supported by windows 2000 ? What is file replication service?
- Which application layer protocol is used by network management frame-works to manage and monitor network devices ? Explain its architecture and working.
- Explain the abstract model of virtual 10 memory used in Linux operating system. Give a suitable diagram to explain its working.