Discuss the connectedness of the interval: 

\[(0,1) \] is connected (p).

Give an example of an unconnected metric space:

\[ (0,1) \cup (2,3) \] is unconnected (q).

Describe the open sphere \( S_2(x, r) \) for \( x \in \mathbb{R}^2 \).

\[ S_2(x, r) = \{ y \in \mathbb{R}^2 : \| y-x \| < r \} \]

Let \( X = \mathbb{R}^2 \) and metric \( d \) is Euclidean on \( \mathbb{R}^2 \).

Prove that a metric space \( (X, d) \) is connected if and only if it has Bolzano-Weierstrass Property.

Prove that a continuous image of a connected space is connected.

Let \( f \) be a function of \( (X, d) \) into \( (Y, d') \). Then \( f \) is continuous if and only if \( f^{-1}(C) \) is open in \( X \) whenever \( C \) is open in \( Y \).

Prove that a compact subset of a metric space is closed and bounded.

Section 1

(1) Prove that \( f \) is continuous if and only if it is continuous on \( (X, d) \) is compact if and only if \( f^{-1}(C) \) is open in \( X \) whenever \( C \) is open in \( Y \).

(2) Let \( f \) be a function of \( (X, d) \) into \( (Y, d') \). Then \( f \) is continuous if and only if \( f^{-1}(C) \) is open in \( X \) whenever \( C \) is open in \( Y \).

(3) Prove that a compact subset of a metric space is closed and bounded.

(4) Prove that a continuous image of a connected space is connected.

(5) Prove that a metric space \( (X, d) \) is connected if and only if it has Bolzano-Weierstrass Property.

(6) Discuss the connectedness of the interval: 

\[(0,1) \] is connected (p).

(7) Give an example of an unconnected metric space:

\[ (0,1) \cup (2,3) \] is unconnected (q).

(8) Describe the open sphere \( S_2(x, r) \) for \( x \in \mathbb{R}^2 \).

\[ S_2(x, r) = \{ y \in \mathbb{R}^2 : \| y-x \| < r \} \]
Chapter I

Section I

Answer

of infinite number of open sets. Prove your
finite number of open sets is open, i.e., the intersection
of in metric space, the intersection of a

\[ \frac{(\lambda x)p + 1}{\lambda x} = (\lambda x)p \]

(a)

Prove that in a bounded metric space, a bounded set of

Section III

\[ \frac{1}{\lambda x} \left[ 1 - e^{+1} \right] \frac{0}{\lambda x} \left[ 1 + e^{-1} \right] \frac{d}{\lambda x} \int_{\lambda x}^{\infty} \]

(b)

Prove that

\[ \frac{x (e^x + 1)}{\lambda x} \frac{0}{\lambda x} \frac{d}{\lambda x} \int_{\lambda x}^{\infty} \]

(c)

Discuss the convergence of the integral.

(d)

Examine the convergence of the integral.

(e)

Chapter II

Section II

(a)

Prove that \( f \) and \( g \) are two integrable functions

on \([a, b]\), then \( f + g \) is integrable on \([a, b]\).

(b)

Prove that \( f \) is differentiable on \([a, b]\).

(c)

Let \( F \), where \( F'(x) = f(x) \),

\[ \int_{a}^{b} f(x) \, dx = F(b) - F(a) \]

(d)

Chapter III

Section III

(a)

Discuss the convergence of the integral.

(b)

Prove that \( \int_{a}^{b} f(x) \, dx = F(b) - F(a) \), where \( F \) is a continuous function.

(c)

\[ \int_{a}^{b} f(x) \, dx = F(b) - F(a) \]

(d)
polynomial need not be an irreducible element.

(e) Show with the help of an example that an irreducible ideal of the ring of integers is not an ideal.

(d) Show that the ideal \( S = \{ a \in \mathbb{Z} : a \equiv 3 \mod{6} \} \) is not a prime ideal of \( \mathbb{Z} \).

(c) Every element of \( R' \) is a sum of homomorphism.

(b) Prove that every automorphism corresponding to \( \alpha \) is the identity element of order 2. Prove that every abelian group \( G \) is abelian if every element of \( G \) is abelian.

(Cumulative Question)

From each section, Q. No. 1 is compulsory.

Note: Attempt five questions in all, selecting one question from each section.

Maximum Marks: 40

[Time: Three Hours]

Groups and Rings

Mathematics

1157

Total Pages: 03
Section II

Let \( R \) be a ring that is not an integral domain. Then show that \( R \) is a prime ideal.

Let \( R \) be a commutative ring and \( S \) be an ideal of \( R \). Then show that \( R \) is a simple ring.

Define a simple ring and show that a division ring is a field.

Prove that the characteristic of an integral domain is either zero or a prime number.

Section III

Find the center of permutation group \( S_3 \).

Prove that the center of a non-abelian group of order 4.

Prove that the set \( \langle g \rangle \) of all inner automorphisms of a group is a normal subgroup of the group.

Prove that \( H \) and \( K \) are subgroups of a group \( G \) and \( H \) and \( K \) are subgroups of \( G \) then \( H \cap K \) is also a subgroup of \( G \).

Section I

(a) Show that \( f(x) = x^3 + x + 1 \) is irreducible over \( \mathbb{Z}_2 \).

(b) Zero elements have a gcd and lcm.

(c) In a unique factorization domain, every pair of non-

maximal ideals is generated by some prime element.

(d) Prove that if \( I \) is an ideal of \( \mathbb{Z} \) of an Euclidean ring \( R \) is
2. Find the lowest degree polynomial which satisfies the following values:

\[ f(1) = 0, \quad f(2) = 3, \quad f(3) = 4, \quad f(4) = 5 \]

Section 1

(i) State Simpson's one-third quadrature formula.

(ii) State Gauss's forward interpolation formula.

Prove that:

(iii) Define Binomial distribution.

(Compulsory Question)

From each Section 0, 1, 2, 3 is compulsory.

Note: Attempt five questions in all, selecting one question from each section.

Maximum Marks: 20

Time: Three Hours

BM-333

NUMERICAL ANALYSIS

16

6. Consider the matrix:

\[
\begin{bmatrix}
1 & x \\
\frac{1}{2} & \frac{1}{2} \\
\frac{x}{2} & 1
\end{bmatrix}
\]

(a) Find the eigenvalues of the matrix.

(b) Find the eigenvectors of the matrix.

(c) Use the given values of the matrix and the method of finding the third approximation.

