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**BCACAC 232**

**Third Semester B.C.A. Degree Examination, April 2021**  
**(Choice Based Credit System)**  
**(2020-21 Batch Onwards)**  
**DATA STRUCTURES**

Time : 3 Hours

Max. Marks : 80

**Note : Answer any ten questions from Part-A and any one full question from each Unit of Part-B.**

**PART – A**

1. a) Write the algorithmic notation for Input/Output statements. (10×2=20)
- b) Define linear array. Give the formula to find the location of a particular element in one dimensional array.
- c) What is sparse matrix ? Give an example.
- d) What do you mean by sequential search ?
- e) What do you mean by sorting ? Mention any two sorting techniques.
- f) Define circularly linked list. Give its diagram.
- g) How does Stack differ from queue ?
- h) Evaluate  $AB+CD^*/$  with proper step. Assume  $A = 2, B = 3, C = 5, D = -5$ .
- i) Define dequeue. What are its types ?
- j) What is a binary search tree ? Give an example.
- k) What is complete binary tree ?
- l) Define path matrix.

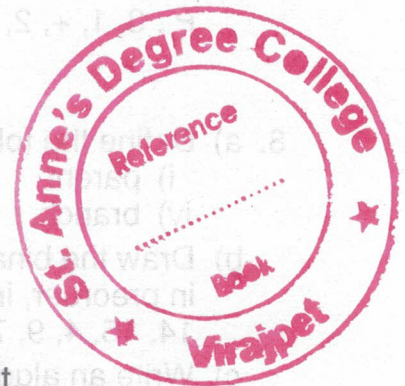
**PART – B**

**Unit – I**

2. a) Write the classification of data structure and briefly explain it.
- b) Write an algorithm to find the maximum element in an array.
- c) How do you represent polynomial using arrays ? Explain with an example.

(5+5+5)

P.T.O.





3. a) List and explain the various operations performed on data structure.
- b) Write a note on iteration logic.
- c) Write an algorithm to delete an element from a linear array. (5+6+4)

### Unit – II

4. a) Write an algorithm for insertion sort.
- b) Trace the bubble sort algorithm for the following data :  
35, 52, 28, 86, 66, 23, 15, 57.
- c) Write an algorithm to insert an item at the beginning of a linked list. (5+6+4)
5. a) Write an algorithm for selection sort.
- b) Trace radix sort technique for the following data :  
352, 175, 361, 423, 538, 128, 351, 543, 366.
- c) Write an algorithm to delete a node following a given node of a linked list. (5+6+4)

### Unit – III

6. a) Write an algorithm to insert an element into a queue using linked list.
- b) Write an algorithm to evaluate postfix expression.
- c) Convert the following infix expression into postfix expression using stack status.  
Q :  $((A + B) * D) \uparrow (E - F)$ . (5+5+5)
7. a) Write an algorithm for PUSH and POP operations using arrays.
- b) Write an algorithm to delete an element from a queue using linked list.
- c) Evaluate the following postfix expression showing the stack status.  
P : 3, 1, +, 2,  $\uparrow$ , 7, 4, -, 2, \*, +, 5, -. (5+5+5)

### Unit – IV

8. a) Define the following terms with respect to tree.
 

i) parent	ii) left child	iii) terminal node
iv) branch	v) depth of a tree	
- b) Draw the binary search tree for the following list of numbers and traverse it in preorder, inorder and postorder.  
14, 15, 4, 9, 7, 18, 40, 35, 16, 13.
- c) Write an algorithm for Depth First Search (DFS) for a graph. (5+5+5)
9. a) With an example, explain linked representation of binary tree.
- b) Draw the binary tree for the following :  
INORDER : D, B, E, A, F, C, H, G  
POSTORDER : D, E, B, F, H, G, C, A
- c) Write an algorithm for Breadth First Search (BFS) for a graph. (5+5+5)



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BCACAC 208

Credit Based III Semester B.C.A. Degree Examination, April 2021  
(2019 –20 and Earlier Batches)  
BASIC MATHEMATICS

Max. Marks : 80

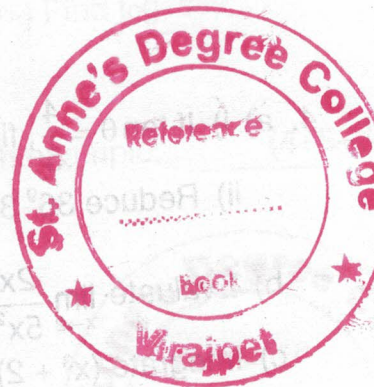
Time : 3 Hours

Note : Answer any ten questions from Part – A and one full questions from each Unit of Part – B.

(10x2=20)

PART – A

1. a) If  $\log_a \sqrt{2} = 1/6$ , find the value of a.
- b) Find the distance between the points (5, 7) (2, 11).
- c) Write binomial theorem.
- d) Represent the following angles in radians.
  - i)  $45^\circ$
  - ii)  $225^\circ$
- e) Define the limit of a function.
- f) If  $y = 2x + x^2$  what is  $\frac{dy}{dx}$  ?
- g) Integrate  $(x^2 - 1)^2$ .
- h) Represent the following using Venn diagram.
  - i)  $A \cup B$
  - ii)  $A - B$
- i) Define null set and universal set.
- j) Define equivalence relation.
- k) Define digraph with an example.
- l) Define isomorphic graphs with example.







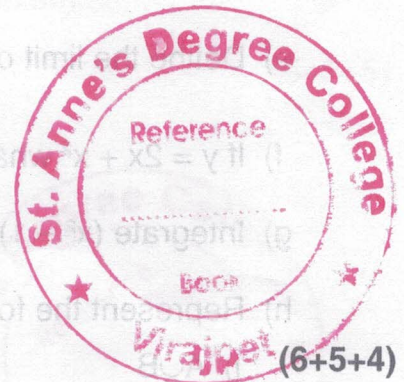
## PART - B

## Unit - I

2. a) i) Solve for  $x$  if  $\log_8 x + \log_4 x + \log_2 x = 11$ .
- ii) Prove that the points  $(6, 6)$ ,  $(2, 3)$  and  $(4, 7)$  form a right-angled triangle.
- b) Find the equation of straight line passing through the point  $(-1, 2)$  perpendicular to the line  $4x - 3y + 7 = 0$ .
- c) Define circle. Find the coordinates of the center and the length of radius of  $x^2 + y^2 + 7x - 9y - 20 = 0$ . (6+4+5)
3. a) Prove that  $\frac{\log \sqrt{27} + \log \sqrt{8} - \log \sqrt{125}}{\log 6 - \log 5} = \frac{3}{2}$ .
- b) i) In a paper on advanced accounts, ten questions are set. In how many different ways an examinee can choose 7 questions ?
- ii) Find the 11<sup>th</sup> term in the expansion of  $(y + 4x)^{30}$ .
- c) Find the coordinates of the point which divides externally the line joining  $(3, 5)$  and  $(2, 4)$  in the ratio 4:3. (4+6+5)

