## BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2018 COURSE)
## B.C.A. Sem-III : WINTER- 2022
## SUBJECT : OPERATING SYSTEMS

Day : Monday                                          Time : 10:00 AM-01:00 PM

Date : 28-11-2022          **W-18767-2022**          Max. Marks : 60

**N.B.**

1) Attempt any **THREE** questions from Section – I and any **TWO** questions from Section – II.
2) Figures to the right indicate **FULL** marks.
3) Answer to both the section should be written in the **SAME** answer book.

### SECTION – I

| | | | |
|---|---|---|---|
| Q.1 | a) | What is Semaphore?  Give the characteristics of it. | (06) |
| | b) | Explain the time slice scheduling with its merits and demerits. | (06) |

Q.2      Differentiate between:
a) Online operating system and Real time operating system      (06)
b) Contiguous allocation and non-contiguous allocation      (06)

Q.3   a)  What do you mean by segmentation?  Give the advantages of segmentation (06) over paging system.
b)  What do you mean by page fault? When does page fault occurs? Describe (06) action taken by operating system when a page fault occurs.

Q.4   a)  What is directory?  Discuss directory structures in brief.      (06)
b)  Explain the concept of DMA.      (06)

Q.5      Write short notes on any **THREE** of the following:      (12)
a) Demand paging
b) Device controller
c) Clock page replacement algorithm
d) Conditional critical region
e) Virtual machine

### SECTION – II

Q.6   What is deadlock?  Give the conditions for occurrence of it.  Explain how we (12) can prevent deadlock.

Q.7   Consider the following case.      (12)

| Job No. | Arrival Time (am) | Priority | Run Time (min) |
|---|---|---|---|
| P₁ | 10.00 | 4 | 7 |
| P₂ | 10.01 | 1 | 5 |
| P₃ | 10.03 | 3 | 2 |
| P₄ | 10.06 | 2 | 3 |

Calculate average waiting time and turnaround time in case of:
a)    SJF          b)    PBPS

Q.8   Suppose the head of moving-hard disk with 200 tracks, numbered 0 to 199 (12) serving a request at track number 143 and moving outside. Following is the queue of requests received at the system.
86, 147, 91, 177, 94, 150, 100, 175, 130, 139
Calculate total time required to move all these tracks in case of following disk scheduling algorithms (consider Seek time=0.25 Second):
a)    FCFS          b)    SSTF

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Day : Wednesday                                                   Time : 10:00 AM-01:00 PM

Date : 30-11-2022                  **W-18768-2022**            Max. Marks : 60

**N. B. :**

   1)   Q. No. 4 is **COMPULSORY**.
   2)   Attempt **ANY TWO** questions from **Q. No 1, 2, 3** in Section – **I**.
   3)   Attempt **ANY TWO** questions from **Q. No 5, 6, 7** in Section -- **II**.
   4)   Figures to the right indicate **FULL** marks.
   5)   Answers to both the sections should be written in **SAME** answer book.

## SECTION – I

**Q. 1**  a)  What is Software Engineering? Explain importance of Software Engineering.  **(06)**

          b)  Explain the role of members involved in development team.  **(06)**

**Q. 2**  a)  What is Feasibility Study? Explain different types of feasibility study.  **(06)**

          b)  Explain the concept of Cost Benefit Analysis.  **(06)**

**Q. 3**  a)  What is mean by Requirement Engineering? Explain any two types of  **(06)**
              Requirement elicitation techniques.

          b)  Explain the Decision tree concept with example.  **(06)**

**Q. 4**      Write short notes on **ANY THREE** of the following:  **(12)**

          a)  Entity – Relationship Diagrams
          b)  Rapid Application Development model
          c)  Software Development Life Cycle
          d)  Cost Benefit Analysis

## SECTION – II

**Q. 5**  a)  What is White Box Testing? Explain Basis path testing.  **(06)**

          b)  Explain the Formal Technical review in detail.  **(06)**

**Q. 6**  a)  What is Software Quality? Explain software quality assurance activities.  **(06)**

          b)  What is Software Maintenance? Explain categories of Software Maintenance.  **(06)**

**Q. 7**      Write short notes on **ANY THREE** of the following:  **(12)**

          a)  Pseudo code
          b)  Software Configuration Management
          c)  Characteristics of good SRS
          d)  Version control

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Day : Friday

Time : 10:00 AM-01:00 PM

Date : 2/12/2022

**W-18769-2022**

Max. Marks : 60

**N.B.:**

1) **Q.No.4** from Section – I is **COMPULSORY**.
2) Answers **ANY TWO** questions from **Q.1, 2, 3** in section – I.
3) Answers **ANY TWO** questions from **Q.5, 6, 7** in section – II.
4) Figures to the right indicate **FULL** marks.
5) Answers to both the sections to be written in **SAME** answer book.
6) Draw a labeled diagram **WHEREVER** necessary.

