Exam Code: 117902 **Paper Code: 2274**

Bachelor of Computer Applications

Semester-II

Course Title: Computer Architecture

Course Code: BCAL-2113

Time allowed: 3 Hrs. **Max. Marks: 80**

Note: Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 16 marks.

Section -A

Q1. Describe Arithmetic Micro-operations and represent Arithmetic Logical Unit (ALU) in detail.

Q2. What do you mean by Computer Instructions? Explain it with Instruction Cycle.

Section -B

Q3. What do you mean by Stack? How stacks are organized in CPU?

Q4. Explain different types of Addressing modes with suitable example.

Section -C

Q5. Describe memory connection to CPU with RAM and ROM representing suitable architecture.

Q6. Describe the role of Cache Memory and Virtual Memory in detail.

Section -D

Q7. Describe the implementation of Direct Memory Access (DMA) transfer in a computer system.

Q8. (a) Write a short note on Vector Processing and its applications.

(b) Describe the role of pipelining with appropriate advantages.

Exam Code: 117902 **Paper Code: 2275**

Programme: Bachelor of Computer Applications
Semester: II
Course Title: **Database Management System**
Course Code: **BCAL - 2114**

Time Allowed: 3 Hours **Max Marks: 80**

Note: There are eight questions of equal marks (16 marks each). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

Section A

Q1: What do you mean by DBMS? Write its advantages and disadvantages in detail. (16)
Q2 a) Write characteristics of ER model. (8)
b) Explain Primary key and Foreign key with examples. (8)

Section B

Q3: a) Who is DBA? Write the responsibilities of DBA. (10)
b) Explain Selection and Projection operations in Relational Algebra. (6)
Q4: Explain sub languages of SQL. (16)

Section C

Q5: Explain Insert, Delete and Update operations in SQL with examples. (16)
Q6: a) Explain various options with Select command. (8)
b) What are wildcard characters? Elaborate. (8)

Section D

Q7: a) What is normalization? Explain its importance. (8)
b) Write 2NF and 3NF along with anomalies. (8)
Q8: Write a note on the following (4*4 = 16)

a) BCNF
b) Grant command
c) Views
d) Roles

Exam Code: 117902 **Paper Code: 2276**
(80)

Programme: Bachelor of Computer Applications
Semester-II

Course Title: Introduction to Object Oriented Programming-I

Course Code: BCAL-2115

Time Allowed: 3 Hours **Max Marks: 80**

Note: Each question carry equal (16 each) marks. Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

SECTION A

1. What are the various characteristics are of object oriented programming (OOP) technique? (16)
2. How the member functions of class can be defined inside and outside the class? Illustrate with an example. (16)

SECTION B

3. What are parametrised constructor? How it can be accessed in the main program? Explain with concept of parametrised constructor with a program example. (16)

4. Explain the concept of Constructor overloading with a programming example. (16)

SECTION C

5. How a function can be overloaded? Write a program to enter two integer numbers and two float numbers and display the greatest of them using function overloading technique. (16)
6. What is an operator? How a binary operator can be overloaded? Illustrate with a program. (16)

SECTION D

7. What is an inheritance? Illustrate different types of an inheritance with a programming example? (16)
8. What is a polymorphism? Explain its types with an example. (16)

Paper Code: 2280

Progamme	Exam Code	Course Code
Bachelor of Computer Applications	117902	BCAL-2118
Bachelor of Science (Information Technology)	118002	BITL–2118

Semester - II

Course Title: Statistical Techniques for Data Science

Time Allowed: 3 Hours **Max. Marks: 80**

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Use of non-programmable non-storage calculator is allowed. Each question carries 16 marks.

SECTION A

Q1. (a)What are various types of data and levels of measurement? (8)

(b) Explain creation of a Frequency distribution table by taking data of your choice. (8)

Q.2. (a) What is Standard Deviation? Explain the Mathematical Properties of Standard Deviation. (6)

(b) From the following data, comment - which of the two is more consistent. (10)

X	12	115	6	73	7	19	119	36	84	29
Y	47	12	76	42	4	51	37	48	13	0

SECTION B

Q3. Explain the concepts:

a) Event and Experiment
b) Independent and dependent Events
c) Equally-Likely Events
d) Mutually Exclusive Events (4X4)

Q.4 What is Skewness? Calculate the Pearson's coefficient of skewness from the following data:

Marks Above	10	20	30	40	50	60	70	80	90
No. of students	100	97	90	70	40	25	15	8	3

(16)

SECTION C

Q5. Explain Addition Theorem of Probability for Mutually Exclusive Events and Not Mutually Exclusive Events, taking examples of your choice. (16)

Q.6 (a) Explain Null Hypothesis and Alternate Hypothesis (8)

(b) The number of accidents per week in a certain city were as follows:

12, 8, 20, 2, 14, 10, 15, 6, 9, 4

Are these numbers in agreement with the belief that accident's numbers were same during these 10 week period?

(for v=9, $\chi^2_{0.05} = 16.92$) (8)

SECTION D

Q.7. (a) What is Analysis of Variance? Explain the uses and techniques of ANOVA. (8)

(b) Explain the steps to perform Correlation analysis in MS Excel. (8)

Q.8. The following tables gives yields of four varieties of wheat grown in two plots

Plots	Varieties			
	A	B	C	D
1	200	230	250	300
2	190	270	300	270
3	240	150	145	180

Is there any significant difference in the production of these varieties? (for V_1=8, V_2=3, F value at 5% level of significance is 4.07)

(16)