II YEAR IV SEMESTER BSc MPCs SYLLABUS

SRI RAMAKRISHNA DEGREE COLLEGE (AUTONOMOUS)

NANDYAL

SRI RAMAKRISHNA DEGREE(AUTONOMOUS) COLLEGE: NANDYAL
B.Sc. SECOND YEAR MATHEMATICS SYLLABUS (2021-2022)
SEMESTER – IV, PAPER - 4
REAL ANALASIS-4

UNIT – I (12 Hours)

REAL NUMBERS :

The algebraic and order properties of R, Absolute value and Real line, Completeness property of R, Applications of Supremum property; intervals. (No question is to be set from this portion).

Real Sequences:

Sequences and their limits, Range and Boundedness of Sequences, Limit of a sequence and Convergent sequence. The Cauchy's criterion, properly divergent sequences, Monotone sequences, Necessary and Sufficient condition for Convergence of Monotone Sequence, Limit Point of Sequence, Subsequences and the Bolzano- weierstrass theorem – Cauchy Sequences – Cauchy's general principle of convergence theorem.

UNIT –II (12 Hours)

INFINITIE SERIES :

Series : Introduction to series, convergence of series. Cauchy's general principle of convergence forseries tests for convergence of series, Series of Non-Negative Terms.

1. P-test
2. Cauchy's n^{th} root test or Root Test.
3. D'-Alemberts' Test or Ratio Test.
4. Alternating Series – Leibnitz Test.
5. Absolute convergence and conditional convergence

UNIT – III (12 Hours)

CONTINUITY :

Limits : Real valued Functions, Boundedness of a function, Limits of functions. Some extensionsof the limit concept, Infinite Limits. Limits at infinity. (No question is to be set from this portion).

Continuous functions : Continuous functions, Combinations of continuous functions, Continuous Functions on intervals, uniform continuity.

UNIT – IV (12 Hours)

DIFFERENTIATION AND MEAN VALUE THEORMS :

The derivability of a function, on an interval, at a point, Derivability and continuity of a function, Graphical meaning of the Derivative, Mean value Theorems; Rolle's Theorem, Lagrange's Theorem, Cauchy's Mean value Theorem

UNIT – V (12 Hours)

RIEMANN INTEGRATION :

Riemann Integral, Riemann integral functions, Darboux theorem. Necessary and sufficient condition for R – integrability, Properties of integrable functions, Fundamental theorem of integral calculus, integral asthe limit of a sum, Mean value Theorems.

Co-Curricular Activities(15 Hours)

Seminar/ Quiz/ Assignments/ Real Analysis and its applications / Problem Solving.

Text Book:Introduction to Real Analysis by Robert G.Bartle and Donlad R. Sherbert, published by John Wiley.

Reference Books:

1. A Text Book of B.Sc Mathematics by B.V.S.S. Sarma and others, published by S. Chand & CompanyPvt. Ltd., New Delhi.
2. Elements of Real Analysis as per UGC Syllabus by Shanthi Narayan and Dr. M.D. Raisinghania, published by S. Chand & Company Pvt. Ltd., New Delhi.

SRI RAMAKRISHNA DEGREE (AUTONOMOUS) COLLEGE::NANDYAL
PART-II : MATHEMATICS
FOURTH SEMESTER END EXAMINATIONS
PAPER-IV –REAL ANALYSIS

Time:3 Hrs **Max.Marks:70M**

SECTION – A

Answer any FIVE Questions. **5x4=20M**

1.Show that every convergent sequence is bounded.

2.Test for convergence $\sum \frac{2^n}{n^3}$

3.Test for convergence $1-\frac{1}{2}+\frac{1}{3}-\frac{1}{4}+\cdots$ ... .

4.Examine the continuity of $f(x)=\frac{1-\cos 2x}{1-\cos 4x}$ when x $\neq 0$ and f(0) $= \frac{2}{3}$

5.By using Lagrange's Mean – Value theorem prove that

$\frac{x}{1+x} < log(1+x) < x \; for \; all \; x > 0$

6.Show that $f(x)=|x-1|+|x-2|$ is not derivable at $x=1 \; and \; x=2$

7.Find the Upper and Lower Riemann sums of $f(x)=x^2 \; on \; [0,1]$ for the partition p=$\{0,\frac{1}{2},\frac{2}{3},\frac{3}{4},1\}$

8. If f ∈ R [a ,b] then show that |f|∈ R[a , b].

SECTION – B

Answer any FIVE Questions. **5x10=50M**

9.A) If $s_n=\frac{1}{1.2}+\frac{1}{2.3}+\frac{1}{3.4}+ \; - - - - - \frac{1}{n(n+1)}$ then prove that $\{s_n\}$ is convergent.