2 (b) Find the second approximation of the following polynomial.

\[ z = 0.007 \]

2 (c) Find the third approximation of the following polynomial.

\[ z = 0.007 \]

2 (d) Find the fourth approximation of the following polynomial.

\[ z = 0.007 \]

2 (e) Find the fifth approximation of the following polynomial.

\[ z = 0.007 \]
\[
\begin{bmatrix}
3 & 0 & 0 \\
0 & 7 & 1 \\
1 & 9 & 1
\end{bmatrix}
\]

(a) Find the eigenvalues and the corresponding eigenvector of the matrix.

\( \lambda = 4, 0, 0 \)

(b) Using power method, find the largest eigenvalue.

\[
\begin{array}{c|c}
\text{Iteration} & \text{Value} \\
\hline
0 & 2.00 \\
1 & 2.4320 \\
2 & 1.6 \\
3 & 0.9440 \\
4 & 1.2 \\
5 & 0.9820 \\
6 & 1.000 \\
\end{array}
\]

(c) Explain below at the point \( x = 1.1 \): 

\( f(x) = \frac{d}{dx} f(x) \)

6. Find the first derivative of the function \( f(x) \).

\( f(x) = x \)

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f(x) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2028</td>
<td>13</td>
</tr>
<tr>
<td>1210</td>
<td>11</td>
</tr>
<tr>
<td>0.96</td>
<td>10</td>
</tr>
<tr>
<td>0.94</td>
<td>1</td>
</tr>
<tr>
<td>0.98</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

By means of Newton's divided difference formula, find the value of \( f(0.7) \), and also the values of \( f(x) \) for \( x = 0.5, 0.7, 0.9, 1 \). Given as \( f(0.7) = \) ?

7. If \( f(x) \) is a Poisson distribution variable such that:

\( (1-x)p = x \)

\( x \geq 0 \)

8. Find the deviation \( \delta \): Find the probability that if \( x \) be the normal variable with mean \( \mu \) and standard deviation \( \sigma \), find \( \delta = x \sigma \) and \( \delta = x \mu \) such that:

\[
(1-x)p = x
\]

9. If \( x \) is a Poisson distribution variable such that:

\( (1-x)p = x \)

\( x \geq 0 \)

10. Find the value of \( f(x) \) for values of \( x \) are given in the following table:

\( f(0.7) = ? \)

11. Given as \( f(0.7) = \) ?

12. Find the value of \( f(x) \) for values of \( x \) are:

\( f(0.7) = ? \)

13. Find the deviation \( \delta \): Find the probability that if \( x \) be the normal variable with mean \( \mu \) and standard deviation \( \sigma \), find \( \delta = x \sigma \) and \( \delta = x \mu \) such that:

\[
(1-x)p = x
\]

14. If \( x \) is a Poisson distribution variable such that:

\( (1-x)p = x \)

\( x \geq 0 \)

15. Find the value of \( f(x) \) for values of \( x \) are given in the following table:

\( f(0.7) = ? \)

16. Given as \( f(0.7) = \) ?

17. Find the value of \( f(x) \) for values of \( x \) are:
1. Attempt any four of the following:

(Question)

Equal marks. Non-programmable calculator is allowed.

Select one question from each unit. All questions carry

Note: Attempt five questions in all. 0 No is compulsory

Maximum Marks: 40

Time: Three Hours

Quantum Mechanics and Laser Physics

Paper: IX

PHYSICS

GS/Q-16

1911

Roll No: 09
Unit I

2. What are the advantages of semiconductor lasers?

3. What is the expression for threshold junction current density in a semiconductor laser?

4. Design a potential box for a particle in a square well. Apply Schrödinger wave equation to obtain energy eigenvalue and wave function for a particle in a square well. What does it mean to be at the boundary in quantum mechanics?

Unit II

2. What is the high value of temporal and spatial coherence? What is the meaning of coherence? Show that a laser source is a coherent source.

3. Discuss the main components of a laser using Raman scattering.

4. Apply uncertainty principle to explain non-existence of point-like electron. Discuss the experimental verification of uncertainty principle using X-ray microscope.

Unit III

2. Calculate the energy states for a ball of mass 10 kg and potential 0.8 V. What do you mean by step potential? Solve Schrödinger wave equation for a particle in a step potential. Find the kinetic energy of the photon is 2.0 eV and the kinetic energy of the common scattered if the wavelength of scattered light is 500 nm. Find the angle of scattering in terms of scattering angle of photons. Design an expression for Raman scattering effect and difference between photoelectrical effect and photoelectric effect.
UNIT

1. Explain the concept of chain reaction.
   (d)

2. What did dead time and recovery time mean?
   (e)

3. What do you mean by internal conversion?
   (f)

4. Give information about the shape of nucleus.
   (a)

5. What is electric quadrupole moment? How does it change in allowed question?

Questions carry equal marks. Non-programmable
question from each Unit. Q. No. 1 is compulsory. All
question from each Unit. Q. No. 1 is compulsory. Adequate
Note: Attempt Five questions in all, selecting at least one

Maximum Marks : 40

Time : Three Hours

Paper : X

NUCLEAR PHYSICS

1162

GSO/D-16

Roll No. : 03

Total Pages : 03
\[ L_{\text{III}} \]

7. Describe the principles and working of a Geiger-Müller counter. Mention its use.

8. While passing through matter, a- and \( \beta \)-particles lose energy. Explain how.

9. What is the role of oscillating magnetic field in the working of a Geiger-Müller counter?

\[ L_{\text{IV}} \]

10. Define Q-value of a nuclear reaction. Derive an expression for mass defect.

11. Find Q-value and kinetic energies of the products in the reaction

\[ n + \text{C} = \text{He} + \gamma \]

12. Explain the energy carried by a particle and daughter nucleus.

13. When is Q-decay? Discuss energetics of Q-decay.

\[ L_{\text{V}} \]

14. Find the total multiplication factor. Secondary emission factor of these of these dipoles = 4, then

\[ 3 = 1.0 \times \text{multiplication factor} \]

(b) If a photo-multiplier tube has 10 dipoles and
Section A

1. Term of a particular electronic configuration.
2. When are rules which help us to identify the ground complexes?
3. What do you mean by labile complexes and inert complexes are always high spin? Why inerted?
4. When are crystal field spliting? Why lanthanides.

Questions from each section. Note: 1. All is compulsory

Note: Attempt five questions in all selecting at least one from

Maximum Marks: 55
Time: Three Hours

Paper XY (CH-301)
INORGANIC CHEMISTRY
1163
GSD/D-16
Total Pages: 02
Section A

1. Explain Gouy's method for measuring malleable.

2. Define malleable susceptibility. How does it vary?

3. Explain paramagnetism and antiferromagnetism.

Section B

3. Discuss the various hypotheses put forward to explain susceptibility.

6. Explain the various thermodynamic and kinetic hypotheses put forward to explain the various hypotheses put forward to explain susceptibility.