## Unit - II

4. a) i) If  $\tan \theta = \frac{4}{5}$ , find the value of  $\frac{2 \sin \theta + 3 \cos \theta}{4 \cos \theta + 3 \sin \theta}$ .
- ii) Reduce  $36^\circ 32' 50''$  to the sexagesimal measure.
- b) Evaluate  $\lim_{x \rightarrow 2} \frac{2x^2 - 7x + 6}{5x^2 - 11x + 2}$ .
- c) Integrate  $(x^3 + 2)^{1/2}$ . (6+5+4)
5. a) i) If  $\sin \theta = \frac{8}{17}$  find  $\frac{\cos \theta + \sin \theta}{\cos \theta - \sin \theta}$ .
- ii) Express both in degrees and radians the angles of a triangle whose angles are to each other as 1:2:3.
- b) Differentiate  $\frac{x^2 + 4}{3x - 7}$  with respect to  $x$ .
- c) Find the value of  $\int_2^4 (9x^2 - 12x + 4) dx$ . (6+4+5)







Unit – III

- 6. a)  $A = \{\alpha, \beta\}$  and  $B = \{1, 2, 3\}$ , find  $A^2, B^2, A^2 \times B, A \times B$  and  $B \times A$ .
- b) Let  $f(x) = x + 2, g(x) = x - 2$  and  $h(x) = 3x$  for  $x \in R, R$  is a set of real numbers. Find  $f \circ g, f \circ f, g \circ g, g \circ f$  and  $f \circ (h \circ g)$ .
- c) Given the relation matrices

$$M_R = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix} \quad M_S = \begin{bmatrix} 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 0 \end{bmatrix}$$

Find  $M_{R \circ S}, M_{\bar{R}}, M_{\bar{S}}, M_{\overline{R \circ S}}$  and show that  $M_{\overline{R \circ S}} = M_{\bar{S}} \circ M_{\bar{R}}$ . (5+5+5)

- 7. a)  $A = \{1\} B = \{a, b\} C = \{2, 3\}$  write  $A^2, B^2, A \times B \times C, C^2 \times A$ .
- b) Let  $X = \{1, 2, 3\}$   $f, g, h$  and  $s$  are the functions from  $X$  to  $X$  given by  
 $f = \{ \langle 1, 2 \rangle, \langle 2, 3 \rangle, \langle 3, 1 \rangle \}$   $h = \{ \langle 1, 1 \rangle, \langle 2, 2 \rangle, \langle 3, 1 \rangle \}$   
 $g = \{ \langle 1, 2 \rangle, \langle 2, 1 \rangle, \langle 3, 3 \rangle \}$   $s = \{ \langle 1, 1 \rangle, \langle 2, 2 \rangle, \langle 3, 3 \rangle \}$  Find  $f \circ g, s \circ s, f \circ h \circ g, s \circ g,$  and  $f \circ s$ .

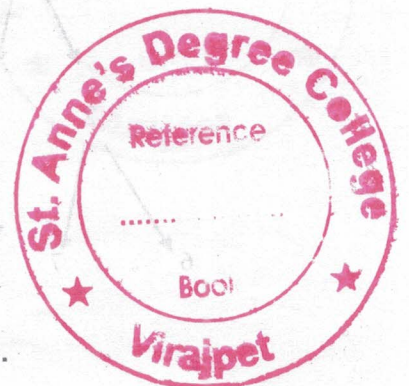
c) Define surjective, injective and bijective functions with example. (4+5+6)

Unit – IV

8. a) Define the following with suitable example.

- i) Multigraph.
- ii) Mixed graph.
- iii) Cyclic graph.

b) Define tree, root node, leaf node with suitable example.





c)  $A = \{1, 2, 3, 4\}$  and  $R$  be a relation on  $A$  that has the matrix

$$M_R = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}$$

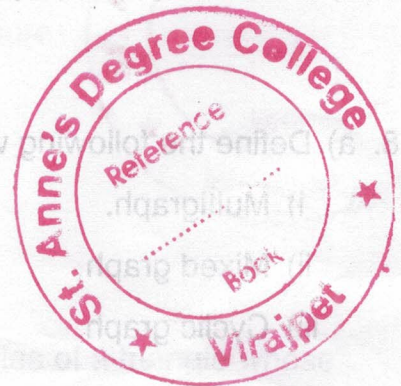
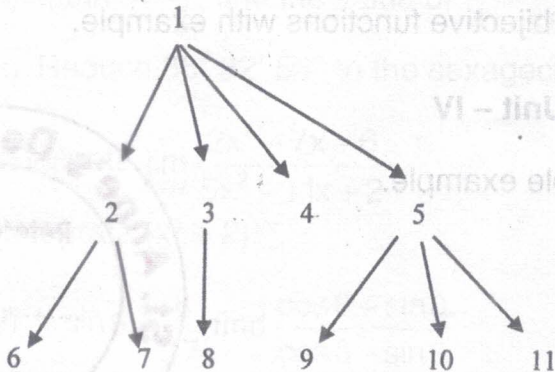
Construct relational graph of  $R$  and write in-degree and out-degrees of all the nodes. (6+4+5)

9. a) Define the following :

- i) in degree
- ii) out degree
- iii) total degree
- iv) parallel edges
- v) isolated vertex.

b) Explain matrix representation of graph with suitable example.

c) Convert the following tree into a binary tree. (5+5+5)





Reg. No.

**BASGEF 231/BCMGEF 231/BSCGEF 231/BCAGEF 231/  
BBAGEF 231**



**Third Semester Examination, April 2021  
Common to All Other UG Courses  
(Choice Based Credit System) (2020-21 Batch Onwards)**

**GENDER EQUITY**

**ಲಿಂಗತ್ವ ಸಮನ್ವಯ  
(Elective Foundation Course)  
(Compulsory Paper)**

Time : 2 Hours

Max. Marks : 40

**SECTION – A**

**Note :** a) Answer **any ten** of the following.

**(2×10=20)**

ಕೆಳಗಿನ ಯಾವುದಾದರೂ 10 ಪ್ರಶ್ನೆಗಳನ್ನು ಉತ್ತರಿಸಿರಿ.

b) Answer **each** question in **2-3** sentences.

ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ 2-3 ವಾಕ್ಯಗಳಲ್ಲಿ ಉತ್ತರಿಸಿ.

1. What is Gender Equity ?

ಲಿಂಗತ್ವ ಸಮನ್ವಯ ಎಂದರೇನು ?

2. Give any two examples of Gender Bias.

ಲಿಂಗ ಪೂರ್ವಗ್ರಹಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಯಾವುದಾದರೂ ಎರಡು ಉದಾಹರಣೆಗಳನ್ನು ಕೊಡಿ.

3. What is discrimination against women ?

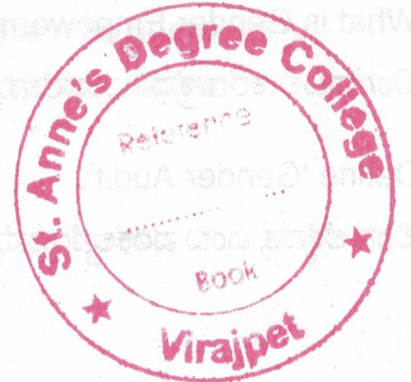
ಮಹಿಳೆಯರ ಮೇಲಿನ ತಾರತಮ್ಯ ಎಂದರೇನು ?

4. What is 'Socialisation' ?

'ಸಾಮಾಜೀಕರಣ' ಎಂದರೇನು ?

5. What is Matriarchy ?

ಮಾತೃ ಪ್ರಧಾನ ವ್ಯವಸ್ಥೆ ಎಂದರೇನು ?



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6. What is Sex Ratio ?

ಲಿಂಗ ಅನುಪಾತ ಎಂದರೇನು ?

