



K18U 1006

Reg. No. :

Name :

IV Semester B.C.A. Degree (CBCSS-Reg./Sup./Imp.) Examination, May 2018
(2014 Admn. Onwards)
General Course
4A14BCA : NUMERICAL ANALYSIS

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. **One** word answer : (8×0.5=4)
- a) A matrix A is said to be non-singular if $|A|$
 - b) _____ errors are those that are present in the data supplied to the model.
 - c) Convert binary number 1101.1101 to decimal equivalent.
 - d) An edge that connects a vertex to it self is
 - e) A connected a cyclic graph is called
 - f) A system of equations $A X = B$ is consistent if
 - g) Numerical quadrature is also known as
 - h) Data that are obtained by counting are called

SECTION – B

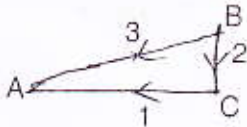
Answer **any 7** questions : (7×2=14)

- 2. Convert the hexa decimal number 39.138 to an octal number.
- 3. Estimate the possible initial guess values of the polynomial equation $2x^3 - 8x^2 + 2x + 12 = 0$.
- 4. Solve the system of equations $3x + 4y = 7, 5x + 3y = 8$.
- 5. Solve $y' = x + 2y, y(0) = 1$, using Eulers method for $x = 0.2$, taking $h = 0.1$.

P.T.O.



6. Define isomorphism of graphs with an example.
7. Evaluate $\int_1^2 x^2 dx$ by using trapezoidal rule with $n = 4$.
8. Estimate appropriate derivative of $f(x) = x^2$ at $x = 1$, for $h = 0.1$ and 0.01 using first order forward difference formula.
9. Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 \\ 1 & 1 \end{bmatrix}$.
10. Find the truncation error in the function $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \frac{x^5}{5!} + \frac{x^6}{6!}$ for $x = \frac{1}{5}$ when we use first three terms.
11. Write down the complete incidence matrix of the closed path ABC of the graph



SECTION - C

Answer any 4.

(4×3=12)

12. Find the root of the equation $f(x) = x^2 - 3x + 2$ in the vicinity of $x = 0$ using Newton-Raphson method.
13. Explain connectives.
14. Using Taylor series method solve $y' + 0.1y = 0$, $y(0) = 2$ for $y(0.1)$ with $h = 0.1$.
15. Use Simpson's Rule with $n = 4$ to estimate $\int_0^2 \frac{1}{1+x} dx$.
16. Use the false position method to find a root of the function $f(x) = x^2 - x - 2 = 0$ in $1 < x < 3$.
17. Find a root of the equation $x^2 - 4x - 10 = 0$ by using bisection method.



SECTION – D

Answer **any 2** questions :

(2×5=10)

Write an essay on **any two** of the following questions.

18. Apply Runge-Kutta method to solve the IVP, $y' = x + y$, $y(0) = 0$, choosing $h = 0.2$ and compute y_1, y_2, y_3, y_4 and y_5 :

19. Use Guass-Jordan method to solve the system of equations

$$2x + 4y - 6z = -8;$$

$$x + 3y + z = 10;$$

$$2x - 4y - 2z = -12$$

20. Find $f(2.5)$ from the following table by using Langrange interpolation polynomial

x	1	2	3	4	5
f(x)	1	1.4142	1.7321	2	2.2361

21. Explain any one iteration method for solving linear equations.



K18U 1004

Reg. No. :

Name :

IV Semester B.Sc. Degree (CBCSS – Reg./Sup./Imp.)
Examination, May 2018
(2014 Admn. Onwards)

COMPLEMENTARY COURSE IN MATHEMATICS
4C04MAT-BCA : Mathematics for BCA – IV

Time : 3 Hours

Max. Marks : 40

Instruction : Non-programmable scientific calculator may be used.

SECTION – A

All the first 4 questions are **compulsory**. They carry **1 mark each**.

1. What is linear programming ?
2. Define Random variable.
3. What is meant by extrapolation ?
4. Give Newton's backward interpolation formulae. (4×1=4)

SECTION – B

Answer **any 7** questions from among the questions **5 to 13**. These questions carry **2 marks each**.

5. Find the sample space S if a coin is tossed twice.
6. What do you understand by expectation of a random variable which is discrete ?
7. Write the steps in formulation of a linear programming problem.

P.T.O.