8. Describe the Dirac equation for magnetic moment.


3. Explain the phenomenon of orbital contribution to magnetic moment.

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3. Explain the phenomenon of orbital contribution to magnetic moment.
and quantum mechanics.

2. (a) Give the difference between classical mechanics

Section A

10 × 8

(i) Define Additive Property.
(ii) Explain Wave-Particle Separation.
(iii) Define Force constant.
(iv) Define Magnetic Induction.
(v) Which is the unit of dipole moment?
(vi) Define Spin operation.
(vii) Be unacceptable.

What are the conditions for a wave function y = 0

(i) Where is classical mechanics?

Compulsory Question

B.

Select two questions each from Section A and Section B.

Note: Attempt Five questions in all. 0 No. 1 is Compulsory.

Paper X VI (CH-302) (Theory)

Physical Chemistry

IIIA

GSO/D-16

Roll No. 04

Total Pages: 04

(e) Discuss the experimental set up of Raman

2

exponential factor

2

(b) Discuss the intensity of rotational spectra with

2

reference to the degeneracy factor and Boltzmann

2

from IR spectra of molecules.
2 Explain Raman effect.

1 Approximation. Explain approximation.

3 What do you know about Born-Oppenheimer approximation? Also draw its PE curve. For energy of vibrational levels on an harmonic oscillator, write the equation. Why a diatomic molecule should be considered an harmonic oscillator.

8. (a) Selection rules. (iii) Resonance power. (iv) Signal to noise ratio.

7. Write notes on the following:

3. Fundamental vibrational frequency is 2358 cm⁻¹. Given that the molecule of mass 2.5 x 10⁻² g, the bond moment of inertia of 6 x 10⁻²7 kg m². Given that the bond moment of inertia is 2.3 x 10⁻²7 kg m², obtain the bond moment of inertia. Given that the bond moment of inertia is 2.3 x 10⁻²7 kg m², explain what type of Raman spectrum would be expected for a diatomic molecule.

6. (a) Define a bond moment. (b) Define dipole moment. (c) Discuss the dipole moment of molecules. (d) Discuss the dipole moment of molecules in covalent bond.

5. Magnitude, justifying. (a) Molar heat capacity of solids, derived from, 3R, in 1°C.

4. (a) Explain the Lewis-Ellis rule and Lewis-Ellis function. (b) Discuss the electronic configurations. (c) Discuss the problem of quantum mechanics. (d) Discuss the problem of quantum mechanics.

2 Write a note on Compton effect.

3 Quantum mechanics is based on the wave-particle duality. Describe the equation in the usual form.
(a) Primary alcohol from GR with the same number of carbon atoms as in alkyl group of GR.

(b) Organic compounds are less reactive than their inorganic counterparts.

(c) Which type of radiation is used in NMR spectroscopy?

(d) The -CH₂-CH₂-O-CH₂-CH₂-O- group is present in:

(i) Polyethylene glycol
(ii) Cellulose
(iii) Starch
(iv) Cellulose acetate
(v) Polyvinyl alcohol

(e) Which of these is an example of a functional group?

(i) Sulfonic acid
(ii) Amine
(iii) Ketone
(iv) Alcohol
(v) Ether

(f) How will you prepare the following from (a) primary alcohol.

(i) Aldehyde

(ii) Acid

(iii) Ether

(iv) Sulfonic acid

(v) Ether

(vi) Alcohol

2. Give one method of preparation of each of the following:

(a) Methyl bromide.

(b) Dibromoethane.

(c) 2-Methyl-2-butene.

(d) Ethanol.
Section A

2. (a) Why are acidic protons more shielded than basic protons? Explain.

(b) CH₃ - CH₂ - CH₃

(c) CH₃ - CH₂ - CH₂ - CH₃

3. Explain why it is reducing dichromate.

4. Explain why it is reducing dichromate.

Section B

4. (a) Explain Mulliken's in the PMR of the following compounds.

(b) CH₂ = CH₂ - CH₂ = CH₂

(c) CH₃ - CH₂ - CH₂ - CH₃

5. Why are acidic protons more shielded than basic protons? Explain.

(a) CH₃ - CH₂ - CH₃

(b) CH₃ - CH₂ - CH₂ - CH₃

(c) CH₂ = CH₂ - CH₂ = CH₂

6. Explain Mulliken's in the PMR of the following compounds.

(a) CH₃ - CH₂ - CH₂ - CH₃

(b) CH₂ = CH₂ - CH₂ = CH₂

(c) CH₃ - CH₂ - CH₃

7. Explain Mulliken's in the PMR of the following compounds.

(a) CH₃ - CH₂ - CH₂ - CH₃

(b) CH₂ = CH₂ - CH₂ = CH₂

(c) CH₃ - CH₂ - CH₃
Section A

(h) Photosynthetic Respiration
(e) Oxidative Phosphorylation
(f) Hydrolysis
(e) Cation
(d) Apoplastic movement
(c) Endomembrane
(b) Division
(a) Membrane

1. Define/explain the following:

Section B

8. Write briefly on the following:

(a) Photosynthesis
(b) Transpiration

7. Describe the mechanism of non-cyclic photophosphorylation

6. Write short notes on the following:

(a) Knock Analog
(b) ATPase

8. Write short notes on the following:

(a) NADPH and NADP
(b) Light reactions

5. Describe the mechanism of non-cyclic photophosphorylation in detail.

4. Discuss transpiration of organic solutes in plants. Describe the mechanism of stomatal opening.

3. Write a brief note on each of the following:

(a) Stomata
(b) Root hairs

2. Explain the various factors concerned with the ascent of sap in plants.

1. Define/explain the following:

(a) Phloem
(b) Xylem
(c) Meristematic tissues
(d) Issue of veins

8. Write short notes on the following:

(b) Seed germination
(c) Seed dormancy

4. 4 x 2 = 8
1. Define the biological cycle. Explain the nitrogen cycle in detail.

2. (i) Explain the ecological principle.
2. (ii) Ecological principles:
   (a) Tertiary levels
   (b) Explain the following:

3. Discuss the following characters of a population:
   (i) Density
   (ii) Distribution
   (iii) Age structure

4. Explain the following:
   (i) Competition
   (ii) Parasitism
   (iii) Soil fertility

5. Write notes on the following:
   (a) Importance of water in plants.
   (b) Explain the adaptations of plants shown towards

6. Write notes on the following:
   (a) Importance of ecology.

7. Write notes on the following:
   (a) Importance of ecology.
   (b) Importance of ecology.

8. Write notes on the following:
   (a) Importance of ecology.
   (b) Importance of ecology.

(2x8) 1-169

1. Importance of ecology.

(2x6) 1-169

2. Importance of ecology.

(2x8) 1-169

3. Importance of ecology.

(2x6) 1-169

4. Importance of ecology.

(2x8) 1-169

5. Importance of ecology.

(2x6) 1-169

6. Importance of ecology.

(2x8) 1-169

7. Importance of ecology.

(2x6) 1-169

8. Importance of ecology.

8. Explain biogeochemical cycles and acid rains.

7. Describe ex-situ conservation of biodiversity.

6. Describe growth curve. Describe two types of growth curve.

5. Desert ecosystems. Explain the importance of desert ecosystems.

4. Describe a perfect cycle. Why is it called a perfect cycle? Explain the carbon cycle. Why is it called a perfect cycle?