7. Give two reasons for Infanticide.

'ಶಿಶು ಹತ್ಯೆ'ಗೆ ಯಾವುದಾದರೂ ಎರಡು ಕಾರಣಗಳನ್ನು ಕೊಡಿ.

8. State any two adverse effects of Child Marriage.

ಬಾಲ್ಯ ವಿವಾಹದ ಯಾವುದಾದರೂ ಎರಡು ದುಷ್ಪರಿಣಾಮಗಳನ್ನು ತಿಳಿಸಿ.

9. What is trafficking in women ?

ಮಹಿಳೆಯರ ಕಳ್ಳ ಸಾಗಾಟ ಎಂದರೇನು ?

10. What is women empowerment ?

ಮಹಿಳಾ ಸಬಲೀಕರಣ ಎಂದರೇನು ?

11. What is commodification of women ?

ಸ್ತ್ರೀಯರ ಶರೀರದ ಸರಕೀಕರಣ ಎಂದರೇನು ?

12. Mention any two special features of Child Marriage Prohibition (Amendment) Act, 1978.

ಬಾಲ್ಯ ವಿವಾಹ ನಿಷೇಧ (ತಿದ್ದುಪಡಿ) ಕಾಯ್ದೆ, 1978ರ ಯಾವುದಾದರೂ ಎರಡು ವಿಶೇಷ ಲಕ್ಷಣಗಳನ್ನು ತಿಳಿಸಿ.

13. What is dowry ? Why taking dowry is illegal ?

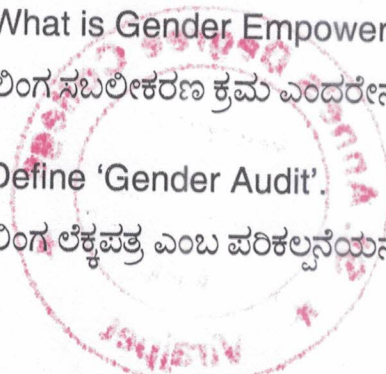
'ವರದಕ್ಷಿಣೆ' ಎಂದರೇನು ? ಅದನ್ನು ಪಡೆಯುವುದು ಯಾಕೆ ಕಾನೂನು ಬಾಹಿರ ?

14. What is Gender Empowerment Measure ? Give a definition.

ಲಿಂಗ ಸಬಲೀಕರಣ ಕ್ರಮ ಎಂದರೇನು ? ಇದನ್ನು ವ್ಯಾಖ್ಯಾನಿಸಿರಿ.

15. Define 'Gender Audit'.

ಲಿಂಗ ಲೆಕ್ಕಪತ್ರ ಎಂಬ ಪರಿಕಲ್ಪನೆಯನ್ನು ವ್ಯಾಖ್ಯಾನಿಸಿರಿ.





BASGEF 231/BCMGEF 231/BSCGEF 231/BCAGEF 231/BBAGEF 231

SECTION – B

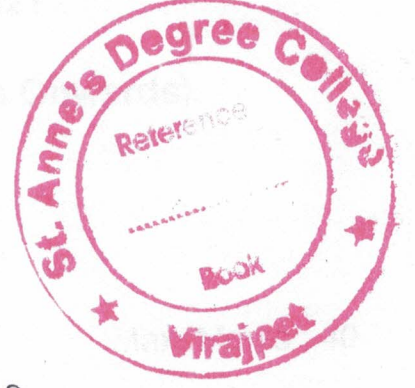
Note : a) Answer any four of the following.

ಈ ಕೆಳಗಿನ ಯಾವುದಾದರೂ ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳನ್ನು ಉತ್ತರಿಸಿರಿ.

(5×4=20)

b) Answer each in about 300 words.

ಪ್ರತಿ ಪ್ರಶ್ನೆಯನ್ನು 300 ಪದಗಳಲ್ಲಿ ಉತ್ತರಿಸಿರಿ.



16. What is Internalization of Gender values ? Explain.

ಲಿಂಗ ಮೌಲ್ಯಗಳ ಅಂತರಂಗೀಕರಣ ಎಂದರೇನು ? ವಿವರಿಸಿ.

17. Distinguish between Gender Equity and Gender Equality.

'ಲಿಂಗತ್ವ ಸಮನ್ವಯ' ಮತ್ತು 'ಲಿಂಗತ್ವ ಸಮಾನತೆ'ಯ ನಡುವಿನ ವ್ಯತ್ಯಾಸಗಳನ್ನು ತಿಳಿಸಿರಿ.

18. Explain different forms of domestic violence.

ಗೃಹ ಹಿಂಸೆಯ ವಿವಿಧ ಸ್ವರೂಪಗಳನ್ನು ವಿವರಿಸಿರಿ.

19. How is the state of Women's participation in Indian politics ? Analyse.

ಭಾರತದ ರಾಜಕಾರಣದಲ್ಲಿ ಮಹಿಳೆಯರ ಪಾಲ್ಗೊಳ್ಳುವಿಕೆಯ ಬಗ್ಗೆ ವಿಶ್ಲೇಷಿಸಿ.

20. Describe the main features of 'CEDAW'.

'CEDAW'ನ ಪ್ರಮುಖ ಲಕ್ಷಣಗಳನ್ನು ಚರ್ಚಿಸಿರಿ.

21. Examine the importance of Millennium Development Goals (MDG's).

ಸಹಸ್ರಮಾನ ಅಭಿವೃದ್ಧಿ ಉದ್ದೇಶಗಳ ಮಹತ್ವಗಳನ್ನು ಚರ್ಚಿಸಿ.

22. Explain the salient features of the Protection of Women from Domestic Violence (Prevention) Act, 2005.

ಗೃಹ ಹಿಂಸೆ (ನಿವಾರಣೆ)ಯಿಂದ ಮಹಿಳೆಯರ ಸಂರಕ್ಷಣಾ ಕಾಯ್ದೆ, 2005ರ ಪ್ರಮುಖ ಲಕ್ಷಣಗಳನ್ನು ವಿವರಿಸಿ.

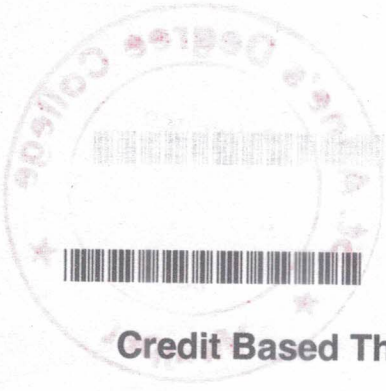
23. What is 'GEM' (Gender Empowerment Measures) ? Explain its purposes.

'GEM' (ಲಿಂಗ ಸಬಲೀಕರಣ ಕ್ರಮ) ಎಂದರೇನು ? ಇದರ ಪ್ರಮುಖ ಉದ್ದೇಶಗಳನ್ನು ವಿವರಿಸಿರಿ.

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Reg. No.

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**BCACAC 210**

**Credit Based Third Semester B.C.A. Degree Examination, April 2021**  
**(Semester Scheme)**  
**(2019 – 20 and Earlier Batches)**  
**DATA STRUCTURES**

Time : 3 Hours

Max. Marks : 80

**Note : Answer any ten questions from Part – A and any one full question from each Unit in Part – B.**

**PART – A**

**(10×2=20)**

1. a) Define data structure.
- b) List any four string operations.
- c) What is sparse matrix ? Give an example.
- d) List the advantages of linked list over arrays.
- e) What is circularly linked list ? Draw its diagram.
- f) Define sorting. Why is it necessary ?
- g) What is stack ? Write any two application of stack.
- h) What is recursion ?
- i) List any two applications of queue.
- j) Define binary tree.
- k) Define digraph. Give an example.
- l) What is an adjacency matrix ?



