

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

कार्यक्रम अधिन्यास सत्र 2018-19

PG Diploma in Computer Application

कोर्स कोड : Course Code: PGDCA-01	कोर्स शीर्षक:— (Course Title) Discrete Mathematics	अधिकतम अंक : 30 Maximum Marks : 30
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नोट— (Instructions):

1. Answer all Questions. सभी प्रश्नों के उत्तर दें।
2. Section A consists of long answer questions. Answer should be in 800 to 1000 words. खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. Section B consists of short answer questions. Answer should be in 200 to 300 words. खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ Section-A

अधिकतम अंक : 18
Maximum Marks : 18

1. Answer the following:
 - a. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?
 - b. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?
2. Rewrite the following arguments using qualifiers, variables and predicate symbols:
 - a. All birds can fly
 - b. Some men are genius.
 - c. Some numbers are not rational
 - d. There is a student who likes mathematics but not geography.
3. Explain the following terms with suitable examples –
 - a. Conjunction
 - b. Disjunction
 - c. Contrapositive

खण्ड ब Section –B

अधिकतम अंक : 12
Maximum Mark : 12

4. Find using Karnaugh maps a minimal form for the boolean function.
 $f(x, y, z) = xyz + xyz' + x'yz' + x'y'z'$.
5. In any boolean algebra show that
 $(a + b)(b + c)(c + a) = ab + bc + ca$.
6. Define with examples of NAND and NOR gates.
7. Briefly explain the Pigeonhole principle.

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कोर्सकोड : Course Code: PGDCA-02	कोर्स शीर्षक:— (Course Title) Programming through 'C' and Data Structures	अधिकतमअंक : 30 Maximum Marks : 30
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नोट— (Instructions):

1. Answer all Questions. सभी प्रश्नों के उत्तर दें।
2. Section A consists of long answer questions. Answer should be in 800 to 1000 words. खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. Section B consists of short answer questions. Answer should be in 200 to 300 words. खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ
Section-A

अधिकतमअंक : 18
Maximum Marks : 18

1. What is a stack? What operations are associated with a stack?
2. (a) Discuss about arithmetic operators and relational operators.
(b) Differentiate between break and continue statements in C language with example.
3. Define AVL tree. Is the statement “Every Binary Tree is an AVL tree” correct? Justify your answer.

खण्ड ब
Section –B

अधिकतम अंक : 12
Maximum Mark : 12

4. Write any five advantages of Pointers over Arrays.
5. Define “Binary Tree”. How does a Binary Tree differ from a Tree?
6. Define “Graph”. When can it be said that two vertices of a Graph are connected?
7. Write an algorithm for the addition of two matrices.

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PG Diploma in Computer Application

कोर्सकोड : Course Code: PGDCA-03	कोर्स शीर्षक:- (Course Title) Computer Organization And Assembly Language Programming	अधिकतमअंक : 30 Maximum Marks : 30
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नोट- (Instructions):

1. **Answer all Questions.** सभी प्रश्नों के उत्तर दें।
2. **Section A consists of long answer questions. Answer should be in 800 to 1000 words.**
खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. **Section B consists of short answer questions. Answer should be in 200 to 300 words.**
खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ Section-A

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 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 Mark : 12

4. Distinguish between horizontal and vertical microprogram control unit.
5. What is instruction cycle? When will be any interrupt processed during the instruction cycle?
6. Briefly describe what are special purpose registers and general purpose registers in CPU.
7. Write an assembly language program to find factorial of 10 using loop.

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कोर्स कोड : Course Code: PGDCA-E1	कोर्स शीर्षक:- (Course Title) Computer Architecture	अधिकतम अंक : 30 Maximum Marks : 30
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नोट- (Instructions):

1. **Answer all Questions.** सभी प्रश्नों के उत्तर दें।
2. **Section A consists of long answer questions. Answer should be in 800 to 1000 words.**
खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. **Section B consists of short answer questions. Answer should be in 200 to 300 words.**
खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ Section-A

अधिकतम अंक : 18
Maximum Marks : 18

1. What are the similarities and distinctions between multiprocessor and multicomputer system? Explain the classification of multiprocessor system.
2. Explain the Pipeline scheduling in detail.
3. Discuss the utility of RISC and CISC Architecture by comparing their various features.

खण्ड ब Section -B

अधिकतम अंक : 12
Maximum Mark : 12

4. Describe the role of system software to improve the performance of a computer.
5. What are the special registers in a typical computer? Explain their purposes in detail.
6. Discuss hit-rate and miss penalty
7. i) Distinguish between auto increment and auto decrement addressing mode
ii) Under what situations the micro program counter is not incremented after a new instruction is fetched from micro program memory?

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कोर्स कोड : Course Code: PGDCA-E2	कोर्स शीर्षक:- (Course Title) Microprocessor and its Applications	अधिकतम अंक : 30 Maximum Marks : 30
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नोट- (Instructions):

1. **Answer all Questions.** सभी प्रश्नों के उत्तर दें।
2. **Section A consists of long answer questions. Answer should be in 800 to 1000 words.**
खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. **Section B consists of short answer questions. Answer should be in 200 to 300 words.**
खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks : 18

1. List the components of a computer and explain each in brief. What is the difference between a microprocessor and a CPU?
2. Discuss the features of 8085 interrupts. Also explain the SIM and RIM formats.
3. Explain the architecture of 8086 in detail with neat block diagram.

खण्ड ब

अधिकतम अंक : 12

Section -B

Maximum Mark : 12

4. What do you understand by DMA?
5. What is the function of SI and DI Registers?
6. What do you mean by Conditional Flag?
7. What do you understand by Addressing mode?