3. Ecological pyramids found in an ecosystem. What is ecological pyramid? Describe different types of ecological pyramids.

2. Discuss the effects of high altitude climate factor on animals.

1. Explain the following in brief:

(i) Population density
(ii) Anomalous migration
(iii) Endangered species
(iv) Carrying capacity
(v) Biogeochemical cycles
(vi) Ecotone
(vii) Primary productivity
(viii) Ecological equilibrium
(ix) Ecosystem

Note: Attempt five questions in all, selecting two questions from Section A and three questions from Section B. The answer should be in your own words except the diagram(s) wherever necessary.

Time: Three Hours

Environmental Biology
ZOOLOGY

GS0/D-16

II70
Section A

1. Discuss the mechanism to control the differentiation.
2. Give an account on cell differentiation.
3. Explain the process of regeneration in animals.
4. Give an account on regeneration in animals.
5. Explain the various types of genes.
6. Describe in detail the natural parthenogenesis.

Section B

Conceptual Question

1. Discuss the significance of biological species.
2. Explain the general characteristics of the species.
3. Write a note on ancestors of man.
4. Discuss the mechanism of reproductive isolation.
5. Write a brief note on homologous organs.
6. Write a note on spontaneous generation.
7. What are complementary links? Explain them with suitable examples.
8. Describe the theory of special creation.

Paper II

Biology

EVOLUTION AND DEVELOPMENT

96/D-16

Total Pages: 0
draw the timing diagram.

3. Discuss fetch and execution cycle of SUB instruction and

8

2. Discuss SAP-1 Architecture in detail.

Unit I

Explain implied addressing in SAP-II with example.

(d)

Explain RTC instruction of SAP-III with example.

(e)

Explain DAA instruction of 8085.

(f)

each state in SAP-I? Why?

4x2

I. (a) The positive clock edge occurs halfway through

Compulsory Question

Question from each Unit. Q. No. 1 is compulsory

Note: Attempt Five questions in all selecting at least one

Maximum Marks: 40

Time: Three Hours

Microprocessor Architecture and Programming-I

FIRST PAPER (Theory)

ELECTRONICS

GSE/D-16

1174

ROLL NO. 03

TOTAL PAGES: 03
Unit III

1. Write a program in assembly language for SAP-2

2. Discuss the memory reference instructions of SAP-2

3. Discuss the push and pop instructions in detail

4. What is the difference between stack and stack pointer?

5. Write a program that multiplies decimal numbers 8 and 12.

6. Why a program these bytes at address 3000H to 30FFH.

Suppose that 256 bytes of data are stored in memory

(p) Explain indirect instructions of SAP-2

(q) Explain push and pop instructions in detail

Unit II

8. Draw and discuss the architecture of 8085 microprocessor:

LDAX IP, SHLD address, STAX IP, LHI address

(p) Explain the following instructions:

(q) Explain fetch-execute overlap

Unit I

9. Draw and discuss the architecture of 8085 microprocessor:

LDAX IP, SHLD address, STAX IP, LHI address

(p) Explain the following instructions:

(q) Explain fetch-execute overlap
center power

amp circuit output power in the unmodulated

determine expression which reduces total power in the

Unit 1

(a) Define luminance, hue and saturation.

(b) Discuss bandwidth in terms of AM and FM.

(c) What is compatibility? Explain it.

(d) What is the highest frequency modulation carrier in 5 kHz.

(e) The highest frequency modulation carrier in a 100 kHz bandwidth is the

(f) How many AM broadcast stations can be

from each line? (No. 1 is compulsory)

Note: Attempt free questions in all sections one question

Maximum Marks: 40

Time: Three Hours

Electronic Communication
Paper II (Theory)

Electronics

1175

G50-D-16

TOTAL PAGES: 08

ROLL NO.: 03
Unit I

8. Generate and coloured TV.

9. Explain how luminance and colour difference signals are transmitted.

8. Draw and discuss block diagram of monochromatic TV.

Unit II

8. Are key odd?

9. Why number of lines in a TV system is important?

8. Discuss components of composite video signal in AM and FM circuits.

Unit III

8. What is progressive and interlaced scanning? Explain.

9. When is progressive and interlaced scanning used?

8. Frequency deviation from modulation index.

9. Define the terms:

8. FM expression for FM wave.

9. Define frequency modulation with neat and clean diagram.

8. Draw and explain the working of FM modulation.

9. Draw and explain the working of FM modulation.

8. Draw and explain the working of FM modulation.

9. Draw and explain the working of FM modulation.

8. The total power contained in an AM wave is 600
2. Define Database and give its components. Explain.

3. Explain functions of DBMS with advantages and disadvantages.


5. (a) Define Foreign Key

6. (a) Explain Physical and Conceptual data model.

Lecture II

Lecture III

(a) Write a note on DBA, its working and functions.

(b) Why is Data Independence?

(c) What is Database? Discuss types of databases.

(d) What is Mapping? Discuss three levels of schemes.

Note: Attempt five questions in all, selecting one question from each unit. Q. No. 1 is compulsory.

Paper 1

Fundamentals & Database

Computer Science

GS0/D-16

1176

TOTAL PAGES: 02
Unit I
8. Make a website of your choice consisting of Forms and Tables.
9. Explain tags for Images and Tables.

Unit II
8. What are the salient features of HTML?
7. What are the salient features of HTML?
6. Make a single web page for a college using different tags.
5. Write a story. Illustrate their procedure also.
4. What are key points to be considered while planning a

Unit III
8. Explain the following with examples: \( x^2 = 8(x+1)^2 = 5 \)
7. Explain the following with examples: \( x^2 = 8(x+1)^2 = 5 \)
6. Explain the following with examples: \( x^2 = 8(x+1)^2 = 5 \)
5. Explain the following with examples: \( x^2 = 8(x+1)^2 = 5 \)
4. Explain the following with examples: \( x^2 = 8(x+1)^2 = 5 \)
UNIT I

8. What is the History of HTML?

UNIT II

8. What are the main features of HTML?

6. Make a simple web page for a college using different tags.

8. Make a website of your choice consisting of Forms and Tables.

UNIT III

5. Define and illustrate their procedure also.

8. What is the difference between web publishing and web site?

8. Which are the key points to be considered while planning a Web Designing?
3. Explain the functions of DBMS with advantages and disadvantages.