**PART – B**

**UNIT – I**

2. a) List and explain any five algorithmic notations.
- b) Write an algorithm to search an element using linear search.
- c) Explain with an example how to represent polynomial using array. **(5+5+5)**
3. a) Briefly explain any five data structure operations.
- b) Write an algorithm to search an element using binary search method.
- c) Explain the algorithmic notation for selection control structures. **(5+5+5)**

P.T.O.





4. a) Write an algorithm for selection sort.  
 b) Trace the insertion sort algorithm for the following data :  
 99, 88, 66, 77, 55, 44, 22, 33.  
 c) Write an algorithm to search for a given element in a singly linked list. (5+5+5)
5. a) What is linked list ? Explain different types of linked list with a neat diagram.  
 b) Write an algorithm to insert a node at the beginning of linked list.  
 c) Trace radix sort for the following data :  
 162, 133, 899, 149, 156, 345, 654, 455, 454, 159, 654, 324, 875. (5+5+5)

## UNIT – III

6. a) Write an algorithm to perform insert and delete operations on queue using arrays.  
 b) List the properties of recursive functions. Write an algorithm to find the factorial of a number using recursion.  
 c) Write a note on circular queues. (5+5+5)
7. a) Write an algorithm to evaluate a postfix expression.  
 b) Write an algorithm to perform PUSH and POP operations on stacks using arrays.  
 c) Write note on dequeue and priority queue. (5+5+5)

## UNIT – IV

8. a) Explain the linked representation of graph with an example.  
 b) Define the following tree terminology :  
 (i) siblings (ii) node  
 (iii) degree of node (iv) complete binary tree (v) edge  
 c) Write an algorithm to search a node in binary search tree. (5+5+5)
9. a) Explain binary search tree with example.  
 b) Write breadth first search traversal algorithm for graph.  
 c) What are the three standard ways of traversing a tree T with root R ? Write steps of each traversal using recursion. (4+5+6)



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BCACAC 231

**Third Semester B.C.A. Degree Examination, April 2021  
(Choice Based Credit System)**

**(2020-2021 Batch Onwards)  
OPERATING SYSTEMS AND LINUX**

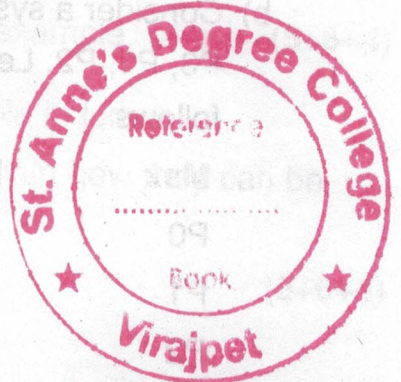
Time : 3 Hours

Max. Marks : 80

**Note :** Answer any ten questions from Part – A and one full question from each Unit of Part – B.

**PART – A**

1. a) What is an Operating System ? (10×2=20)  
b) Define time sharing processing system.  
c) Distinguish program and process.  
d) Define deadlock.  
e) List the difference between page and frame.  
f) What is virtual memory ? Why is it needed ?  
g) Differentiate free software and freeware software.  
h) Name the different file system types used in Linux.  
i) What is the use of backup files ?  
j) Mention any two file oriented commands in Linux.  
k) What is the purpose of shift commands in Linux ?  
l) Specify the purpose of cut command in Linux.



**PART – B**

**Unit – I**

2. a) Explain the process management and memory management components of operating system.  
b) Explain the life cycle of the process with a neat diagram.  
c) What is a critical section ? Name the requirements for solution to the critical section problem. (6+4+5)

P.T.O.





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3. a) Explain the different services provided by the OS.  
 b) Explain the concept of semaphores with pseudo code for wait and signal.  
 c) Consider the following set of processes that arrive at time 0 with the length of the CPU-burst time given in milliseconds.

Process	CPU Burst Time
P1	6
P2	8
P3	7
P4	3

Draw Gantt chart and find the average waiting time using SJF scheduling.

(5+5+5)

## Unit – II

4. a) What is demand paging ? Explain.  
 b) Consider a system with 12 magnetic tape drives and three processes, P0, P1, P2. Let the maximum needs and allocation at a certain time be as follows :

Max	Needs	Currently allocated
P0	10	5
P1	4	2
P2	9	2

Find a safe sequence.

- c) Consider the reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. For memory with three frames, find the number of page faults for FIFO and LRU algorithms.

(5+4+6)

5. a) Explain resource-allocation graph with an example.  
 b) Explain FIFO, Optimal Page Replacement Algorithm and LRU algorithm.  
 c) Explain the methods used to recover from deadlock.

(5+6+4)

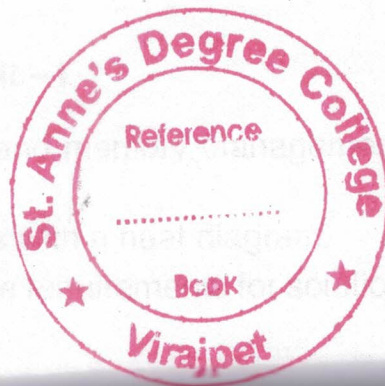


**Unit – III**

- 6. a) Give the structure of Linux file system. Explain with example.
- b) Write a short note on Linux Kernel.
- c) How can we create files and folders in Linux ? (5+5+5)
  
- 7. a) Write a note on powers of an administrator in Linux OS.
- b) Write a note on Linux distributions.
- c) Define and explain the features of Linux. (5+5+5)

**Unit – IV**

- 8. a) Write a note on positional parameters.
- b) Explain the following commands :
  - a) sort
  - b) wc
  - c) dd.
- c) Explain the *case* statement in Linux with syntax and example. (5+6+4)
  
- 9. a) Explain any five directory oriented commands available in Linux.
- b) What are the different types of file permissions ? Explain how they can be changed using the *chmod* command.
- c) Write a note on *vi* editor. (5+6+4)





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Reg. No.

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**BCACCE 236**

**III Semester B.C.A. Degree Examination, April 2021  
(Choice Based Credit System)  
(2020 – 21 Batch Onwards)  
HARDWARE AND PC MAINTENANCE (Elective)**

Time : 2 Hours

Max. Marks : 40

**Note :** Answer **any five** questions from Part – A and **five** questions from Part – B.

**PART – A**

1. a) What is a Web Server ?
- b) Expand CMOS and RTC.
- c) What is auto-detection ?
- d) What is RAM ? Mention its types.
- e) What is media error ?
- f) Name the different types of Installation.
- g) Differentiate full-duplex and half-duplex.
- h) What do you mean by optimization ?



(5×2=10)

**PART – B**

2. Explain ping command and write any five ping command options. 6
3. Explain crimping with its two types. 6
4. What is Microprocessor ? Explain its component with man in the box example. 6
5. Explain any five devices and their connectors. 6
6. Explain device manager. 6
7. Explain about network security. 6
8. What are the different types of errors occur during the OS installation ? 6
9. Explain Operating System folders. 6

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Reg. No.

