Seat No.

Total No. of Questions: 03

Total No. of Pages: 01

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Empowered Autonomous)
Affiliated to Savitribai Pule Pune University, Pune

Class: FYBCA (Sci)
Subject Code (ENG-101-AEC): General English
Semester- I Examination ②
2024 Pattern

Time: 1 Hour   (No. of Credits 02)   Marks: 30

Note: a. All questions are compulsory
      b. Figures to right indicate full marks

Q. 1. (A) Attempt each of the following   (04)
1. Peanuts are more nutritious than cashewnuts. (Change into positive degree)
2. Arjun was not so generous as Karna. (Change into comparative degree)
3. Honesty is the best policy. (Change into positive degree)
4. No other state in India is as big as Maharashtra. (Change into superlative degree)

Q. 1. (B) Attempt each of the following   (06)
1. It is useless to cry over spilt milk. (Transform into a negative sentence)
2. The milk turned sour. (Transform into an interrogative sentence)
3. It is very nice of you. (Transform into an exclamatory sentence)

Q. 2. Attempt any four of the following   (12)
1. What does Wordsworth think about nature in *Education of Nature*.
2. How does Wordsworth change a sad poem into a celebration?
3. Relationship between Sir Mohan Lal and his wife in *Karma*.
4. Significance of the title "Karma".
5. What does the poet complain about in *Sonnet 29*?
6. The contrast between the beginning and end in *Sonnet 29*?

Q. 3. Attempt any two of the following   (08)
1. Write a paragraph on 'My favourite book'.
2. Write a paragraph on 'My Hobbies'.
3. Design a display advertisement for newspapers about the launch of Honda's new bike.
4. Draft an advertisement to be published in *The Times of India* for the post of an English teacher.

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Affiliated to Savitribai Phule Pune University, Pune

Class: F Y B C A (Science)
Subject Code : BCA-101-GEN
Problem Solving Techniques & Basic C Programming
(2024 Pattern) Semester I

Time: 01.00 Hour   (No. of Credits 02)   Max. Marks: 30

Instructions to the candidates:
   i) All questions are compulsory.
   ii) Figures to the right indicate full marks.

Q1. (A) Attempt each of the following   (1 Marks each)

1. What is an array?
2. Which are the basic data types in c.?
3. List out tokens in C.
4. Write syntax of "Do while" loop. .

(B) Attempt each of the following   (2 Marks each)

1. Write a syntax of if …else.
2. Define algorithm.
3. What is the newline character?

Q2. Attempt any four of the following   (3 Marks each)

1. Explain any two aspects of functions call.
2. What is flowchart? Draw and explain various symbols of flowchart.
3. Discuss low level programming language.
4. Write an algorithm & draw flowchart to check given number is perfect number or not.
5. Write an algorithm & draw flowchart to calculate factorial of a number.
6. Write a C program to enter marks of 3 subjects and display grade.

Q3. Attempt any two of the following   (4 Marks each)

1. Discuss call by value method with example.
2. Explain different string library functions.
3. Write a C program to print 1 to 10 multiplication table
4. Write a C program to print sum of array elements.

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Total No. of Questions: 3

Total No. of pages: 2

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Affiliated to Savitribai Phule Pune University, Pune.
F.Y.B.C.A (Science)
Subject: Computer Architecture
Paper Code: BCA-103-GEN
(NEP Pattern)

Time: One Hour   **(No. of Credits 02)**   Max Marks: 30

Instructions to Candidates:

i.   All Questions are compulsory.

ii. Neat Labeled Diagrams must be drawn wherever necessary.

iii. Use of calculator is allowed.

iv. Figures to the right indicate full marks.

Q1.(A) Attempt each of the following.   (1 Mark each)

(i) Write the full form of ASCII.

(ii) Write truth table of 2 input AND gate.

(iii) Define Encoder.

(iv) What is Register?

(B) Attempt each of the following.   (2 Marks each)

(i) Convert $(47)_{10} = (\ldots)_2$

(ii) What is flip-flop? State different types.

(iii) Draw logic diagram of half adder.

Q2. Answer any <u>four</u> questions.   (3 Marks each)

i) Convert $(24.76)_8$ into binary & decimal.

ii) Draw a 1:4 DEMUX & write its truth table.

iii) What is counter? Explain any one counter.

iv) Write a short note on hexadecimal number system. Explain any one interconversion with example.

P.T.O

v) Distinguish between multiplexer & de multiplexer.

vi) Simplify using Boolean laws. Draw simplified diagram $Y=A\overline{B}+AB+B$.