2. Define Data and give its components.

8. Define Relational Model and its properties and operations.

Unit I

7. Discuss E-R diagrams. Explain concept using Inventory.


6. Explain physical and conceptual data model.

Unit III

4. Write two commands for each component of SQL.

5. When is data independence?

8. Explain three levels of schemas.

4. Write a note on DBMS its working and features.

Note: Attempt five questions in all selecting one from each Unit. No. 1 is compulsory.

Time: Three Hours

Maximum Marks: 85

Fundamentals of Database

Paper I

COMPUTER SCIENCE

1176

GSO/D-16
UNIT I

Define Indent.

(b) When do you mean by text wrap?

c) What is a pagebreak?

d) What is control palette?

e) What are the applications of DTP?

2. Define DTP. What are the applications of DTP?

COMPUTER APPLICATIONS

DESKTOP PUBLISHING

Paper 1

GSD/D-16

ROLL NO. ........................................

TOTAL PAGES : 03
Write the steps to add page numbers to a publication.

(b) Into a frame

When is a frame? Write the steps to import text

(c) Within a publication

Explain various steps to find and change a word in

(d) While the steps to open the story editor

What is a story editor? What are its advantages?

Link information

(e) Bring the clerk's

(f) Press Special

(g) Insert Objects

6. Write short notes on the following:

Unit II

and import a style.

5. Define styles. Explain various steps to create new styles

Delete box

Specify characters. Select characters and paragraph specifications

Paragraph. Explain various options of formatting in
I. Explain the following:

(Compulsory Question)

1. Local Class
2. Nested Class
3. This Pointer
4. Destructor
5. Base Class
6. Derived Class
7. Members
8. Static Members
9. Scope resolution operator
10. New operator
11. Delete operator

Note: Attempt five questions in all, selecting at least one question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

Total Marks: 40

[Maximum Marks: 40]

Programming Using C++
Unit IV

8. What is polymorphism? How many types of polymorphism are there? Explain with example. Write a program to implement binary operation overloading.

9. What is function overloading? Explain. Write a program in C++ to find area of different shapes.

8. Write a class with suitable examples. Also explain.

Unit III

8. Explain various overloaded I/O functions with example.

7. Write a constructor overloading. Explain with example.

4. (a) What is constructor? What is its use?

8. Explain various manipulators with example.

Unit II

8. Explain the static data member and member function.

8. Write a class with suitable examples.

3. (a) Explain the differences between class and structure programming in detail.

8. Explain various important features of object oriented programming.
2. What are the scopes of animal cell and tissue culture? Discuss.

8. What are the major advantages and disadvantages of animal tissue culture?

7. Write short notes on the following:

- Gene targeting
- Transfection
- Artificial Insemination
- Animal Cloning

6. How foreign genes can be cloned and expressed in animal cells? Discuss briefly.

5. Describe briefly:

- Vectors used in gene therapy
- Applications of transgenic animals
- Selectable markers
- Open culture
- Cell fusion methods
- In vitro culture of tissues

4. What are the different methods available for decontamination of animal tissue? Describe briefly.

Note: Attempt Q. No. 1 and Q. No. 2 and four others selecting two.

Maximum Marks: 40

Time: Three Hours

Paper XI

ANIMAL BIOTECHNOLOGY

1181

GS/D-16

ROLL NO. 02

TOTAL PAGES: 02
1. Write a note on the following:

- Cytogenetics
- Plant cell cultures
- Production of useful secondary metabolites through plant cell cultures

2. Write a brief account on biotransformation with examples.

3. Discuss the advantages of antibodies production in hybrid fusion products.

4. (a) What are the advantages and limitations of callus cultures?
   (b) What is the role of WR-F and B genes in plant tissue culture?
   (c) What is the main contribution of the scientists 'scooq' and 'miller' in plant tissue culture?
   (d) Define virilization.
   (e) Define transformation.
   (f) Define regeneration.

5. (a) Write a note on structural organisation of Ti plasmid.

(Compulsory Question)

Carry equal marks. Select two questions from each unit. All questions are compulsory.

Maximun Marks : 40

Note: Attempt Q. No. 1 (Compulsory) and four others.

Time: Three Hours
9. What are exceptions? Explain with an example.

8. Write a program for exception handling.

Unit IV

Inheritance

What does inheritance by multiple class mean? Explain.

Unit III

Virtual Functions

What are virtual functions? Explain.

Unit II

3. What is inline function? Explain it with an example.

2. What are classes in C++? Explain the difference between

1. Explain the following:

- Designations
- Preprocessor directives
- Unary Operator
- Binary Operator
- Static Member Function

(Compulsory Question)

Note: Attempt five questions in all sections at least one.

Time: Three Hours

Maximum Marks: 25

Programming in C++

Paper: I

Computer Science

OAS/D-16

11-97

Roll No.
mean ?

(i)

Would be appropriate.

(6)

List one of the cases where use of NULL value

(d)

Define meta-data.

(e)

Define database system.

Justify the statement.

(p)

Weak entities do not have their own key attributes.

(a)

Define foreign key.

(Compulsory Question)

Compulsory Q. No. 1. All questions carry equal marks.

Select one question from each unit in addition to

Note: Q. No. 1 is Compulsory. Attempt five questions in all.

Time: Three Hours

Maximum Marks: 40

B.Sc. 25

A. 22

Introduction to Database Systems

Paper: II

COMPUTER SCIENCE

1998

OGCA/D-16

Roll No. 03

Total Pages: 03
UNIT I

2. Discuss with example, the conventions for displaying an ER schema as an ER diagram.

3. Describe in brief basic concepts of Network Model.

4. Why is a relationship type?

5. What is a relationship type? Explain differences between a relationship instance and a relationship.

UNIT II

4. Explain with example, the major categories of data models.

5. Explain centralized and two-tier client/server architecture.

6. Discuss with example, the main characteristics of data models.

UNIT III

4. Discuss database approach.

5. Give example of sytems in which it may make sense to use traditional file processing instead of a database approach.

6. Discuss the advantages of each.

7. What are the different types of database end users?

8. Discuss the capabilities that should be provided by DBMS.

9. Example with following keys used in relational data model.

UNIT IV

2. Why is each considered a primary key?

3. Why is each considered a super key?

4. Why is each considered an alternative key?

5. Why is each considered a candidate key?

6. Why is each considered a secondary key?
Section A

Questions from each section.

Note: Attempt Five questions in all, selecting at least two.