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**BCACAC 212**

**Credit Based Third Semester B.C.A. Degree Examination, April 2021  
(Semester Scheme)  
(2019 – 20 and Earlier Batches)  
DATA MINING**

Time : 3 Hours

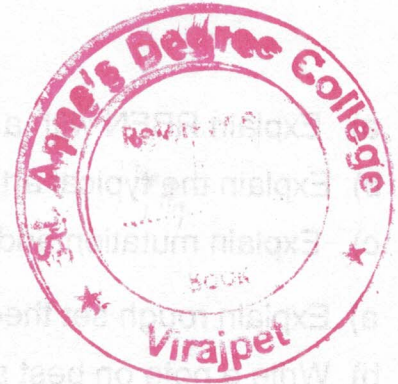
Max. Marks : 80

**Note** : Answer **any ten** questions from Part – A and **any one full** question from **each** Unit in Part – B.

**PART – A**

**(10×2=20)**

1. a) Define data cube.
- b) What is data warehouse ?
- c) Define maximal frequent set and border set.
- d) What is FP tree ?
- e) What is mutation ?
- f) What are transverse and intrinsic links ?
- g) What is page rank ?
- h) What is stemming ?
- i) List the structures used in dynamic item set counting algorithm.
- j) What is temporal data mining ?
- k) Define rough set.
- l) What is entropy ?



**PART – B**

**UNIT – I**

2. a) Explain different stages of KDD.
- b) Explain data warehouse architecture with neat diagram.
- c) Compare data mining and DBMS. **(5+6+4)**

P.T.O.





3. a) Explain star schema with diagram.  
 b) Explain the following OLAP operations with neat diagrams.  
 (i) Slicing (ii) Dicing  
 c) Explain Meta data with their types. (5+5+5)

## UNIT – II

4. a) Explain APRIORI algorithm with an example.  
 b) Compare categorical and numerical clustering.  
 c) Write a note on CLARA. (6+5+4)
5. a) Explain Partition algorithm with an example.  
 b) Write a note on STIRR.  
 c) Differentiate hierarchical and partition clustering. (6+4+5)

## UNIT – III

6. a) Explain RBFN with a neat diagram.  
 b) Explain the typical artificial neurons with activation function.  
 c) Explain mutation and crossover operation in genetic algorithm. (5+5+5)
7. a) Explain rough set theory.  
 b) Write a note on best split.  
 c) Explain decision tree with suitable example. (5+5+5)

## UNIT – IV

8. a) Explain GSP algorithm.  
 b) State the important features that can be extracted from an unstructured document.  
 c) Write a note on web usage mining. (5+5+5)
9. a) Write a note on web content mining.  
 b) Explain episode discovery.  
 c) List and explain various temporal data mining tasks. (4+5+6)

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Reg. No.

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BCACAC 209



**Credit Based Third Semester B.C.A. Degree Examination, April 2021  
(2019-20 and Earlier Batches)  
MICROPROCESSORS**

Time : 3 Hours

Max. Marks : 80

**Note :** Answer **any ten** questions from Part – A and **one full** question from **each** Unit of Part – B.

**PART – A**

1. a) List any two features of 4004 microprocessor. **(10×2=20)**
- b) Represent  $(76)_{10}$  in packed and unpacked BCD format.
- c) Expand XMS and TPA.
- d) What is the use of SI and DI registers in string manipulation instructions ?
- e) What is the purpose of segment override prefix ? Give an example.
- f) Differentiate LDS and LES instructions.
- g) List the four ASCII arithmetic instructions.
- h) What is the use of CBW instruction ?
- i) Differentiate NOT and NEG instructions.
- j) What is the purpose of CALL instruction ? Give an example.
- k) List any four conditional jump instructions.
- l) What is the use of NOP instruction ?



P.T.O.







Unit – III

- 6. a) Explain different rotate instructions with examples.
- b) Explain DAA and DAS instructions with suitable examples.
- c) Explain LOOP, LOOPE and LOOPNE instructions with example. (6+5+4)
- 7. a) Explain different shift instructions with examples to each.
- b) Explain MUL and DIV instruction with suitable examples.
- c) Explain REP, REPE and REPNE instructions with example. (6+5+4)

Unit – IV

- 8. a) Explain NEAR and FAR calls with suitable diagrams :
- b) Explain :
  - i) INT's    ii) INT 3    iii) INTO.
- c) Explain :
  - i) LOCK prefix            ii) BOUND instruction. (5+6+4)
- 9. a) Explain the role of RET. Compare it with IRET.
- b) Explain :
  - i) ENTER and LEAVE instructions
  - ii) ESC
- c) What is a microcontroller ? Draw its block diagram. (5+6+4)





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Reg. No. 

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**BCACAC 233**

**Third Semester B.C.A. Degree Examination, April 2021  
(Choice Based Credit System)  
(2020-2021 Batch Onwards)  
VISUAL BASIC .NET PROGRAMMING**

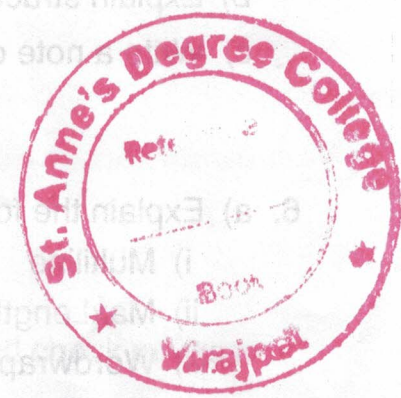
Time : 3 Hours

Max. Marks : 80

**Note : Answer any ten questions from Part – A and one full question from each Unit of Part – B.**

**PART – A**

1. a) List two components of .NET framework. **(10×2=20)**
- b) What do you mean by intellisense ? Mention any four intellisense features.
- c) Write the syntax of declaring variables and give one example for declaring variable.
- d) What is the purpose of ResumeNext ?
- e) List four methods of VB.NET form.
- f) What is the use of Windowstate property ? Specify the values.
- g) Differentiate checkbox and radio buttons.
- h) Differentiate textbox and labels.
  - i) How to
    - i) Clear a combobox
    - ii) Get the number of items in a combobox.
  - j) List any 4 properties of ColorDialog control class.
  - k) What is the purpose of ADO.NET ?
  - l) Differentiate executeReader( ) and executeScalar( ) methods.



P.T.O.





## PART – B

## UNIT – I

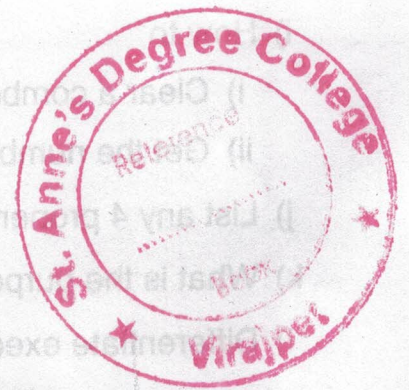
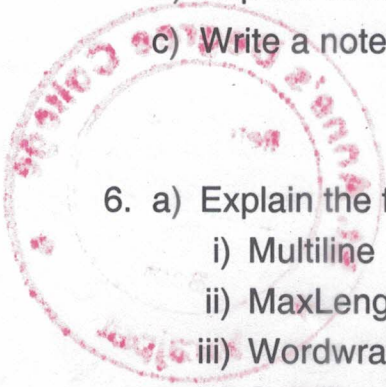
2. a) Explain any two mouse events in VB.NET.  
b) Explain the following parts of VB.IDE.  
i) The Toolbox  
ii) The Solution Explorer  
iii) The Properties Window.  
c) Explain Do..Loop and For.. loop with syntax and example. (4+6+5)
3. a) List and explain any three keyboard events in VB.NET.  
b) Explain the keywords Public, Private, Friend, Protected and Static used in declaring the variables.  
c) Explain Foreach..Next and Do..Until loops with their syntax and example. (3+6+6)