Q3. Answer any <u>two</u> questions.   **(4 Marks each)**

(i) Draw logic diagram of JK Flip flop & write its truth table.

(ii) Write a note on BCD to & 7-segment decoder.

(iii) What are universal gates? Using any one universal gate construct NOT & AND gate.

(iv) Perform the following:

    i) $(10110)_2 = (?)_{10}$

    ii) $(F0B6)_{16} = (?)_2$

    iii) $(589)_{10} = (?)_{BCD}$.

Seat No.: ☐

Total No. of Questions: 03

Total No. of Pages: 02

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Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati.
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Affiliated to Savitribai Phule Pune University, Pune.

F.Y.BCA (Science)
MATHEMATICS
Semester – I
BCA-105-GEN: Foundation of mathematics for computer science
(2024 Pattern)

Time: 1 Hours

Max. Marks: 30

Instructions to the Candidates:
  1) All questions are compulsory.
  2) Figures to the right indicate full marks.
  3) Use of non-programmable scientific calculator is allowed.

Q1) A) Attempt the following. *(1 mark each)*   [04]
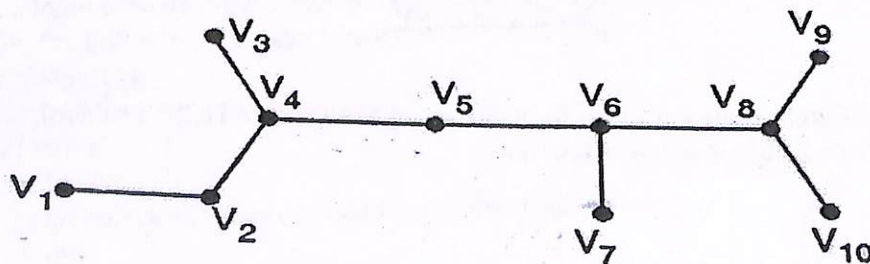
 a) Define Pendant Vertex.
 b) If $A = \{2, 4, 6\}$ and $B = \{1, 2\}$ then find $A \times B$.
 c) Define Diagonal Matrix.
 d) If $A = \begin{bmatrix} 3 & -7 \\ 7 & 0 \end{bmatrix}$ then find determinant of A.

B) Attempt the following. *(2 mark each)*   [06]

 a) Consider $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5, 6\}$. Find $A \cup B$, $A \cap B$, $B - A$, B^c.
 b) If $f: R \to R$ defined by $f(x) = x^2 + 1$ and $g: R \to R$ defined by $g(x) = \frac{1}{x-1}$.
    Then find $gof(x)$.
 c) Find the subgraph of $G - v_5$ and $G - v_7$ of the following graph G.

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Q2) Attempt any *FOUR* of the following. (*3 mark each*)

a) Consider the following matrix

$$A = \begin{bmatrix} 14 & 16 \\ 15 & 22 \end{bmatrix} \text{ and } B = \begin{bmatrix} 45 & 48 \\ 15 & 23 \end{bmatrix}$$

Find $A + B, 5A, 7B$.

b) In a class of 40 students, 18 likes mathematics, 16 likes science and 10 likes both mathematics and science. Find the students who like either mathematics or science.

c) Let $A = \{e, f, g, h\}$ be any set. Construct example of relation on A which is reflexive, symmetric but not transitive relation.

d) Check whether the following function is onto or not.
$g: Z \rightarrow E$ defined as $g(x) = 2x$ where Z is set of integers and E is set of even integers.
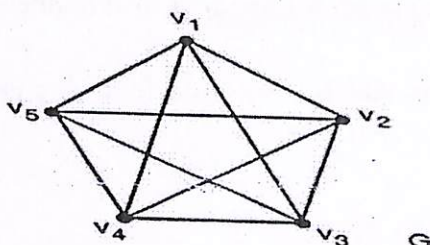
e) For the following graph G
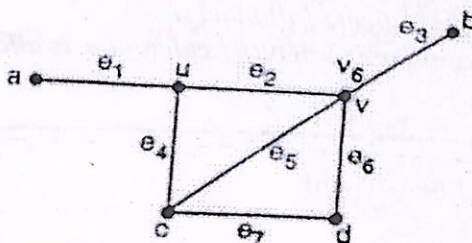
Find any three cycles of graph G.

f) How many 5 letter words are there which begin and end with a vowel?