## SECTION – I

**Q.1**    What is RDBMS? Explain Dr. E.F. Codd's Rules in detail.    **[12]**

**Q.2**    Discuss the various constraints available in oracle with examples.    **[12]**

**Q.3**    Explain the sequence object of oracle in brief. Describe its creation and applications with examples.    **[12]**

**Q.4**    Write short notes on **ANY THREE** of the following:    **[12]**
   a) Commit and Rollback commands
   b) Differentiate between SQL and PL/SQL
   c) Numeric function in SQL
   d) Differentiate between TRUNCATE and DELETE command

## SECTION – II

**Q.5**    Write SQL queries for the following:
   a) Create following tables with proper constraints    **[02]**
      Party (Partycode, Partyname)
      Politician (Pno, Pname, City, Partycode)
   b) Insert 2 records in each table.    **[02]**
   c) List the party names for party codes 1, 3 and 5.    **[02]**
   d) List the Party names in ascending order.    **[02]**
   e) Display the politician names belonging to Party 'XYZ'.    **[02]**
   f) List the politicians from city 'Delhi'.    **[02]**

**Q.6**    Create a table Employee with Employee Number, Employee Name, Designation, Department and Basic Pay.    **[12]**
   Write a PL/SQL program to display the appropriate pay slip. The formula for calculating allowance and deduction is given below:
   Allowance = 15% of Basic Pay.
   Deduction = 10% of Basic Pay.

**Q.7**    What is stored procedure? Explain with example how stored procedure can be created and executed.    **[12]**

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## BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2018 COURSE)
## B.C.A. Sem-III : WINTER- 2022
## SUBJECT : STATISTICS

Day : Monday

Date : 5/12/2022

**W-18770-2022**

Time : 10:00 AM-01:00 PM

Max. Marks : 60

**N.B.**

1) **Q.No. 4** from Section-I is **COMPULSORY**.
2) Attempt **ANY TWO** questions from Q.No. 1 to Q. No. 3 in Section – I.
3) Attempt **ANY TWO** questions from Q.No. 5 to Q. No. 7 in Section – II.
4) Figures to the **RIGHT** indicate **FULL** marks.
5) Answers to both the sections should be written in **SAME** answer book.

### SECTION – I

**Q.1** Define Statistics. Explain the limitations of Statistics. **(12)**

**Q.2** Calculate mean, median and mode for the following : **(12)**

| Marks : | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| No. of boys: | 7 | 10 | 16 | 17 | 26 | 31 | 11 | 2 | 1 |

**Q.3** Calculate Karl Pearson's coefficient of correlation for the following data : **(12)**

| X : | 100 | 200 | 300 | 400 | 500 | 600 | 700 |
|---|---|---|---|---|---|---|---|
| Y : | 30 | 50 | 60 | 80 | 100 | 110 | 130 |

**Q.4** Write short notes on **ANY TWO** of the following : **(12)**
  a) Scope of statistics
  b) Graphical representation of data
  c) Deciles, percentiles, quartiles

### SECTION – II

**Q.5** What is primary data and secondary data? Explain various primary data collection **(12)** methods in brief.

**Q.6** i) Find two regression equations for the following two series. **(12)**
ii) What is the most likely value of x when y = 20
iii) What is the most likely value of y when x = 22.

| X: | 35 | 25 | 29 | 31 | 27 | 24 | 33 | 36 |
|---|---|---|---|---|---|---|---|---|
| Y: | 23 | 27 | 26 | 21 | 24 | 20 | 29 | 30 |

**Q.7** What is time series analysis? Explain various components of time series. **(12)**

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Day : Wednesday                                         Time : 10:00 AM-01:00 PM

Date : 7/12/2022                    **W-18771-2022**         Max. Marks : 60

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**N.B.:**
1) **Q. No. 4** is **COMPULSORY.**
2) Solve any **TWO** questions from Q. No. **1, 2** and **3.**
3) Solve any **TWO** questions from Q. No. **5, 6** and **7.**
4) Figures to the right indicate **FULL** marks.
5) Answers to both the sections should be written in **SAME** answer book.

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## SECTION-I

**Q.1**  Define multimedia. Explain the applications of multimedia in school and business.  **(12)**

**Q.2**  State the various multimedia authoring tools. Explain any two tools in detail.  **(12)**

**Q.3**  What is sound? State its characteristics. Differentiate between MIDI Vs Digital audio.  **(12)**

**Q.4**  Write short notes on any **THREE** of the following:  **(12)**
  a) Magnetic media
  b) Communication modes
  c) Video signal formats
  d) HDTV and HD video

## SECTION-II

**Q.5**  a) Differentiate between hypermedia and hypertext.  **(06)**

  b) Explain cross platform formats in multimedia.  **(06)**

**Q.6**  What is animation? Explain the steps of creating a bouncing ball animation.  **(12)**

**Q.7**  What is meant by multipoint conferencing? Explain in detail.  **(12)**

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