## UNIT – II

4. a) Write the syntax of creating sub procedures in VB.NET. Give an example.  
b) Explain unstructured exception handling with example.  
c) Explain any five unique properties of form. (5+5+5)
5. a) Explain the use of static variables in a procedure with suitable example code.  
b) Explain structured exception handling with example.  
c) Write a note on MsgBox function. (5+5+5)

## UNIT – III

6. a) Explain the following properties of a textbox :  
i) Multiline  
ii) MaxLength  
iii) Wordwrap  
iv) Scrollbar  
v) PasswordChar.  
b) What is the use of scrollbar ? Explain its unique properties.  
c) Explain DateTimePickers with their static properties. (5+5+5)



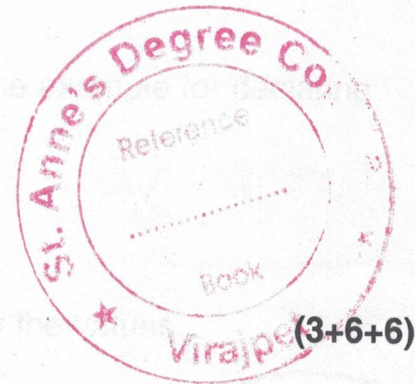




7. a) Write the code for following with reference to ListBox :
- i) Removing items
  - ii) Adding items
  - iii) Sorting items
  - iv) Determining number of many items
  - v) Determining items selected.
- b) What is the use of trackbar ? Explain its unique properties.
- c) Write VB.NET program to create any tree structure using tree view control. (5+5+5)

UNIT – IV

8. a) What is a Context Menu ? How to create it ?
- b) Explain the following with two properties, events and methods :
- i) Open File Dialogs
  - ii) Font Dialogs
  - iii) Print Preview.
- c) Explain the following objects of ADO.NET :
- i) Data Connection objects
  - ii) Command objects
  - iii) Data table objects .
9. a) Give one example for each of the following in SQL :
- i) The IN clause
  - ii) The LIKE clause
  - iii) SELECT statement
  - iv) The BETWEEN clause
  - v) The DISTINCT clause.
- b) How do you create menu access keys, menu shortcuts and check marks to menu items ?
- c) Explain the concept of databinding in VB.NET. (3+6+6)
- (5+5+5)



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BCAKAL 231

**III Semester B.C.A. Examination, April 2021**  
**(2020 – 21 Batch Onwards)**  
**(Choice Based Credit System)**  
**KANNADA**  
**Advanced Kannada**

Time : 3 Hours

Max. Marks : 80

I. ಮೂರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ :-

(3×8=24)

1) ಗುರುವಿನ ಮಹತ್ವವನ್ನು ಅಂಬಿಗರ ಚೌಡಯ್ಯನವರ ವಚನಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲಿ ವಿವರಿಸಿ.

ಅಥವಾ

'ಕಪ್ಪು ಜನತೆಯ ಸೂರ್ಯನಿಗೆ' ಕವನದಲ್ಲಿ ಚಿತ್ರಿತವಾದ ಅಂಬೇಡ್ಕರ್ ಅವರ ವ್ಯಕ್ತಿತ್ವವನ್ನು ತಿಳಿಸಿ.

2) 'ಬದುಕು ರಿಪೇರಿಯನ್ನು ಬಯಸುತ್ತಲೇ ಇರುತ್ತದೆ' ಎನ್ನುವ ಮಾತನ್ನು ಲೇಖನದ ಹಿನ್ನೆಲೆಯಲ್ಲಿ ವಿಶ್ಲೇಷಿಸಿ.

ಅಥವಾ

'ನಮ್ಮ ನಂಬಿಕೆಗಳನ್ನು ಇನ್ನೊಬ್ಬರ ಮೇಲೆ ಹೇರಬಾರದು' ಎನ್ನುವುದು 'ನಾನು ಕೊಂದ ಹುಡುಗಿ' ಕಥೆಯಲ್ಲಿ ಹೇಗೆ ವ್ಯಕ್ತವಾಗಿದೆ ? ತಿಳಿಸಿ.

3) ಮಹಾನ್ ಸಂಗೀತ ಆರಾಧಕನೊಬ್ಬನ ಕರುಣಾಜನಕ ಕಥೆ 'ಸುಬ್ಬಣ್ಣ' ನೀಳತೆಯಲ್ಲಿ ಹೇಗೆ ವ್ಯಕ್ತವಾಗಿದೆ ? ವಿವರಿಸಿ.

ಅಥವಾ

ತೊರೆಯಪುರದಲ್ಲಿ ಸುಬ್ಬಣ್ಣನವರ ಬದುಕು ಹೇಗಿತ್ತು ? ವಿಶದೀಕರಿಸಿ.

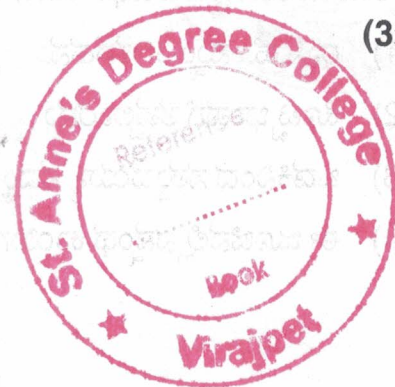
II. ಒಂದು ವಿಭಾಗದಿಂದ ಒಂದರಂತೆ ಮೂರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ :

(3×5=15)

1) ವಸಿಷ್ಠ-ವಿಶ್ವಾಮಿತ್ರರ ವಾಗ್ವಾದದ ಸ್ವಾರಸ್ಯವನ್ನು ತಿಳಿಸಿ.

ಅಥವಾ

'ಗಾಂಧಿ ಜಯಂತಿ' ಕವನದ ಆಶಯವೇನು ?



P.T.O.





2) ಬಾಡಿಗೆ ಮನೆಗಳಲ್ಲಿ ವಾಸಿಸುವವರ ಕಷ್ಟಗಳನ್ನು ಲೇಖಕರು ಹೇಗೆ ಅನಾವರಣಗೊಳಿಸಿದ್ದಾರೆ ? ತಿಳಿಸಿ.

ಅಥವಾ

ಚೆನ್ನಮ್ಮನ ಪಾತ್ರಪರಿಚಯವನ್ನು ಮಾಡಿರಿ.

3) ಸುಬ್ಬಣ್ಣನವರು ಮನೆಬಿಟ್ಟು ಹೋಗಲು ಕಾರಣವೇನು ?

ಅಥವಾ

ಸುಬ್ಬಣ್ಣನವರ ಪತ್ನಿಯ ವ್ಯಕ್ತಿತ್ವವನ್ನು ಚಿತ್ರಿಸಿ.

