



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**  
**FACULTY OF SCIENCES**  
**COMPUTER SCIENCE DEPARTMENT**  
**2020 EXAMINATIONS**

**COURSE: CIT 392 - Computer Laboratory II**

**Credit: 2 units**

**TIME ALLOWED: 2 Hours**

**INSTRUCTION: Answer Question 1 and any other THREE (3) Questions**

- 1a) Discuss the procedural, structural and object-oriented programming paradigms.(3marks)
- b) Describe the features of C++ programming language.(2 marks)
- c) Construct the syntax for user-defined packages in Java(3 marks)
- d) Briefly give 5 examples of Maths methods in Java and state the function of each method.(2 $\frac{1}{2}$  marks)
- e).i.) Give the general form of a one-dimensional array with an example.(1 $\frac{1}{2}$ mark)
- ii) Write a Java program to find the mean of an array of 10 arbitrary values.(4 marks)
- f) i.) Explain the projection, selection and joining capabilities of SELECT statement in SQL .(1 $\frac{1}{2}$ marks)

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	SALARY	HIRE_DATE	DEPARTMENT_ID
100	Steven	King	24000	17-JUN-87	90
101	Neena	Kochhar	17000	21-SEP-89	20
102	Lex	De Haan	17000	13-JAN-93	40
103	Alexander	Hunold	9000	03-JAN-90	60
104	Bruce	Ernst	6000	21-MAY-91	60
105	David	Austin	4800	25-JUN-97	50
106	Valli	Pataballa	4800	05-FEB-98	50
107	Diana	Lorentz	4200	07-FEB-99	60
108	Nancy	Greenberg	12000	17-AUG-94	70
109	Daniel	Faviet	9000	16-AUG-94	100
110	John	Chen	8200	28-SEP-97	100
111	Ismael	Sciarra	7700	30-SEP-97	70
112	Jose Manuel	Urman	7800	07-MAR-98	100
113	Luis	Popp	6900	07-DEC-99	100
114	Den	Raphaely	11000	07-DEC-94	30
115	Alexander	Khoo	3100	18-MAY-95	80
116	Shelli	Baida	2900	24-DEC-97	30
117	Sigal	Tobias	2800	24-JUL-97	80
118	Guy	Himuro	2600	15-NOV-98	30
119	Karen	Colmenares	2500	10-AUG-99	30

- ii. Use the EMPLOYEES table above and listing the output:
- I. Write a query to retrieve the last name and salary from the EMPLOYEES table for any employee whose salary is between 2500 and 2600. **(2.5 marks)**
  - II. Write a query that retrieves the employee ID, first name, last name and the department ID of employees in department 30. **(2.5 marks)**
  - III. Write a query to retrieve the last name and salary from EMPLOYEES table for any employee whose salary is less than or equal to 2900. **(2.5 marks)**
- 2.a. State the features of ADA programming language. **(5 marks)**
- b. Write a ADA programming language that will find the roots of a quadratic equation  $ax^2 + bx + c = 0$  using the quadratic formula. **(10 marks)**
3. a . Differentiate between structural and object-oriented programming paradigm for COBOL. **(3 marks)**
- b. Given a rate of exchange of the naira (*Rate*) to the US\$ design a COBOL program to convert a certain amount of US\$ to the naira (*Dollar*). Your result is *Exchange* **(12 marks)**
- 4.a) Describe an array. **(1 mark)**
- b) Write a Java program to calculate the sum of integers from 1 to 100. **(8 marks)**
  - c.) Multidimensional arrays are actually arrays of arrays in Java, write a Java program that allocates a 2 by 3 array and assigns it to names. The array is {{"Mr. ", "Mrs. ", "Ms. "}, {"Alan", "Charles" }}. Show the output. **(6 marks)**
- 5a. Explain the connection between SQL and relational database. **(1 mark)**
- b. Using the EMPLOYEREES table above:
    - i. Write a query to retrieve the employee numbers, last name and salary from the EMPLOYEES table for any employee whose employee number is 101,103,105,106 or 110 **(6 marks)**
    - ii Write a query to display the employee number, first\_name and hire\_date of employees. The result should be displayed in such a way that the first names will be arranged alphabetically. **(8 marks)**