OR

B) State and prove Cauchy's General Principle of convergence.

10.A) Test for convergence $\sum_{n=1}^{\infty} \frac{2n-1}{n(n+)(n+2)}$

OR

B) State and prove Leibnitz's Test

11.A) Let f:R→R be such that f(x)=$\frac{\sin(a+1)x+\sin x}{x}$ for x < 0 ,

f(x) = c for x = 0 ,

f(x) =$\frac{(x+bx^2)^{\frac{1}{2}}-x^{\frac{1}{2}}}{bx^{\frac{3}{2}}}$ for x>0 Then determine the values of a, b, c for which the function is continuous at x=0.

OR

B) By using definition prove that $f(x)=x^3$ is uniformly continuous on $[-2,\ 2]$.

12.A)State and Prove Lagrange's Mean-Value theorem.

OR

B)Verify Cauchy's Mean-Value Theorem for the function $f(x) = x^2$, $g(x) = x^3$ in (1,2).

13.A) Prove that $f(x) = x^2$ is Integrable on $[0, a]$ and $\int_0^a x^2\, dx = \frac{a^3}{3}$

OR

B) State and Prove Fundamental theorem in Riemann Integration

SRI RAMAKRISHNA DEGREE(AUTONOMOUS) COLLEGE: NANDYAL
B.Sc. SECOND YEAR MATHEMATICS SYLLABUS (2021-2022)
SEMESTER – IV, PAPER - 5

LINEAR ALGEBRA-5

Course Outcomes:

After successful completion of this course, the student will be able to;

1. understand the concepts of vector spaces, subspaces, basises, dimension and their properties
2. understand the concepts of linear transformations and their properties
3. apply Cayley- Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods
4. learn the properties of inner product spaces and determine orthogonality in inner product spaces.

Course Syllabus:

UNIT – I (12 Hours)

VECTOR SPACES-I:

Vector Spaces, General properties of vector spaces, n-dimensional Vectors, addition and scalar multiplication of Vectors, internal and external composition, Null space, Vector subspaces, Algebra of subspaces, Linear Sum of two subspaces, linear combination of Vectors, Linear span Linear independence and Linear dependence of Vectors.

UNIT –II (12 Hours)

VECTOR SPACES-II:

Basis of Vector space, Finite dimensional Vector spaces, basis extension, co-ordinates, Dimension of aVector space, Dimension of a subspace, Quotient space and Dimension of Quotient space.

UNIT –III (12 Hours)

LINEAR TRANSFORMATIONS:

Linear transformations, linear operators, Properties of L.T, sum and product of LTs, Algebra of Linear Operators, Range and null space of linear transformation, Rank and Nullity of linear transformations – Rank – Nullity Theorem.

UNIT –IV (12 Hours)

MATRIX :

Matrices, Elementary Properties of Matrices, Inverse Matrices, Rank of Matrix, Linear Equations, Characteristic equations, Characteristic Values & Vectors of square matrix, Cayley – Hamilton Theorem.

UNIT –V (12 Hours)

INNER PRODUCT SPACE :

Inner product spaces, Euclidean and unitary spaces, Norm or length of a Vector, Schwartz inequality, Triangle Inequality, Parallelogram law, Orthogonality, Orthonormal set, complete orthonormal set, Gram
– Schmidt orthogonalisation process. Bessel's inequality and Parseval's Identity.

Co-Curricular Activities(15 Hours)

Seminar/ Quiz/ Assignments/ Linear algebra and its applications / Problem Solving.

Text Book:

Linear Algebra by J.N. Sharma and A.R. Vasista, published by Krishna Prakashan Mandir, Meerut- 250002.

Reference Books :

1. Matrices by Shanti Narayana, published by S.Chand Publications.
2. Linear Algebra by Kenneth Hoffman and Ray Kunze, published by Pearson Education (low priced edition),New Delhi.
3. Linear Algebra by Stephen H. Friedberg et. al. published by Prentice Hall of India Pvt. Ltd.4^{th} Edition, 2007.