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कोर्स कोड : Course Code: PGDCA-05	कोर्स शीर्षक:- (Course Title) Object oriented programming C++	अधिकतम अंक : 30 Maximum Marks : 30
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नोट- (Instructions):

1. **Answer all Questions.** सभी प्रश्नों के उत्तर दें।
2. **Section A consists of long answer questions. Answer should be in 800 to 1000 words.**
खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. **Section B consists of short answer questions. Answer should be in 200 to 300 words.**
खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ
Section-A

अधिकतम अंक : 18
Maximum Marks : 18

1. What is operator overloading? Illustrate Operator overloading concept to concatenate strings.
2. Explain why do we need to use constructors? Explain copy constructor with an example.
3. What are the different forms of inheritance supported by C++? Explain with examples.

खण्ड ब
Section –B

अधिकतम अंक : 12
Maximum Mark : 12

4. What do you mean by “this” function? What are the applications of “this” pointer?
5. What are pure virtual functions?
6. What do you mean by container classes?
7. What is a Use case? Also explain with example.

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कोर्स कोड : Course Code: PGDCA-06	कोर्स शीर्षक:- (Course Title) Database Management System	अधिकतम अंक : 30 Maximum Marks : 30
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नोट- (Instructions):

1. Answer all Questions. सभी प्रश्नों के उत्तर दें।
2. Section A consists of long answer questions. Answer should be in 800 to 1000 words. खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. Section B consists of short answer questions. Answer should be in 200 to 300 words. खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ Section-A

अधिकतम अंक : 18
Maximum Marks: 18

1. Suppose you are given the following requirements for a simple database for the National Hockey League (NHL):
The NHL has many teams, each team has a name, a city, a coach, a captain, and a set of players, each player belongs to only one team, each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records, a team captain is also a player, a game is played between two teams (referred to as host_team and guest_team).
(i) Draw an E-R diagram.
(ii) Transform the E-R diagram to a Relational Schema.
2. How distributed database different from client server database? Discuss them with their advantages and disadvantages.
3. Explain different type of locking protocols for concurrency control.

खण्ड ब Section -B

अधिकतम अंक : 12
Maximum Mark : 12

4. How does a deadlock occur in a computer system? How can you prevent deadlock happening in DBMS?
5. $R(ABCDEF) F = \{A \rightarrow B, B \rightarrow C, C \rightarrow D, E \rightarrow F\}$ decomposed into $D = R1(AB), R2(BCD), R3(DEF)$. Find whether D is Lossless or Lossy?
6. What is index file? What are the differences between B+ tree and B tree index file?
7. What is data? What do you mean by information? What are the differences between data and information?

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कोर्स कोड : Course Code: PGDCA-07A	कोर्स शीर्षक:— (Course Title) Computer Fundamental and its Organization	अधिकतम अंक : 30 Maximum Marks : 30
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नोट— (Instructions):

1. **Answer all Questions.** सभी प्रश्नों के उत्तर दें।
2. **Section A consists of long answer questions. Answer should be in 800 to 1000 words.**
खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. **Section B consists of short answer questions. Answer should be in 200 to 300 words.**
खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ Section-A

अधिकतम अंक : 18
Maximum Marks : 18

1. Explain different types of Memories.
2. With the help of a diagram explain the components of a computer system.
3. Explain the difference between flow chart and pseudo-code with the help of an example.

खण्ड ब Section –B

अधिकतम अंक : 12
Maximum Mark : 12

4. What is a light pen? Briefly explain its working.
5. Differentiate between seek time and latency.
6. What is Data Transfer rate? Explain.
7. Explain signed 1's complement representation of integers with the help of an example.

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कोर्स कोड : Course Code: PGDCA-E3	कोर्स शीर्षक:- (Course Title) Data Warehouse and Mining	अधिकतम अंक : 30 Maximum Marks : 30
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नोट- (Instructions):

1. **Answer all Questions.** सभी प्रश्नों के उत्तर दें।
2. **Section A consists of long answer questions. Answer should be in 800 to 1000 words.**
खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. **Section B consists of short answer questions. Answer should be in 200 to 300 words.**
खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ Section-A

अधिकतम अंक : 18
Maximum Marks : 18

1. What is data mining? Define and describe relationship and pattern detected in data mining. What is the scope of data mining?
2. Explain structure of the data warehouse? Discuss in detail all the steps involve in making a data warehouse.
3. Explain OLTP and OLAP and also discuss difference between them?

खण्ड ब Section -B

अधिकतम अंक : 12
Maximum Mark : 12

4. What are the requirements of cluster analysis?
5. What type of processing takes place in a data warehouse?
6. What are the various types of metadata? Explain in detail?
7. What do you mean by knowledge discovery process?

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PG Diploma in Computer Application

कोर्सकोड : Course Code: PGDCA-E4	कोर्स शीर्षक:– (Course Title) System Analysis and Design	अधिकतमअंक : 30 Maximum Marks : 30
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नोट– (Instructions):

1. **Answer all Questions.** सभी प्रश्नों के उत्तर दें।
2. **Section A consists of long answer questions. Answer should be in 800 to 1000 words.**
खंड अ में दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।
3. **Section B consists of short answer questions. Answer should be in 200 to 300 words.**
खंड ब में लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

खण्ड अ Section-A

अधिकतमअंक : 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 good testable software?

खण्ड ब Section –B

अधिकतम अंक : 12
Maximum Mark : 12

4. What are the differences between Black Box Testing” and “White Box Testing”?
5. What do you mean by Software Configuration Management?
6. Discuss the role of PERT Chart in software development.
7. What is coupling and Cohesion? What are the different types of Cohesion?