Q3) Attempt any *TWO* of the following. (*4 mark each*)

a) If a function $f: R \rightarrow R$ is defined as, $f(x) = 2x - 3$. Show that f is bijective function.

b) Find degree of the following graph G.

c) How many different arrangements of the alphabets of MATHEMATICS are there?

d) Verify the given matrix is orthogonal or not

$$A = \begin{bmatrix} 4 & 5 & 6 \\ 6 & 6 & 9 \\ 6 & 9 & 7 \end{bmatrix}.$$

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Total No. of Questions: 03

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Class: FYBCA (Sci)
Subject Code (ENG-151-AEC): General English-II
Semester- II Examination
2024 Pattern

Time: 1 Hour   (No. of Credit: 02)   Marks: 30

Instructions: a. All questions are compulsory.
               b. Figures to right indicate full marks.

Q. 1. (A) Attempt each of the following. (04)
1. We do not trust strangers. (Change into passive voice)
2. Her homework is being done by him. (Change into active voice)
3. I was writing an email. (Change into passive voice)
4. A case has been filed by the CBI. (Change into active voice)

(B) Attempt each of the following. (06)
1. I do not know the time. The temple is open for public. (Join the sentences with 'when')
2. It was raining. We didn't go out. (Join the sentences with 'because')
3. Umesh ran all the way to school. He was late. (Join the sentences with 'though')

Q. 2. Attempt any four of the following. (12)
1. What message do you get from *Still I Rise*?
2. Write about the character of the narrator in *The Child*.
3. Write about the journey of Najab across the desert in *Love Across the Salt Desert*.
4. Write about the love story of Najab and Fatimah in *Love Across the Salt Desert*.
5. Write about the character of Gangu in *The Child*.
6. What is the significance of war imagery in *Success is Counted Sweetest*?

Q. 3. Attempt any two of the following. (08)
1. Write an email in response to the vacancy advertised in *The Times of India* for the post of a teacher.
2. Write a letter to invite your friend to stay with you during the summer vacations.
3. Identify the following words as noun/verb/adverb/adjective:
   a) important
   b) everywhere
   c) arrival
   d) slowly
4. Identify the following words as noun/verb/adverb/adjective:
   a) walk
   b) yellow
   c) intelligently
   d) theatre

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Affiliated to Savitribai Phule Pune University, Pune
Class: F Y B C A (Science)
Subject Code: BCA-151-GEN
Advanced C Programming
(2024 Pattern) Semester II

Time: 01.00 Hour   (No. of Credits 02)   Max. Marks: 30

Instructions to the candidates:
   i)   All questions are compulsory.
   ii) Figures to the right indicate full marks.

Q1. (A) Attempt each of the following   (1 Marks each)

   1. What is void pointer?
   2. Define union.
   3. What is the use of file inclusive macro?
   4. File pointer is declared as FILE *fp. Justify.

(B) Attempt each of the following   (2 Marks each)

   1. List arithmetic operations on pointer.
   2. List the similarities between structure and union.
   3. List types of macros.

Q2.   Attempt any four of the following   (3 Marks each)

   1. What is pointer? How it is initialized explain with example?
   2. Define a structure? Write the syntax for structure declaration with example.
   3. Differentiate between macro and functions.
   4. Program to find length of string using pointer.
   5. How to open and close a file? Explain with example.
   6. Write a program to create a file which contains all odd numbers upto 50. Display the contents of file on standard output device.

Q3.   Attempt any two of the following   (4 Marks each)

   1. Explain dynamic memory allocation in C with example.
   2. Write a C program which creates a structure book_bank containing the fields book id, book name, author and price. Read the records of n books.
   3. Write a program to find the square of a number using macro with argument.
   4. Write a program to copy contents of one file to another file.

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Affiliated to Savitribai Phule Pune University, Pune.
F.Y.B.C.A. (Science)
Subject- Introduction to Microcontroller
Paper code-BCA-153-GEN
(NEP Pattern)

Time: One Hour   (No. of Credits 02)   Max Marks: 30

Instructions to Candidates:
  i.   All Questions are compulsory.
  ii.   Neat Labeled Diagrams must be drawn wherever necessary.
  iii. Use of calculator is allowed.
  iv.   Figures to the right indicate full marks.

Q1. (A) Attempt each of the following.   **(1 Mark each)**

(i) How many ports are present in 8051 microcontroller?

(ii) Write the long form of PSW.

(iii) What is the default address of stack pointer resister?

(iv) Write the data type for single bit declaration in 8051 C programs.