SRI RAMAKRISHNA DEGREE (AUTONOMOUS) COLLEGE::NANDYAL
PART-II : MATHEMATICS
FOURTH SEMESTER END EXAMINATIONS
PAPER-IV – LINEAR ALGEBRA

Time:3 Hrs **Max.Marks:70M**

SECTION-A

I Answer ANY FIVE of the following **5x4=20M**

1.If S is a Non empty Subset of Vector Space V(F) Then Prove that $L(S)$ is a Subspace

2.Prove that the Set $S = \{(2,1,1,1)(1,3,1,-2)(1,2,-1,3)\}$ is linearly Independent

3.State and Prove Existence Theorem

4.Show that the mapping T:$V_3(R) \to V_2(R)$ is defined by$T(x,y,z) = (x-y, x-z)$is a linear Transformation

5.Find the Characteristic equation of the matrix $A = \begin{bmatrix} 3 & 1 & 1 \\ 2 & 4 & 2 \\ 1 & 1 & 3 \end{bmatrix}$

6.If α, β are two vectors in a Unitary Space Prove That

$$\|\alpha+\beta\|^2 - \|\alpha-\beta\|^2 = 2\|\alpha\|^2 + \|\beta\|^2$$

7.Ifα, β are two Vectors in an inner product Space $V(F)$ then Prove that

$$\|\alpha+\beta\| \leq \|\alpha\| + \|\beta\|$$

8.Prove that $S = \left\{\left(\frac{1}{3}, \frac{-2}{3}, \frac{-2}{3}\right)\left(\frac{2}{3}, \frac{-1}{3}, \frac{2}{3}\right)\left(\frac{2}{3}, \frac{2}{3}, \frac{-1}{3}\right)\right\}$ forms an Orthonormal Set in $V_3(R)$

SECTION-B

I Answer ANY FIVE of the following 5x10=50M

9.The Necessary and Sufficient Condition for a Non empty SubSet W of Vector Space $V(F)$to be a Sub Space is $a, b \in F \ and \ \alpha, \beta \in W \Rightarrow a\alpha + b\beta \in W$

OR

Express the Vector $\alpha = (1. -2.5)$ as a linear Combination of the Vectors $e_1 = (1,1,1), e_2 = (1,2,3), e_3 = (2,-1,1)$

10. If$W_1 \ and \ W_2$ are two Sub Spaces of a finite dimensional Vector Space V(F) Then Show that $dim(W_1 + W_2) = dim(W_1) + dim(W_2) - dim(W_1 \cap W_2)$

OR

If$V(F)$ is a Finite Dimensional Vector Space and W is a Sub Space of $V(F)$ then Show that $dim\left(\frac{V}{W}\right) = dimV - dimW$

11.Find $T(x, y, z)$ where $T: V_3 \to V_3$ is defined By $T(0,1,2) = (3,1,2)$ and $T(1,1,1) = (2,2,2)$

OR

State and Prove Rank –Nullity Theorem

12.Find the Characteristic Values and Characteristic Vectors of the matrix

$$A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$$

OR

By using Cayley-Hamilton Theorem find inverse of the Matrix $A =$

$$\begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$$

13.State and Prove Cauchy's-Schwarz's Inequality

OR

Apply Gram Schmidt Process Obtain an Orthonormal Basis of $R^3(R)$ from the basis$\{(1,0,0), (1,1,0), (1,1,1)\}$

512-B1

II Year B.Sc.-Physics: IV Semester

Course-IV: ELECTRICITY, MAGNETISM AND ELECTRONICS

UNIT-I

1. Electrostatics:

Gauss's law-Statement and its proof, Electric field intensity due to (i) uniformly charged solid sphere and (ii) an infinite conducting sheet of charge, Deduction of Coulomb's law from Gauss law, Electrical potential, Equipotential surfaces, Potential due to a (i) dipole (ii)uniformly charged sphere

2.Dielectrics:

Dielectrics-Polar and Non-polar dielectrics- Effect of electric field on dielectrics, Dielectric strength, Capacitance of a parallel plate condenser with dielectric slab between the plates, Electric displacement D, electric polarization P, Relation between D, E and P, Dielectricconstant and electric susceptibility.

UNIT-II

3.Magnetostatics:

Biot-Savart's law and its applications: (i) circular loop and (ii) solenoid, Divergence and curl of magnetic field, Ampere's Circuital Law and its application to Solenoid, Hall effect, determination of Hall coefficient and applications.