8. Find the feasible solution of the following transportation problem using North-West Corner method.

		Warehouses				Supply
		W_1	W_2	W_3	W_4	
Factories	F_1	14	25	45	5	6
	F_2	65	25	35	55	8
	F_3	35	3	65	15	16
Requirement		4	7	6	13	30 (Total)

9. By using Lagrange's interpolation formula find x if $y_1 = 4$, $y_3 = 12$, $y_4 = 19$ and $y_x = 7$.
10. State the Trapezoidal rule.
11. Give the integral equation in Picard's method of successive approximation.
12. Solve the equation $y' = x + y^2$ subject to the condition $y = 1$ when $x = 0$.
13. State intermediate value theorem. (7×2=14)

SECTION – C

Answer **any 4** questions from among the questions 14 to 19. **Each** question carries 3 marks.

14. Suppose that a game is to be played with a single die assumed fair. In this game a player wins Rs. 20 if a 2 turns up, Rs. 40 if a 4 turns up loses Rs. 30 if a 6 turns up while the player neither wins nor loses if any other face turns up. Find the expected sum of money to be won.
15. Find the expected value of x if the density function of a random variable x given by $f(x) = \begin{cases} \frac{1}{2}x, & 0 < x < 2 \\ 0, & \text{otherwise} \end{cases}$.
16. A manufacturing company is engaged in producing three types of products A, B and C. The production department produces each day components sufficient to make 50 units of A, 25 units of B and 30 units of C. The management is confronted with the problem of optimizing the daily production of the products

in the assembly department, where only 100 man-hours are available daily for assembling the products. The following additional information is available.

Type of Product	Profit Contribution/Unit	Assembly time/product
A	12	0.8
B	20	1.7
C	45	2.5

The company has a daily order commitment for 20 units of product A and a total of 15 units of products B and C. Formulate this problem as an LP model so as to maximize the total profit.

17. Solve by Vogel's Approximation method, the transportation problem.

		Destinations				Availability
		1	2	3	4	
Sources	1	21	16	25	13	11
	2	17	18	14	23	13
	3	32	27	18	41	19
Requirement		6	10	12	15	43

18. Find a real root of the equation $f(x) = x^3 - x - 1 = 0$.

19. Certain corresponding values of x and $\log_{10} x$ are (300, 2.4771), (304, 2.4829), (305, 2.4843) and (307, 2.4871), find $\log_{10} 301$. (4×3=12)

SECTION - D

Answer **any 2** questions from among the questions **20** to **23**. These questions carry **5 marks each**.

20. Define Variance. Find the variance and standard deviation of the random variable

$$X \text{ given by } f(x) = \begin{cases} \frac{1}{2}x, & 0 < x < 2 \\ 0, & \text{otherwise} \end{cases}$$

21. Use the graphical method to solve the following LP problem.

$$\text{Maximize } Z = 2x_1 + x_2$$

S.t. to the constraints

$$\begin{aligned} x_1 + 2x_2 &\leq 10, & x_1 - x_2 &\leq 2 \\ x_1 + x_2 &\leq 6, & x_1 - 2x_2 &\leq 1 \\ x_1, x_2 &\geq 0 \end{aligned}$$



22. Find the cubic polynomial which takes the following values $y(1) = 24$, $y(3) = 120$, $y(5) = 336$ and $y(7) = 720$. Hence obtain the value of $y(8)$.

23. From the following table of values of x and y obtain $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ for $x = 1.2$.

x	y
1	2.7183
1.2	3.3201
1.4	4.0552
1.6	4.9530
1.8	6.0496
2.0	7.3891
2.2	9.0250

(2×5=10)



K18U 1007

Reg. No. :

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IV Semester B.C.A. Degree (CBCSS – Reg./Sup./Imp.) Examination, May 2018
(2014 Admn. Onwards)
Core Course
4B08BCA : OPERATING SYSTEM

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. **One word answer :** (8×0.5=4)
- a) The address seen by the memory unit is called
 - b) _____ is a program is execution.
 - c) _____ page replacement algorithm suffers from Belady's anomaly.
 - d) An OS component that is responsible for hiding the complexity of an I/O device is known as
 - e) Degree of multiprogramming is controlled by _____ scheduler.
 - f) What does PCB stands for ?
 - g) A thread is a _____ process.
 - h) The number of processes completed per unit time is known as

SECTION – B

Write short notes on **any seven** of the following questions. (7×2=14)

- 2. What is meant by concurrent processing ?
- 3. What are virtual devices ?
- 4. What are overlays ?
- 5. What is seek time ?
- 6. What is the principle of optimality with reference to page replacement ?

