U.G. DEGREE EXAMINATION — JULY, 2022.

Computer Science

(From CY – 2020 onwards)

First Year

MATHEMATICS

Time : 3 hours   Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions.

1.   Form the biquadratic equation, two of whose roots are $1+i$ and $2+\sqrt{3}$.

2.   If $S = \{1,2,3\}$ and $T = \{x,y\}$, list all the elements of $S \times T$.

3.   Derive the Newton-Raphson iteration formula.

4.   Define DFA.

5.   Prove that the mapping $f : X \to X$ where $X = \{x \in R, x \neq 0\}$ defined by $f(x) = \dfrac{1}{x}$ is one-to-one and onto.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions.

6. Solve the equation $x^3 - 3x^2 + 4 = 0$ two of the roots being equal.

7. Prove that the relation "congruence modulo m" over the set of positive integers is an equivalence relation.

8. Find the positive roots of the equation $3x^3 + 5x - 40 = 0$. Correct to two places of decimals using the bisection method.

9. Draw a DFA for the language accepting strings ending with '01' over input alphabets $\Sigma = \{0, 1\}$.

10. Find the root of the equation $x^3 + x^2 - 100 = 0$, that lies between 4 and 5, correct to 4 decimal places of decimal using iteration method.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions.

11. If α, β, γ are the roots of the equation $3x^3 + 6x^2 - 9x + 2 = 0$, then find the value of $\Sigma \dfrac{\alpha}{\beta}$.

12. Write all possible functions from $X = \{1, 2\}$ to $Y = \{a, b, c\}$ and classify them into one-to-one, onto, neither one-to-one nor onto types of functions.

13. Find the roots of the equation $x^x = 100$, correct to 4 places of decimals using Newton-Raphson method.

14. Draw a DFA for the language accepting strings ending with 'abb' over input alphabets $\Sigma = \{a,b\}$.

15. If $f : A \to B$ and $g : B \to C$ are bijections, prove that $gof : A \to C$ is also a bijection.

16. Let $A = \{1,2,3\}$. Define $f : A \to A$ by $f(1) = 2, f(2) = 1$ and $f(3) = 3$. Find f^2, f^3, f^4 and f^{-1}.

17. Draw a DFA for the language accepting strings starting and ending with different characters over input alphabets $\Sigma = \{0, 1\}$.

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Computer Science

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First Year

INTRODUCTION TO COMPUTER ORGANIZATION

Time : 3 hours   Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any Three questions out of Five questions in 100 words

All questions carry equal marks

1.   What is error detection code?

2.   What is a cache memory?

3.   What is a CPU?

4.   What is a microprocessor?

5.   What is a logic gate?

PART B — (3 × 7 = 21 marks)

Answer Any Three Questions Out Of Five Questions in 200 Words

All Questions Carry Equal Marks

6. Explain with block diagram the von Neumann architecture.

7. Explain the various types of memory devices.

8. Explain in detail about addressing modes.

9. What are the different types of interrupts in a microprocessor system?

10. Explain the types of micro operations.

PART C — (4 × 10 = 40 marks)

Answer Any Four Questions Out Of Seven Questions in 500 Words

All Questions Carry Equal Marks

11. Write a detail note on the various generations of computer.

12. Explain with the block diagram of the DMA transfer in a computer system?

13. Discuss about the structure of CPU with a neat block diagram.

14. Explain with the block diagram of the micro computer architecture?

15. What is RAM? Explain its types.

16. Discuss in detail about the various I/O organizations?

17. Describe in detail about the different types of data representation.

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UG-A-1217   BSCS-05X

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Computer Science

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First Year

'C' PROGRAMMING AND DATA STRUCTURES

Time : 3 hours   Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of five questions in 100 words.

All questions carry equal marks.

1. What is an identifier?

2. What is an array?

3. What is a sparse array?

4. What is a tree?

5. What is meant by prototyping?

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of five questions in
200 words.

All questions carry equal marks.

6. Explain data types in C.

7. Write a short notes on storage classes in C.

8. Explain the types of list in data structures.

9. Explain the binary search tree.

10. Discuss the shortest path problem with an
    example.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in
500 words.

All questions carry equal marks.

11. Explain about the different operators in C.

12. What is a pointer? Explain in detail and give the
    merits and demerits.

13. What is tree traversal? Explain it types.

14. Explain about the searching and its types.

15. Write a detail note on control structures in C.

16. Discuss the operations and applications of stack.

17. Explain in detail the various types of sorting in data structure.

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First Year

VISUAL BASIC PROGRAMMING

Time : 3 hours   Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1.   What is graphical user interface?

2.   Write about the mouse events in VB?

3.   What is a control array?

4.   What is a data control?

5.   Differentiate between goto and on-goto statements in VB.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6.   Explain the components of windows programming.

7.   How will you create a button at run time in VB?

8.   Explain select case control structure in VB.

9.   What is OLE? Explain.

10. Explain the scope rules in VB.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Describe in detail – How will you create your own project?

12. What is a property window? Explain the different types of properties in VB.

13. Explain with flow charts of the control structures in VB.

14. How will you do the linking and embedding an excel worksheet with VB project? – Explain.

15. What is WINAPI - Explain in detail

16. Describe in detail about procedures in VB.

17. Explain in detail about different types of events in VB.

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