III. ಒಂದು ಪದ್ಯಭಾಗದ ಸಂದರ್ಭ ಸೂಚಿಸಿ ಭಾವಾರ್ಥವನ್ನು ಬರೆಯಿರಿ :

(1×5=5)

- 1) ತೀವಿದೊಡ್ಡೋಲಗದ ನಡುವೆ ತನ್ನಂ ಮೊದಲೊ  
ಳೋವಿ ನುಡಿಸದ ಕೋಪವೊಂದಾ ವಸಿಷ್ಠಮುನಿ  
ಯಾವುದಂ ಪೆಳ್ಳಡದನಲ್ಲೆಂಬ ಭಾಷೆಯೆರಡಖಿಳ ಜೀವಾವಳಿಯಲಿ  
ಭಾವಿಪಡೆ ಕುಂದನಲ್ಲದೆ ಲೇಸ ಕಾಣದಿಹ  
ಭಾವ ಮುಪ್ಪುರಿಗೊಂಡು ಕುಡಿವರಿದು ಕಡುಗೋಪ  
ವಾವರಿಸಿ ಕೌಶಿಕಂ ನಿಂದು ನಿಲ್ ನುಡಿಯಬೇಡೆಂದು ಜಙ್ಘದಿಂತೆಂದನು !
- 2) ಇವನ ಅಧ್ಯಕ್ಷತೆಯ ಕೆಳಗೆ ಜರುಗಲು ಬೇಕು  
ಈ ಮನೆಯ ಪ್ರತಿಯೊಂದು ಕೆಲಸ ಕಾರ್ಯ  
ತಪ್ಪಿತೋ ಹಿಂದೂ ಮುಂದೂ ನೋಡದಿವನು ಊದಿಯೆ  
ಬಿಡುವ ಸಮರ ತೂರ್ಯ !  
ನಮಗಿಲ್ಲ ಇವನೆದುರು ನಿಂತು ನುಡಿಯುವ ಧೈರ್ಯ;  
ಬೆಳಗಿನಿಂದಲೂ ಸಂಜೆವರೆಗು ಒಂದೇ ಸವನೆ ಉರಿವ ಸೂರ್ಯ !



IV. ಅ) ಎರಡು ಸಾಲುಗಳಿಗೆ ಸಂದರ್ಭ ಸೂಚಿಸಿ ಸ್ವಾರಸ್ಯವನ್ನು ಬರೆಯಿರಿ :

(2×4=8)

- 1) ರಾಸಿ ಹೊನ್ನೊಟಧಿಕನಹನು
- 2) ಕೊಟ್ಟ ಭಾಷೆಗೆ ತಪ್ಪಲಾರೆನು
- 3) ಒಡಕಿನಿಂದ ಸತ್ತುದಯ್ಯಾ ನಮ್ಮ ಜನ ಯಾವಾಗಲೂ
- 4) ಈ ಜೂಜಿನಲ್ಲಿ ನನ್ನಂಥ ಕಾಯಿಗಳಿಗೆ ದಿಕ್ಕಿಲ್ಲಿದೆ ?



2) ಬಾಡಿಗೆ ಮನೆಗಳಲ್ಲಿ ವಾಸಿಸುವವರ ಕಷ್ಟಗಳನ್ನು ಲೇಖಕರು ಹೇಗೆ ಅನಾವರಣಗೊಳಿಸಿದ್ದಾರೆ ? ತಿಳಿಸಿ.

ಅಥವಾ

ಚೆನ್ನಮ್ಮನ ಪಾತ್ರಪರಿಚಯವನ್ನು ಮಾಡಿರಿ.

3) ಸುಬ್ಬಣ್ಣನವರು ಮನೆಬಿಟ್ಟು ಹೋಗಲು ಕಾರಣವೇನು ?

ಅಥವಾ

ಸುಬ್ಬಣ್ಣನವರ ಪತ್ನಿಯ ವ್ಯಕ್ತಿತ್ವವನ್ನು ಚಿತ್ರಿಸಿ.

III. ಒಂದು ಪದ್ಯಭಾಗದ ಸಂದರ್ಭ ಸೂಚಿಸಿ ಭಾವಾರ್ಥವನ್ನು ಬರೆಯಿರಿ :

(1×5=5)

- 1) ತೀವಿದೊಡ್ಡೋಲಗದ ನಡುವೆ ತನ್ನಂ ಮೊದಲೊ  
ಳೋವಿ ನುಡಿಸದ ಕೋಪವೊಂದಾ ವಸಿಷ್ಠಮುನಿ  
ಯಾವುದಂ ಪೆಳ್ಳಡದನಲ್ಲೆಂಬ ಭಾಷೆಯೆರಡವಿಳ ಜೀವಾವಳಿಯಲಿ  
ಭಾವಿಪಡೆ ಕುಂದನಲ್ಲದೆ ಲೇಸ ಕಾಣದಿಹ  
ಭಾವ ಮುಪ್ಪುರಿಗೊಂಡು ಕುಡಿವರಿದು ಕಡುಗೋಪ  
ವಾವರಿಸಿ ಕೌಶಿಕಂ ನಿಂದು ನಿಲ್ ನುಡಿಯಬೇಡೆಂದು ಜಙ್ಘಲಿತೆಂದನು !
- 2) ಇವನ ಅಧ್ಯಕ್ಷತೆಯ ಕೆಳಗೆ ಜರುಗಲು ಬೇಕು  
ಈ ಮನೆಯ ಪ್ರತಿಯೊಂದು ಕೆಲಸ ಕಾರ್ಯ  
ತಪ್ಪಿತೋ ಹಿಂದೂ ಮುಂದೂ ನೋಡದಿವನು ಊದಿಯೆ  
ಬಿಡುವ ಸಮರ ತೂರ್ಯ !  
ನಮಗಿಲ್ಲ ಇವನೆದುರು ನಿಂತು ನುಡಿಯುವ ಧೈರ್ಯ;  
ಬೆಳಗಿನಿಂದಲೂ ಸಂಜೆವರೆಗು ಒಂದೇ ಸವನೆ ಉರಿವ ಸೂರ್ಯ !



IV. ಅ) ಎರಡು ಸಾಲುಗಳಿಗೆ ಸಂದರ್ಭ ಸೂಚಿಸಿ ಸ್ವಾರಸ್ಯವನ್ನು ಬರೆಯಿರಿ :

(2×4=8)

- 1) ರಾಸಿ ಹೊನ್ನೊಟಧಿಕನಹನು
- 2) ಕೊಟ್ಟ ಭಾಷೆಗೆ ತಪ್ಪಲಾರೆನು
- 3) ಒಡಕಿನಿಂದ ಸತ್ತುದಯ್ಯಾ ನಮ್ಮ ಜನ ಯಾವಾಗಲೂ
- 4) ಈ ಜೂಜಿನಲ್ಲಿ ನನ್ನಂಥ ಕಾಯಿಗಳಿಗೆ ದಿಕ್ಕಿಲ್ಲಿದೆ ?





ಆ) ಎರಡರ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ :

(2×4=8)

- 1) ಆನಂದ.
- 2) 'ರಿಪೇರಿ' ಲೇಖನದಲ್ಲಿ ಬರುವ ರಹೀಮನ ಪಾತ್ರ.
- 3) ನಾಶವಾಗುತ್ತಿರುವ ಕೃಷಿ ಸಂಸ್ಕೃತಿ.
- 4) ಎಂ.ವಿ. ಸೀತಾರಾಮಯ್ಯ.

ಇ) ಎರಡರ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ :

(2×4=8)

- 1) ಮಾಸ್ತಿ ವೆಂಕಟೇಶ ಅಯ್ಯಂಗಾರ್
- 2) ನಾರಾಯಣ ಶಾಸ್ತ್ರಿಗಳು
- 3) ಕಲ್ಕತ್ತದಲ್ಲಿ ಸುಬ್ಬಣ್ಣನ ಬದುಕು
- 4) ಮಾಸ್ತಿಯವರ ಮಾವ.