Maximum Marks: 20

Time: Three Hours

Paper XVI (CH-302)

PHYSICAL CHEMISTRY

OGSA/D-16
Describe the rotational and vibrational spectra of the following molecules:

(a) HCl
(b) H₂O
(c) CO₂
(d) CH₄
(e) H₂S
(f) SO₂
(g) NO₂
(h) O₃

(iii) Explain the relationship between the rotational and vibrational states of a diatomic molecule.

(iv) Derive the expression for the moment of inertia of a diatomic molecule.

(v) Which diatomic molecule has the highest nuclear moment of inertia?

(vi) Calculate the moment of inertia of a diatomic molecule for a given nuclear distance.

Reading assignment:
- Chapter 5, Section 2, pages 123-124
- Chapter 6, Section 3, pages 130-131

Explain the following:
- The moment of inertia of molecules with different atomic masses.
- The effect of nuclear vibration on the rotational energy levels.

Section B

Sample problems:

1. Explain the bond length and moment of inertia of a diatomic molecule.
2. Calculate the moment of inertia of a diatomic molecule for a given nuclear distance.
3. Explain the relationship between the rotational and vibrational states of a diatomic molecule.
4. Derive the expression for the moment of inertia of a diatomic molecule.
I. Answer the following:

1. Explain the following:

(Compulsory Question)

Note: Attempt five questions in all sections at least one section.

Maximum Marks: 45

Time: Three Hours

Course No. 301
Dietetics
GSD/D-16

Roll No. 01

Total Pages: 04
7. Describe various symptoms, dietary modifications, dosages, and frequency of prescribed medications and nutrition therapy.

6. Explain the principles of dietary management, nutritional therapy, and medication adherence.

5. Describe the following:
   - Dosage and frequency of medication
   - Dietary restrictions
   - Dietary modifications

4. Discuss the nutritional needs and dietary modifications for patients who had undergone different types of surgery.


2. Write various objectives of diet therapy. Explain the principles of dietary management, nutritional therapy, and medication adherence.
2. What is body proportion? How would you select clothing.

I. Define fashion. Discuss principles of fashion.

Note: Attempt five questions in all. Select five questions.

Maximum Marks: 40

Time: Three Hours

Paper: 302

DESIGNING

ADVANCE APPAREL AND TEXTILE

GS0/D-16

ROLL NO: 01

TOTAL PAGES: 03
1. Write briefly on the following:

(a) Sources of fashion
(b) Dyes
(c) Print
(d) Resist
(e) Pigment Types

2. Discuss in detail the meaning and importance of textile design.

3. Explain the techniques used in hand printing.

4. Discuss in detail the factors influencing and relating to textile design.

5. While the classification of different dyes, mention the dyestuffs used for dying cotton fabrics.

6. Explain the different methods used in tie and dye to produce different effects.

7. Explain the techniques used in hand printing.

8. Define Print. Discuss any four printing problems with their remedies.

9. Write briefly on the following:

(Composers Questions)
I. Define the following:

1. Compulsory Question

Note: Attempt five questions in all, selecting two questions from each unit as well as compulsory question. Each question carries equal marks.

Paper 303

CHILDREN WITH SPECIAL NEEDS
EARLY CHILDHOOD EDUCATION AND

650/D-16

1216

Roll No. 03

Total Pages: 03
1. Explain the significance of welfare program mean for children with special needs.

2. Discuss the educational provisions for the children suffering from speech disorders.

3. What are the factors affecting the education of early childhood?

4. Explain the factors affecting the selection of indoor and outdoor equipment.

5. Discuss the Gandhian theory on nursery school education.

6. Explain the characteristics and needs of the children with special need.
Computer Question

Note: Attempt five questions in all, selecting two questions from each unit. No. 1 is compulsory. All questions carry equal marks.

Maximum Marks: 40

PAPER 304
HORSENG

1 Z 7

TOTAL PAGES: 03
2. Prepare any four types of commonly used symbols for house plans.

3. Describe various characteristics of glass and plastic for constructing a house.

4. How can you arrange loan for housing from cooperative banks?

5. What will you consider while selecting a site for a house?

6. Write down the role of aesthetics in house plan.

7. Plan the space a furniture for a bed room of high income families keeping in view the privacy.
16. Explain the purpose of `<marquee>` tag.

17. Give an example image with background color and link color in body. What are the attributes used for setting background color?

18. What is the purpose of `<bgsound>` tag?

19. Give an example from size, style, and color in the text. Explain what are the attributes used in `<font>` tag for setting.

### Question 1

Explain the Web Publishing Process.

### Question 3

What are the principles of Good Web Design? Explain.

### Question 6

Confuses. Briefly explain features of two popular search engines.

### Question 8

What is mean by Search Engine? Explain.

### Question 10

What is the purpose of proxy server?

### Question 12

Explain the working of Web Server.

### Question 14

Control & Give example.

### Question 16

How are multiple forms selected using select box?

### Question 18

What is use of copyright and research attribute in.`

### Question 20

What is purpose of `<iframe>` in body tag?

### Question 22

What DNS is converted into IP Address?

### Question 24

Briefly explain initial protocol version.

### Question 26

Questions carry equal marks. Indicate in addition to compulsory questions, select one question from each list. All questions are compulsory.

Note: Attempt five questions in all. Out of 10, 1 is compulsory

Maximum Marks: 80

Time: Three Hours

BCA-351

WEB DESIGNING FUNDAMENTALS

1230

BCA/D-16 Total Pages: 02
2. (a) Define Operating System. List out the various functions performed by an operating system.
(b) Explain the main functions of Kernel.

1. (a) Explain network operating system.
(b) Define system calls with example.
(c) What do you mean by CPU scheduling?
(d) What do you mean by deadlock prevention?
(e) Explain multithreading.
(f) What do you mean by thread?

Compulsory Question:

Note: Attempt five questions in all, selecting at least one question from each Unit. Q. No. 1 is compulsory.
Explain various page replacement policies.

Explain the concept of fragmentation. Explain the
advantages and disadvantages of fragmentation.

Explain various methods to handle
deadlock. What is deadlock avoidance? How can you avoid
prevention. Distinguish between deadlock avoidance and deadlock

Explain various methods for handling deadlock.
necessary and sufficient conditions for deadlock.

What do you mean by deadlock? Explain the

Define dispatcher. Explain its need with example.

Preemptive scheduling.

Distinguish between preemptive and non-

Explain various types of

What is scheduler? Explain various scheduling

Define non-preemptive scheduling. Explain various scheduling

Explain the architecture of operating system.

What is layered structure of operating system? Explain
UNIT I

8. Explain need of knowledge in expert systems with suitable example.
8. Explain binding algorithm.
8. Explain the difference between knowledge base and working memory.