4.Electromagnetic Induction:

Faraday's laws of electromagnetic induction, Lenz's law, Self induction and Mutual induction,Self inductance of a long solenoid, Mutual inductance of two coils, Energy stored in magnetic field, Eddy currents and Electromagnetic damping

UNIT-III

5.Alternating currents:

Alternating current - Relation between current and voltage in LR and CR circuits, Phasor and Vector diagrams, LCR series and parallel resonant circuit, Q –factor, Power in ac circuits, Power factor.

6.Electromagnetic waves-Maxwell's equations: Idea of displacement current, Maxwell's equations-Derivation, Maxwell's wave equation(with derivation),Transverse nature of electromagnetic waves, Poynting theorem(Statement and proof).

UNIT-IV

7. Basic Electronic devices:

PN junction diode, Zener diode and Light Emitting Diode (LED) and their I-V characteristics, Zener diode as a regulator- Transistors and its operation, CB, CE and CC configurations, Input and output characteristics of a transistor in CE mode, Relation between alpha, beta and gamma; Hybrid parameters, Determination of hybrid parameters from transistor characteristics; Transistor as an amplifier.

UNIT-V:

8. Digital Electronics:

Number systems, Conversion of binary to decimal system and vice versa, Binary addition & Binary subtraction (1's and 2's complement methods), Laws of Boolean algebra, De Morgan's laws-Statements and Proofs, Basic logic gates, NAND and NOR as universal gates, Exclusive-OR gate, Half adder and Full adder circuits.

512-B1

Physics Semester-IV

For Mathematics combinations

Paper-IV Electricity, Magnetism and Electronics

Time: 3 Hours Max. Marks: 70

SECTION-A

Answer any **FIVE** questions 5 x 4=20 Marks

1. Deduce Coulomb's law from Gauss law.
2. Define dielectric polarization and dielectric constant.
3. Explain Hall effect and obtain expression for Hall voltage.
4. Derive an expression for the energy stored in magnetic field.
5. Derive an expression for the power in an A.C. circuit.
6. Write down the Maxwell's equations in differential form.
7. Explain how the transistor works as an amplifier.
8. Convert the following:
   (a) $(56)_{10}$ to binary number and (b) $(101101)_2$ to a decimal number.

SECTION-B

Answer **ALL** the questions 5 x 10=50 Marks

9. (a) State and explain Gauss's law in electrostatics.

   OR

   (b) Define **D**, **E** and **P** and obtain the relation between them.
10. (a) Derive an expression for magnetic induction at any point on the axis of a circular current loop.

    OR

    (b) Define Self inductance and derive an expression self inductance of a solenoid.
11. (a) Discuss the theory of LCR series resonance circuit.

    OR

    (b)What is Poynting vector? Derive an expression for Poynting vector using Maxwell's equations.

12. (a) Describe the construction, working and I-V characteristics of p-n junction diode.

    OR

    (c) Explain how the Zener diode can be used as a voltage regulator.
13. (a) State and prove De Morgan's theorems.

    OR

    (b) Show that NAND and NOR gates act aa universal gates.

B.Sc. PHYSICS SYLLABUS UNDER CBCS
For Mathematics Combinations
II Year B.Sc.-Physics: V
MODERN PHYSICS

UNIT-I :

Atomic and Molecular Physics:(12 hrs)

Vector atom model and Stern-Gerlach experiment, Quantum numbers associated with it, Angular momentum of the atom, Coupling schemes, Spectral terms and spectral notations, Selection rules, Intensity rules, Fine structure of Sodium D-lines, Zeeman effect, Experimental arrangement to study Zeeman effect.

Raman effect, Characteristics of Raman effect, Experimental arrangement to study Raman effect, Quantum theory of Raman effect, Applications of Raman effect.

UNIT-II:

Matter waves & Uncertainty Principle:(12 hrs) Matter waves, de Broglie's hypothesis, Wave length of matter waves, Properties of matter waves, Davisson and Germer's experiment, Phase and group velocities, Heisenberg's uncertainty principle for position and momentum& energy and time, Illustration of uncertainty principle using diffraction of beam of electrons (Diffraction by a single slit)and photons(Gamma ray microscope),Bohr's principle of complementarily.