V. ಒಂದು ವಾಕ್ಯ ಅಥವಾ ಪದದಲ್ಲಿ ಕೆಳಗಿನ ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೂ ಉತ್ತರಿಸಿರಿ :

(12×1=12)

- 1) ರಾಘವಾಂಕ ಕವಿಯು ಯಾವ ಶತಮಾನದಲ್ಲಿ ಜೀವಿಸಿದ್ದನು ?
- 2) 'ಆಕಾಶಬುಟ್ಟಿ' ಇದು ಯಾರ ಕೃತಿ ?
- 3) ಸಿದ್ಧಲಿಂಗ ಪಟ್ಟಣ ಶೆಟ್ಟಿಯವರ ಅಂಕಣ ಬರಹದ ಹೆಸರೇನು ?
- 4) 'ಕಪ್ಪು ಜನತೆಯ ಸೂರ್ಯನಿಗೆ' ಈ ಕವನವನ್ನು ಬರೆದವರು ಯಾರು ?
- 5) 'ರಾಘವ' ಕಾವ್ಯನಾಮದಿಂದ ಪ್ರಸಿದ್ಧರಾದವರು ಯಾರು ?
- 6) 'ನಾನು ಕೊಂದ ಹುಡುಗಿ' ಕಥೆಯಲ್ಲಿ ಬರುವ ಹಳ್ಳಿ ಯಾವುದು ?
- 7) ರಹೀಮ ಯಾರು ?
- 8) 'ನಲಮುಖಿ' ಕೃತಿಯನ್ನು ರಚಿಸಿದವರು ಯಾರು ?
- 9) ಸುಬ್ಬಣ್ಣ ಮನೆಬಿಟ್ಟು ಮೊದಲು ಹೋದದ್ದು ಯಾವ ಊರಿಗೆ ?
- 10) ಸುಬ್ಬಣ್ಣನಿಗೆ ಪಿಟೀಲನ್ನು ವಾಪಾಸು ತಂದುಕೊಟ್ಟವರು ಯಾರು ?
- 11) ಮಾಸ್ತಿಯವರಿಗೆ ಜ್ಞಾನಪೀಠ ಪ್ರಶಸ್ತಿ ತಂದುಕೊಟ್ಟ ಕೃತಿ ಯಾವುದು ?
- 12) ಮಾಸ್ತಿಯವರಿಗೆ ಸಂಗೀತವನ್ನು ಕಲಿಸಿದವರು ಯಾರು ?









IV. 'मिस्टर अभिमन्यु' नाटक के आधार पर राजनैतिक भ्रष्टाचार पर अपने विचार व्यक्त कीजिए ।

(1×10=10)

अथवा

'मिस्टर अभिमन्यु' नाटक का सार अपने शब्दों में लिखते हुए विशेषताओं पर प्रकाश डालिए ।

V. किन्हीं दो पर टिप्पणी लिखिए ।

(2×5=10)

i) विमल

ii) पिताजी

iii) राजन

iv) गयादत्त

VI. किसी एक प्रश्न का उत्तर लिखिए ।

(1×5=5)

1) प्रयोजनमूलक हिन्दी के विविध रूप ।

2) प्रयोजनमूलक हिन्दी की परिभाषा और स्वरूप ।

VII. 1) बाजार में नया मोबाइल आया है - वीनस, इसकी बैटरी बिना चार्जिंग छह महीने चलती है, ॥

एक विज्ञापन तैयार कीजिए । 5

2) किसी नयी फिल्म पर दो मित्रों के बीच का संवाद प्रस्तुत कीजिए । 5

3) निम्नलिखित पारिभाषिक शब्दावलियों के हिन्दी रूप लिखिए । (1×5=5)

i) Approval

ii) Candidate

iii) Draft

iv) Reservation

v) Salary.



4) निम्नलिखित पद्यांश को पढ़कर प्रश्नों के उत्तर चुनिए ।

(1×5=5)

वह जीवन भी क्या जीवन है  
जिसमें हिंसा है, रुदन है  
मानव मरु में खो जाएगा कहीं  
जग ही निर्जन हो जाएगा कहीं ॥  
अब जीवन अर्थ व्यर्थ हो जाएगा  
घने अन्धकार बीच खो जाएगा ।

1) कवि किस प्रकार के जीवन की निंदा कर रहा है ?

क) उदास      ख) हिंसक      ग) नीरस      घ) निर्जन

2) घने अन्धकार में क्या खो जाएगा ?

क) मानव      ख) जगत      ग) मरु      घ) जीवन

3) 'मरु' का समानार्थी शब्द चुनिए ।

क) रेगिस्तान      ख) नरक      ग) हरियाली      घ) मृत्यु

4) 'निर्जन' का क्या अर्थ है ?

क) गरीब      ख) जनसंख्या      ग) सुनसान      घ) मानव

5) मानव कहाँ खो जाएगा ?

क) मरु      ख) निर्जन      ग) वन      घ) रात











- c) Consider the following set of processes that arrive at time 0 with the length of the CPU burst time given in milliseconds :

Process	Burst time
P1	6
P2	8
P3	7
P4	3

Draw Gantt chart and find the average waiting time and turnaround time using Round Robin scheduling for a given time quantum of 2 milliseconds.

(4+6+5)

3. a) Explain the concept of process scheduling with a neat diagram.  
 b) Explain time sharing systems and real time systems.  
 c) Explain various criteria for CPU scheduling.

(4+6+5)

### Unit – II

4. a) Explain the necessary conditions for deadlock to occur in a system.  
 b) What is dining philosopher's problem ? Explain.  
 c) Explain wait-for-graph with an example.  
 5. a) What is readers writer's problem ? Explain.  
 b) Write a short note on safe state.  
 c) Explain deadlock prevention methods.

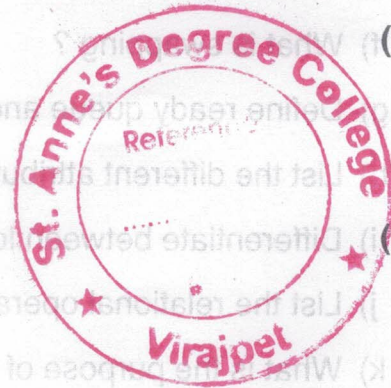
(5+5+5)

(5+5+5)

### Unit – III

6. a) What is fragmentation ? Explain.  
 b) Consider the following page reference string :  
 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1.  
 How many page faults would occur for the following page replacement algorithm, by assuming three frames ?  
 i) LRU algorithm  
 ii) Optimal replacement algorithm.  
 c) Explain direct and sequential access on files.

(4+6+5)







7. a) Explain FIFO page replacement algorithm with an example.  
b) Explain two level directory structure.  
c) Explain the concept of segmentation with a neat diagram. (5+5+5)

#### Unit – IV

8. a) Explain the following commands :  
i) head  
ii) mv  
iii) wc  
iv) rmdir.  
b) Explain any two iterative statements in Linux with syntax and example.  
c) Explain any five process-oriented commands used in Linux. (4+6+5)
9. a) Explain the features of UNIX operating system.  
b) Explain the following commands :  
i) sort  
ii) date  
iii) cal  
iv) grep.  
c) Explain the UNIX file system with neat diagram. (5+4+6)