(B) Attempt each of the following.   **(2 Marks each)**

(i) State the significance of SBUF register in serial communication.

(ii) What do you mean by ADC and DAC?

(iii) How many register banks are in 8051 microcontroller? Write their addresses.

Q2. Answer any _four_ questions.   **(3 Marks each)**

i) Differentiate between microcontroller and microprocessor.

ii) Write down the PSW register and explain each bits of it.

iii) Write the table for size in bits and data range of following data types in 8051 C.

     a) unsigned char b) signed char c) unsigned int d) signed int e) sbit f) bit.

iv) Write embedded C program for 8051 microcontroller to generate square wave.

v) Explain External ROM interfacing with a neat diagram.

vi) Explain interrupts available in 8051.

Q3. Answer any <u>two</u> questions. (4 Marks each)

i) a) Write an 8051 program to toggle all the bits of P1 continuously.

b) Write an 8051 program to toggle all the bits of P1 continuously with delay 250ms.

(ii) Draw the block diagram of 8051 microcontroller and explain it.

(iii) Draw the diagram for LED interfacing with 8051 microcontroller and write an 8051 C program to ON-OFF that LED on port 0.

(iv) Write an 8051 program to toggle all the bits of P2 continuously with a 50ms delay using timer 0, mode 1.

Total No. of Questions: 03

Total No. of Pages: 02

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F.Y.B.C.A.(Science)

MATHEMATICS

Semester – II

BCA-155-GEN: Linear Algebra

(2024 Pattern)

Time: 1 Hours

Max. Marks: 30

Instructions to the Candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Use of non-programmable scientific calculator is allowed.*

Q1) A) Attempt the following. (*1 mark each*) [04]

a) Define the term: Linearly Independent set.

b) Write identity matrix of order 3 × 3.

c) Define the term: column rank of matrix.

d) Find eigen value of the following matrix.

$$A = \begin{bmatrix} 5 & 0 \\ 0 & 3 \end{bmatrix}$$

B) Attempt the following. (*2 mark each*) [06]

a) Write any two properties of vector space with respect to multiplication.

b) State Rank Nullity theorem.

c) Determine whether the set $W = \left\{ \begin{bmatrix} a & b \\ c & d \end{bmatrix} \middle| b = 0, c = 1 \right\}$ is subspace of the vector space $V = M_{2 \times 2}(R)$.

Q2) Attempt any **FOUR** of the following. (*3 mark each*) [12]

a) Determine if the set $W = \{(x, y) / x^2 - y^2 = 0\}$ is a subspace of R^2.

b) If $A = \begin{bmatrix} 1 & 2 \\ -1 & 3 \end{bmatrix}, = \begin{bmatrix} 0 & 1 \\ 2 & 4 \end{bmatrix}, C = \begin{bmatrix} 4 & -2 \\ 0 & -2 \end{bmatrix}$ then express if possible $D = \begin{bmatrix} -1 & 7 \\ 5 & 1 \end{bmatrix}$ as a linear combination of A, B, C.

c) Reduce the following matrix in to row echelon form.

$$A = \begin{bmatrix} 2 & 10 & 8 & -26 \\ 3 & -1 & 2 & 5 \\ 2 & 2 & 3 & -4 \end{bmatrix}.$$

P.T.O.

1

d) Solve the following system of linear equations using Gaussian Elimination method.

$x - 2y + z - 4w = 1$,
$x + 3y + 7z + 2w = 2$,
$x - 12y - 11z - 16w = 5$.

e) Is $S = \{(3,2,3), (1,1,1), (1,0,1)\}$ linearly independent set? Justify your answer.

f) Find nullity of the matrix A, if A is of order 4×6 and $rank(A) = 3$.

Q3) Attempt any **_TWO_** of the following. (*4 mark each*)

[08]

a) Find a matrix P that diagonalizes A and determine $P^{-1}AP$ where $A = \begin{bmatrix} 1 & -2 \\ -5 & 4 \end{bmatrix}$.

b) If W_1 and W_2 are subspace of vector space V then prove that $W_1 \cap W_2$ is subspace of V.

c) Solve the following system of linear equation by Gaussian-Jordan elimination method

$x + 2y - 3z = 0$,
$3x + 4y - 5z = 4$,
$2x + 5y - 8z = 5$.

d) Find column rank of matrix A

$$A = \begin{bmatrix} 1 & 2 & -1 \\ 4 & 1 & 3 \\ 5 & 3 & 2 \\ 2 & 0 & 2 \end{bmatrix}.$$

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