UNIT-III:

Quantum (Wave) Mechanics:(12 hrs)

Basic postulates of quantum mechanics, Schrodinger time independent and time dependent wave equations-Derivations, Physical interpretation of wave function, Eigen functions, Eigen values, Application of Schrodinger wave equation to (i) one dimensional potential box of infinite height(Infinite Potential Well) and (ii) one dimensional harmonic oscillator

UNIT-IV:

Nuclear Physics:(12 hrs)

Nuclear Structure: General Properties of Nuclei, Mass defect, Binding energy; *Nuclear forces*: Characteristics of nuclear forces- Yukawa's meson theory; *Nuclear Models*: Liquid drop model, The Shell model, Magic numbers; *Nuclear Radiation detectors*: G.M. Counter, Cloud chamber, Solid State detector; *Elementary Particles*: Elementary Particles and their classification

UNIT-V:

Nano materials:(7hrs)

Nano materials – Introduction, Electron confinement, Size effect, Surface to volume ratio, Classification of nano materials– (0D, 1D, 2D); Quantum dots, Nano wires, Fullerene, CNT, Graphene (Mention of structures and properties),Distinct properties of nano materials (Mention-*mechanical, optical, electrical, and magnetic properties*); Mention of applications of nano materials: (*Fuel cells,Phosphors for HD TV, Next Generation Computer chips, elimination of pollutants, sensors*)

Superconductivity:(5 hrs)

Introduction to Superconductivity, Experimental results-critical temperature, critical magnetic field, Meissner effect , Isotope effect, Type I and Type II superconductors, BCS theory (elementary ideas only),Applications of superconductors

SEMESTER-IV

MODEL PAPER

MODERN PHYSICS – PAPER-V

SECTION -A

Answer any FIVE questions **5x4M=20M**

1. Discuss about L-S and J-J coupling schemes.
2. Describe the characteristics of Raman Effect.
3. Explain the Heisenberg's Uncertainty principle.
4. Determine the wavelength of matter waves.
5. Explain about Eigen functions and Eigen values.
6. Discuss the characteristics of Nuclear forces.
7. Explain the various applications of Nano materials.
8. Discuss isotope effect on superconductors.

SECTION -B

Answer all questions **5x10M=50M**

9. A) Explain various quantum numbers associated with vector atom model.

OR

B) What is Raman Effect? Explain its necessary experiment.

10. A) Discuss about Davisson and Germer's experiment about electron diffraction.

OR

B) Define Heisenberg Uncertainty principle. Verify Uncertainty principle with Gamma ray microscope.

11. A) Derive Schrodinger's time-independent wave equation.

OR

B) Discuss the energy levels of particles in one dimensional infinite potential box by using Schrodinger equation.

12. A) Explain about general properties of Nucleus.

OR

B) Explain about construction and working of cloud chamber.

13. A) Explain the classification of Nano materials.

OR

B) Explain type-1 and Type-2 superconductors.

SRI RAMAKRISHNA DEGREE COLLEGE(AUTONOMOUS)
II B.Sc; ELECTRONICS (SEMESTER-IV)
(2021-2022 Regulation)
PAPER-IV : MICROPROCESSOR SYSTEMS

UNIT -I: (12Hrs)

INTRODUCTION TO 8085

Evaluation of Microprocessor, INTEL-8085, Architecture-CPU, ALU, Register Organization, Address and data bus and control bus – Pin configuration of 8085 – Fetch and Execute Cycles – Addressing Modes.

UNIT -II: (12 Hrs)

INSTRUCTION SET OF 8085:

Data transfer Instruction, Logical Instructions, Arithmetic Instructions, Branch Instructions, Machine Control instructions.

UNIT -III: (12Hrs)

PROGRAMMING WITH 8085:

Assembly Language Programming using 8085, Programmes for Addition, Subtraction, Multiplication, Division, largest and smallest number in an array, **Ascending and descending order, BCD to ASCII and ASCII to BCD.**

UNIT -IV: (12Hrs)

INTRODUCTION TO 8086:

Architecture- Pin Description-Flag manipulation-Instruction set-Addressing modes-Basic 8086 configuration-Minimum mode and Maximum Mode.

UNIT -V: (12Hrs)

ARM PROCESSOR: Introduction to 16/32 bit processors, Arm architecture & organization, Arm based MCUs, Instruction set.

TEXT BOOKS:

1. Microprocessor Architecture, Programming and Applications with the 8085 – Penram International Publishing, Mumbai.- Ramesh S. Gaonakar
2. Microcomputer Systems the 8086/8088 family – YU-Cheng Liu and Glenn SA Gibson
3. Microcontrollers Architecture Programming, Interfacing and System Design– Raj Kamal Chapter: 15.1, 15.2, 15.3, 15.4.1
4. 8086 and 8088 Microprocessor by Tribel and Avatar Singh.

