(a)

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7 × 2 = 14

Maximum marks : 80

Time allowed : 3 hours

HINDI (COMPREHENSION)

CGP / D-18

[Handwritten marks: 18]
1. त्रिकोण क्षेत्रफल को संदर्भित करिए - विचार: क्षेत्रफल (सेमी यांत्रिक)
2×6 = 12

माध्यमिक मार्क्स: 80

HINDI (EXEMPLARY)

CSO / D-18

Printed Papers: 4

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3. 2 x 3 = 6

4. 2 x 6 = 12

5. 2 x 3 = 6

6. 2 x 3 = 6

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1. How do you feel about the situation?

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1. Sanskrit Compositions

GSG / D-18

Time allowed: 3 hours

Maximun marks: 80
7  তার কারণ এই দিন আমি এখানে ছিলাম।

8  এই কাজ বিস্তার করার একটি উদাহরণ ছিল যা আমি দেখতাম।

9  অন্যদিকে, সমস্ত কাজকে সম্পন্ন করা সম্ভব হবে না।

10  তার জন্য আমি তাদের সাথে কথা বলা হবে।
$t = 1 \times 4$

$2 \times 3 = 6$

$0 = 0 \times 1$

$1 \times 6 = 6$

(1) $t = 1 \times 4$

(2) $2 \times 3 = 6$

(3) $0 = 0 \times 1$

(4) $1 \times 6 = 6$
Paper—Option II
Rise of Modern World
Map of Europe

GSQ / D-18
Printed Pages: 4

Maximum marks: 80

Time allowed: 3 hours

1. Multiple Choice Questions. Each question carries 2 marks.

2. Compositional Question (A R T I F A C T)

3. The explanatory note will carry full marks.

4. Attempt all the questions in all sections. No. of Questions: 16

5. What do you mean by Mercantile Revolution? Examine also

6. European map of Europe. Show the Mercantile Powers of

7. In the context of Renaissance in Europe, also add the explanatory note: 16

8. On the outline map of Europe, show the important centres of

9. Also add the explanatory note: 16

10. Describe the causes responsible for the rise of Industrial

11. Describe the causes of the rise of Scientific Revolution

12. Revolution in England
Describe the main results of the Reformation.

2. What do you understand by 'Puritanism'? Analyse also the Reactions

(a) Edward VI (b) Edward VII (c) Edward VIII

Which country was ruled by whom?

(a) France (b) Germany (c) England

Who used the word 'Absolute' for the first time?

(a) Adam Smith (b) Jean-Jacques Rousseau (c) John Locke

Who wrote the book 'Wealth of Nations'?

(a) Adam Smith (b) Jean-Jacques Rousseau (c) Thomas Malthus
Turnover

(F)

Which country have theMulit Party System?

(iii)

How many features of Political Development according to

(iii)

Who is the author of the book "The Spirit of Laws"?

(iii)

Who is the father of Enlightenment?

(i)v

Computer Question (strictly apply)
Unit III (Chapter III)

5. Define Political Culture. Discuss its various types and
their determinants.

4. Critically discuss the structural-functional approach of

Unit II (Chapter II)

3. Critically examine the features and importance of
Comparative Politics.

2. Describe the purpose, nature and scope of Comparative Politics.

1. Describe the functions of legislature in modern state.

8. What do you mean by Political Party? Describe various types of

9. What do you mean by Party System? Describe various types of

10. Discuss the problems and solutions of constitutionalism.

7. What is constitutionalism? Discuss its features and history.

6. What is a constitution? Discuss the meaning and scope of law.

Unit I (Chapter I)

Write a press release related to the students.
the high above discussion answer the following questions:

- How does the government measure the growth rate of population in the country?
- Why is control of population a major concern to economic problems? How is it linked to various social and economic development?
- In the past, the problem of over-population is a great hindrance in the path of development. But still, population growth is high in India and death rate is low. Why?
- India is the second most populous country in the world after?

compulsory: Do remember three questions selecting one.

Note: Do five questions in all. Questions no. 4 and 5 are

maximum marks: 80

Paper: Paper - I

Indian Economics

ECONOMICS

CSE 0-18
Choose one of the following statements:

1. Which of the following is not the nature of socialism?
2. Which of the following is not the nature of socialism?
3. Which of the following is not the nature of socialism?
4. Which of the following is not the nature of socialism?
5. Which of the following is not the nature of socialism?