P.T.O.

K18U 1007

7. What is a safe state ?
8. What is LFS ?
9. Write notes on any two Linux shells.
10. What is multiprogramming ?
11. Define Kernal.

SECTION – C

Answer **any four** of the following questions :

(4×3=12)

12. Compare internal and external fragmentation.
13. Write about various process states.
14. Explain OS structure.
15. List the major features of Linux.
16. Briefly describe spooling technique.
17. Explain the basic concepts of time sharing systems.

SECTION – D

Write an essay on **any two** of the following questions.

(2×5=10)

18. Explain I/O management schemes.
 19. Discuss contiguous memory allocation, paging and any three page replacement algorithms.
 20. Define and discuss the characteristics of deadlock. Explain how deadlock can be detected.
 21. Describe about process scheduling.
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K18U 1008

Reg. No. :

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IV Semester B.C.A. Degree (CBCSS – Reg./Sup./Imp.)

Examination, May 2018

(2014 Admn. Onwards)

Core Course

4B09 BCA : JAVA PROGRAMMING

Time : 3 Hours

Max. Marks : 40

SECTION — A

1. Answer **all** questions.

- a) _____ is the default layout manager.
- b) The _____ tag is used to pass parameters to an applet.
- c) The expansion of term API is _____
- d) All exceptions are sub class of _____.
- e) _____ is the method to retrieve text from Label.
- f) An _____ is generated when a button is pressed, a list item is double-clicked, or a menu item is selected.
- g) The default priority of Thread is _____.
- h) Multilevel inheritance is possible in Java. True/False. (8×0.5=4)

SECTION — B

Answer **any 7** questions of the following. **Each** question carries **2** marks.

2. What do you mean by bytecode ?
3. Define polymorphism.
4. What is exception ?

P.T.O.



- 5. What are different data types in Java ?
- 6. Write use APPLET tag ?
- 7. State method to draw circle.
- 8. What are wrapper classes ?
- 9. What is the use of package concept in Java ?
- 10. Write two methods to access random access files ?
- 11. Name various event listeners. (7×2=14)

SECTION — C

Answer **any four** questions. **Each** question carries **3** marks.

- 12. Short note on loops in Java.
- 13. Write java program to add two complex numbers.
- 14. Explain try _____ catch statement in java.
- 15. Write short note on FileInputStream.
- 16. Write short note on ScrollBars.
- 17. Explain various operators in Java. (4×3=12)

SECTION — D

Answer **any two** questions. **Each** question carries **5** marks .

- 18. Explain applets in Java with examples.
 - 19. Explain features of Java programming language.
 - 20. Explain layout managers with example.
 - 21. Explain object and class concepts in Java. (2×5=10)
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K18U 1009

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IV Semester B.C.A. Degree (CBCSS-Reg./Sup./Imp.) Examination, May 2018
(2014 Admn. Onwards)
Core Course
4B10BCA : LINUX ADMINISTRATION

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. One word answer.

(8×0.5=4)

- _____ command helps to view the lines at the beginning of a file.
- The maximum number of positional parameters is _____
- Which symbol is used to run a process in background ?
- The option used in *at* command to remove any unwanted command from the job queue is _____
- _____ command is used to save and restore files to and from a medium like floppy disk.
- "echo \$!" gives _____
- The command used in *vi* editor to save and quit is _____
- The command that searches for a pattern irrespective of case is _____

SECTION – B

Write short notes on **any seven** of the following questions.

(7×2=14)

- Give a brief description on C shell.
- What is inode ?
- Write a shell script to find the largest of 3 numbers.
- Explain *case* construct in shell script with example.
- What is the use of *man* command in Linux ?
- What is kernel ?

P.T.O.

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8. Explain the three types of users for files in Linux.
9. What do you mean by booting ?
10. What are the different steps to add a new user ?
11. Write a short note on init process.

SECTION – C

Answer **any four** of the following questions.

(4×3=12)

12. Write a shell program to check whether the given number is palindrome or not.
13. Write the steps to delete a directory in Linux.
14. What is the use of pipes and filters in Linux ?
15. What is the use of crontab ?
16. Describe file permissions in Linux.
17. Explain LILO Boot Loader.

SECTION – D

Write an essay on **any two** of the following questions.

(2×5=10)

18. Explain Linux File System.
 19. Write a shell script to display a number in words.
 20. Explain Linux system security.
 21. Explain chmod command.
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