MICROPROCESSOR SYSTEMS

MODEL PAPER(522-B1)

PART-A

Answer any **FIVE** Questions 5x4M=20M

1. Explain the evolution of Microprocessors.
2. What are the interrupts of 8085 microprocessor?
3. What are the addressing modes of 8085?
4. Give a note on minimum and maximum modes of 8086.
5. Write an assembly language program for addition of two 8-bit numbers.
6. Explain the Pin Description of 8085.
7. Write a note on loop instructions of 8086.
8. What are the features of ARM processors?

PART-B

Answer **ALL** Questions 5x10M=50M

9. Explain the Architecture of 8085.

   Or

   Explain the Register Organization of 8085.

10. Explain the Arithmetic and Data transfer group instructions of 8085 with examples.

    Or

    Write an ALP to find the largest Number from data array.

11. Explain the Flag-Register of 8085 with examples.

    Or

    Explain the Architecture of 8086.

12. Explain Pin Description of 8086.

    Or

    Explain Loop instructions and rotate instructions of 8086.

13. Explain the Architecture of ARM processor.

    Or

    Explain ARM based MCUs.

SRI RAMAKRISHNA DEGREE COLLEGE (AUTONOMOUS)
II B.Sc; ELECTRONICS (SEMESTER-IV)
(2021-2022 Regulation)
PAPER-V : MICROCONTROLLER AND INTERFACING

UNIT-I: (10Hrs) :**INTRODUCTION TO 8051**:
Introduction, comparison of Microprocessor and micro controller, Evolution of microcontrollers from 4-bit to 32 bit, Development tools for micro controllers, Assembler-Compiler-Simulator/Debugger.

UNIT -II: (10Hrs): **8051 ARCHITECTURE:**

Overview and block diagram of 8051, Architecture of 8051, program counter and memory organization, Data types and directives, PSW register, Register banks and stack, pin diagram of 8051, Interrupts and timers.

UNIT-III:(10Hrs): **ADDRESSING MODES AND INSTRUCTION SET:**

Addressing modes and accessing memory using various addressing modes, instruction set: Arithmetic, Logical, Simple bit, jump, loop and call instructions and their usage. Timer/Counter Programming.

UNIT-IV : (15Hrs) : **PROGRAMMING WITH 8051:**
Assemble language programming Examples: Addition, Multiplication, Subtraction, division, arranging a given set of numbers in largest/smallest order, **ascending and descending order of an given array.**

UNIT-V: (15Hrs) : **INTERFACING AND APPLICATION OF 8051:**

Interfacing of – PPI 8255, interfacing seven segment displays, displaying information on a LCD, control of a stepper Motor (Uni-Polar)- **interfacing of ADC and DAC.**

TEXT BOOKS:

1. The 8051 microcontroller and embedded systems using assembly and c-kennet j. Ayalam, Dhananjay V. gadre, cengage publishers
2.The 8051 microcontrollers and Embedded systems - By Muhammad Ali Mazidi and Janice Gillispie Mazidi – Pearson Education Asia, 4th Reprint, 2002.

MICRO CONTROLLER AND INTERFACING

MODEL PAPER (522-B2)

Section – A

Answer any **FIVE** of the following: 5x4M=20M

1. Distinguish between Microprocessor and Microcontroller.
2. Write about evaluation of Microcontroller.
3. Explain about Program Status Word.
4. Write about Memory Organization of 8051.
5. Define the following.
   (i). PUSH & POP. (ii). CJNE
6. Explain Instruction Format of 8051.
7. Write an ALP for Division of Two 8-bit numbers using Microcontroller.
8. Draw & Explain the pin diagram of PPI 8255.

Section - B

Answer any **ALL** of the following: 5x10=50M

9. What are the programming development tools for microcontroller and explain.

   or

   Explain about data types and directives.

10. Draw & Explain Block diagram of 8051 Microcontroller.

    or

    Explain pin diagram of 8051.

11. Explain the addressing modes of 8051 with the help of examples.

    or

    Explain the following instructions with an example.

    (i) RRL A (ii) DA A (iii) SWAP A (iv) MUL AB

12. Write an ALP to find the smallest number from the given data using 8051Microcontroller.

    or

    Write an ALP to arrange an array of numbers in both ascending and Descending orders.

13. Draw & Explain the interfacing of LCD module to 8051 Microcontroller.

    or

    Explain interfacing of Stepper Motor with 8051 Microcontroller.