UNIT II

5. Write at least four application areas of AI.
5. Explain various categories of expert system.
5. Explain some limitations of expert systems.
5. Explain the difference between knowledge base and working memory.

UNIT III

6. What is Artificial Intelligence?
6. Write the features of an expert system.

Computers Question

Unit questions by selecting at least one question from each unit in addition to compulsory question given below. Note: Answer the questions in all O. No. 1 is compulsory.

Maximum Marks: 80
Time: Three Hours

BCA-33

ARTIFICIAL INTELLIGENCE

BCA/D-16

ROLL NO. 1322

TOTAL PAGES: 16
1. Explain the security requirements for networks.

2. Explain various types of firewalls.


5. Why do you mean by Wiredless LAN?

6. What is ALOHA and Slotted ALOHA?

7. What is Web Based Model?

8. What do you mean by Bridging?

9. What is Multiplexing? Explain various types of Multiplexing.

10. What is Cables, modem and DSL Model?

11. Write brief notes on the following:

(a) Encryption
(b) Code
(c) Authentication
(d) Routers
(e) Bridges
(f) Protocols

Complementary Question

Note: Attempt Five questions in all sections at least one.

Maximum Marks: 30
in Visual Basic:

(c) Discuss the concept of general and event procedures

(d) Visual Basic

(e) Differentiate between static and dynamic entities in

(f) Explain various types of variables in Visual Basic

(g) Explain the reason to say VH as Visual Language.

(h) What is the significance of Visual Language and

(Comprehensive Question)

carry equal marks:

Selecting one question from each letter. All questions allocated will have to attempt four more questions compulsory. In addition to compulsory question, student is

Note: Attempt five questions in all. Question No. 1 is

[Maximun Marks: 80]

Time: Three Hours

BCA-335

PROGRAMMING USING VISUAL BASIC

BCA/D-16

Total Pages: 03

Roll No. 03
6. Discuss the following with examples in Visual Basic:

(a) Named and Intrinsic Constants
(b) Scope and Lifetime of Variables
(c) Functions and Function Parameters
(d) Programs and Program Components

UNIT I

8. Write programs in Visual Basic for:

6. Explain various decision control statements in Visual Basic.

UNIT III

5. How do we carry out input and output in Visual Basic?

UNIT II

16. Explain the various controls for input and output with examples.

8. Discuss the following with examples in Visual Basic:

(a) Do-Loop and Fore-Next Statements
(b) One-dimensional Two-dimensional and Multi-dimensional Arrays

UNIT I

7. Discuss the following and give examples in Visual Basic:

(a) Flowchart and How do they differ from each other?
(b) Explain the concept of procedural, object-oriented, object-
UNIT I

Standard MIDI File: Describe the MIDI (Musical Instrument Digital Interface) file format.

UNIT II

Explain the following audio file formats: G7, AMR, WAV, and MP3.

UNIT III

PAL and SECAM: Discuss the following analog video standards: NTSC, PAL, and SECAM.

UNIT IV

AVI, WMV, MPEG, and MP4: Discuss the following video file formats.

UNIT V

When is multimedia authoring done? Discuss various applications of multimedia.

UNIT VI

1. (a) What is digital audio? (b) What is a digital video? (c) What is data compression? (d) What is a data compression tool?

UNIT VII

1. (a) What is a hypermedia tool? (b) What is a hypertext tool? (c) What is a multimedia tool?
What is data hiding?
What is function overloading?
What are the uses of pointer?
What is reference operator?

What is constructor? Is it necessary to have a function in Object?
What is Object class? What are the members answer

Is it necessary to overload operators? Justify your
left shift and right shift operators.
What are bitwise operators? Differentiate between

Q: Attempt two questions in all sections at least one

Note: Attempt two questions in all sections at least one

Time: Three Hours

Maximum Marks: 80

ROLL NO. 03
TOTAL PAGES: 03

RCA-331
ORIENTED PROGRAMMING
INTRODUCTION TO OBJECTS

ROLL NO. 03
TOTAL PAGES: 03
UNIT I

6. Explain delete operator with example.

10. Explain with example.

9. (a) Overloading: Explain a program to add two numbers using function.
   (b) What is function overloading? What are its benefits?

UNIT II

8. Explain disadvantages of using friend function. What are the advantages.

7. (a) When is friend function used? What are the advantages.

6. Illustrate using example.

4. How can we pass class objects as arguments of a function? Illustrate with example.

16. Default constructor? Explain it with example.

5. Explain formalized console input/output with example.

UNIT III

16. What is Copy constructor? How is it different from clone?

16. To have them in the beginning of a program? What are the preprocessor-directives if it is necessary.

8. Create namespace? What do you mean by namespace? How can you

2. Write short notes on the following:

- Polymorphism
- Classes
- Inheritance
- Data Abstraction
By selecting one question from each unit is compulsory and attempt remaining four questions.

Unit I

1. Explain information retrieval.
   (a) What is bounded value analysis?
   (b) Explain cause effect graphing.
   (c) What is the need of ERD?
   (d) Define quality assurance.
   (e) What is the need of evolutionary model?
   (f) Why is loop testing? Difference between control flow and data based testing.

Unit II

1. What are the major tools of structured analysis? Continuous.
   (a) COCOMO Model.
   (b) Project Scheduling

Unit III

1. Discuss various fundamentals of software design.
2. Discuss the different phases of system development.
3. Why are the major tools of structured analysis Continuous?

Note: Attempt five questions in all including Q. No. 1 (which is compulsory) and attempt remaining four questions.

Maximum Marks: 80
Time: Three Hours

BCA-333
SOFTWARE ENGINEERING
OBCA/D-16

1238
Total Pages: 02
When do you mean by frame relay and X.25?

1. Chain
2. Congestion
3. Fragmentation
4. Link
5. Point to Point
6. Point to Multipoint
7. Multipoint to Multipoint
8. Bridged Networks
9. Frame relay
10. X.25

Note: Attempt five questions in all selecting one question from each unit. Q.1 to Q.5 is compulsory. All questions are equal marks.

Max: 50

Roll No: 03

Total Pages: 03
What is Ethernet? Explain various types of Ethernet in detail.

What do you mean by error detection and correction?

Explain various methods for error detection and correction using suitable examples.

Unit III

Distinguish between PDM, TDM, and WDM.

Distinguish between analog and digital signals.

How can data be represented using analog and digital signals?

With advantages and disadvantages of each of the methods, describe switching communication network along with explanation of each layer in detail.

Describe various types of security threats. Describe various types of security measures in detail.

What is the need of network security? Discuss various types of

How is link state routing? When are flooding and shortest path routing used in link state routing?

What do you mean by switch? Describe various types of switching.

Unit IV

Describe the layered architecture of OSI Reference model.
Unit IV

V. Write down various application areas of Computer Graphics.

3. Explain any two line drawing algorithms with suitable examples.

6. Explain various 2D geometric transformations.

7. Perform a 45° rotation of a triangle whose coordinates are A(0,0), B(1,1), C(5,2) about the point P(-1,-1).

9. Write Hidden Surface Elimination algorithm.

10. Write about Ellipse-Circle drawing algorithm.

Unit III

5. Explain the following:

(a) DCT
(b) PLASS
(c) Shadow Mask Method
(d) Direct View Storage Table

4x4 = 16

8. Explain the following on the given data:

(a) CAD
(b) ODC
(c) Random Scan and Raster Scan


6. Write down various application areas of Computer Graphics.
UNIT

6. (iv) What are different features of XML? (4)

CSS 3

(iii) What is the purpose of Marquee and Mouserover in Side Scrolling? (6)

Side Scrolling?

I. (i) How Clean Side Scrolling is different from Server carry equal marks.

Note: Answer five questions in all selecting one question from each Unit. No. I is compulsory. All questions carry equal marks.

Maximun Marks: 80

Time: Three Hours

BCA-356
WEB DESIGNING-II

1241
OBCA/D-16

Roll No. 03

Total Pages: 03
8. Discuss the concept of links in HTML with examples.

7. Explain event handling in HTML.

6. Discuss the common tasks of adding tables, forms, images, and sound with CSS.

Unit III

8.5.3 Discuss the components of Photoshop windows. Explain how they are used to manage images. In front of page.

5. Explain the ways of creating Photoshop layers. Explain why layers are used. In front of page.

4. Discuss standard and formatting tools with examples.

Unit II

8. How would you change various aspects of text using HTML?

9. What is the purpose of Document Type Definitions (DTD)?

10. Discuss color and background properties in context.

8.8 Discuss the concept of links in HTML with examples and advantages and disadvantages.
8. Processor Register

For each type of instruction, why is data in memory needed?

2. What is the difference between an immediate, a direct, and an indirect address?

Unit I

2. Each

Why is data in primary storage needed? (p)

What is stored program concept? (r)

List the data hazards in pipeline. (q)

I. (a) Difference between linear and non-linear

Compulsory Questions

From each Unit Q. No. I is compulsory.

Note: Attempt five questions in all, selecting one question from each Unit.

Maximum Marks: 40

Time: Three Hours

B.E.T-201

COMPUTER SYSTEM ARCHITECTURE

B.E.T/D-16

1261

Roll No. 03
techniques.

9. Explain the differences between RISC and CISC architectures.

3. Given primary strings 10011000 and 10101010, perform the logic AND, OR, XOR with the two parallelism is achieved?

8. Why parallelism is required? How processor level

### UNI IV

4. Dynamic micro-programming

(i) Macro-operation

(ii) Micro-operation

(iii) Control memory

Define the following terms:

5. Of the instruction and micro-operation. What would be the sizes by using a micro-operation? How many bits can be saved

of combinations and micro-operation combinations. How many bits can be saved

of 100 bits each. If only 120 different combinations

8. A micro-operation contains 124 words

2. What is the difference among hardware, software, and

### UNI III

5. Design a typical stage that implements the following

5. If the contents of register A is 1101 and that of B is 0110,

7. \( A \land B \rightarrow A \lor B \)

8. \( A \lor B \rightarrow A \land B \)

9. \( A \land B \rightarrow A \lor B \)

10. \( A \lor B \rightarrow A \land B \)

11. \( A \land B \rightarrow A \lor B \)

12. \( A \lor B \rightarrow A \land B \)
Write a program to search an element from a list represented in memory. Explain 1D and 2D array and explain how they can be performed on 1D. What do you mean by pointer and what operations differentiate between structure and union.

Unit II

Describe various types of constructors with their syntax and their precedence. Explain various types of operators used in C++ and explain their meaning. To find prime numbers between 1 to 100.

Unit I

1. Write short notes on the following:
   * Function Template
   * Enumeration
   * This Pointer
   * Object and Class

2. (c) Explain the concept of function overloading.
3. (d) Call by value and call by reference.
4. (e) Library and user define function.
5. (f) Distinguish between:
   * Enum
   * Structure
   * Array
   * Pointer

Unit III

5. (a) What is a class? Explain its role in C++.
6. (b) Write a program using an internal function to search an element from a list represented in memory. Explain 1D and 2D array and explain how they can be performed on 1D. What do you mean by pointer and what operations differentiate between structure and union.

Unit IV

Describe various types of constructors with their syntax and their precedence.
1. Describe the basic structure of HTML documents.

2. (a) Image Tag
   (b) Video Tag
   (c) Audio Tag

3. (a) H1 to H6
   (b) Table Row (TR) Tag
   (c) Table Data (TD) Tag

4. (a) Discuss various types of links in HTML.

5. Describe various block level and text level elements.

6. Explain the various phrase elements.

7. Discuss various head section elements.

8. Describe HTML colors using hexadecimal numbers.
What are the advantages of the 80486 over the
1. ADC interface to the 8086.
2. Describe the function of EOC and SC signals in

I 5.
3. What are the two main parts in the 8087 and their
4. What can be interfaced with the 8086? Why?
5. What is the maximum memory in terms of bytes,
s
I 6.
6. What is the difference between hardware and

Compulsory Questions

From each Unit
1. remaining four questions by selecting only one question
carry equal marks. Q. No. 1 is compulsory. Attempt
Note: There are nine questions in this paper. All questions

Maximum Marks: 40

B.Tech-505
AND PROGRAMMING-III
MICROPROCESSOR ARCHITECTURE
B.Tech-16 12615

Roll No. ____________________________

Total Pages: 03
Unit I

7. Draw and explain the block diagram of the 8087 and the 8086 and Pentium processors. (a) List the major hardware and software features that distinguish the 8086 microprocessor from the Pentium processors. (b) Discuss in detail the design issues of a RISC processor.

8. Explain the basic features of a RISC processor. (a) Discuss in detail the length of time it takes to execute a RISC instruction. (b) Explain in detail the stack operation during a CALL instruction. (c) Explain in detail the interrupt/interrupt handler. (d) What do you mean by non-maskable and maskable.

Unit II

5. What is the difference between a macro and a macro without parameters? (a) Explain how you will define and call a subroutine. (b) What is the difference between a macro and a subroutine?

6. What are the different uses of a stack in a microprocessor? (a) Define a stack. What is the role of stack segment? (b) Explain in detail the stack pointer register and stack pointer register (c) What are the different uses of a stack in a microprocessor?