Choose the best answer:

1. Socialism is a system where the government owns and controls the means of production.
2. Socialism is characterized by democratic institutions.
3. Socialism promotes equality and social justice.
4. Socialism emphasizes the collective ownership of land and natural resources.
5. Socialism prioritizes economic planning and state control over the economy.

2. Which of the following is not the nature of socialism?

Choose the best answer:

1. Economic planning and state control over the economy.
2. Private ownership of land and natural resources.
3. Collective ownership of land and natural resources.
4. Democratic institutions.
5. Social equality and justice.

2. Which of the following is not the nature of socialism?

Choose the best answer:

1. Economic planning and state control over the economy.
2. Private ownership of land and natural resources.
3. Collective ownership of land and natural resources.
4. Democratic institutions.
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3. Collective ownership of land and natural resources.
4. Democratic institutions.
5. Social equality and justice.

2. Which of the following is not the nature of socialism?

Choose the best answer:

1. Economic planning and state control over the economy.
2. Private ownership of land and natural resources.
3. Collective ownership of land and natural resources.
4. Democratic institutions.
5. Social equality and justice.
Explain the main strengths and weaknesses of the Indian economy.

(c) Show answers to questions:

(i) Which of the following countries has the highest population?
   (a) China
   (b) India
   (c) Japan
   (d) All of these

(ii) Which of the following crop has not been beneficial?
   (a) Paddy
   (b) Wheat
   (c) Rice
   (d) None of these

(iii) Which of the following is an indicator of economic development?
   (a) Human development
   (b) Industrial development
   (c) Increase in real per capita income
d  
(4)
9. Explain the famine and problem of unemployment in India. What are the steps taken by the government to overcome this problem?

8. Explain the problem of poverty in India. What measures will you suggest to solve this problem?

7. Discuss the problem of poverty in India. Write measures you will take to overcome this problem.

6. Comment upon democratic development in India since Independence.

5. Is India over-populated? If so, give reasons and remedies.

4. Compare the need of economic development in India with the developed nations.

3. What is mixed economy? Explain its main merits and demerits.
9. Why is Capital Formation Low in India? Explain the measures to promote Capital Formation in India.

8+8

8. Why has Capital Formation in India been low? Explain the measures to promote Capital Formation in India.

10+6

6. What are the main causes of rapid growth of population in India? Explain the measures that have been taken by the Government to control the population growth in India.

10+6

5. Why is unemployment widespread in India? Suggest measures to control the population growth in India.

8+8

4. Why is unemployment widespread in India? Suggest measures to control the population growth in India.
1. Explain the concept of Economic Development and also

2. Explain the factors that determine Economic Development and also

3. Critically examine the Schumpeter's theory of Economic Growth

4. Discuss the role of Capital Formation in Economic Development

5. Explain the negative effects of Globalisation in the Indian Economy.

8+8=16

Developed Country

And also discuss the causes of low capital formation in less developed countries.

UNIT - II (Table II)

6+10=16

UNIT - I (Table I)

1024
I. Give short answers of the following:

**Compulsory Question**

II. Answer the following questions from the section chosen by the candidate: Maximum marks: 40

III. Time allowed: 3 hours

Food and Nutrition

Paper - Course 301

HOME SCIENCE

CGD / D-18

1. Increase in B complex in food.
2. It is a rich source of Protein.
3. Deficiency of Protein causes... (c)
4. Deficiency of Vit A causes... (d)
5. Deficiency of Vit B causes... (e)
6. It is a rich source of Iron.
7. It is a rich source of Vit D.

**Note:** Attempt the questions in all sections and two questions from each unit. No. is compulsory. All questions carry equal marks.
5. Write short note on any two:

(a) Why do we cook food?
(b) Explain the basic method of cooking in detail.


7. What should be given allowance also. Plan a day’s diet for an adolescent girl. Give recommendations.

8. Explain the C louds of I nterstellar G as. What are their uses and causes? What happens if a cloud is condensed into water by the pressure of earth and wind? What type of cloud you get in this case?

9. Define meal planning and explain any four factors affecting it. Whirl I (throat-I)
5. Explain the importance of food Poisoning.

4. Discuss the importance of organisation and administration in physical education and sports.

3. Discuss the importance of organisation and administration in physical education and sports.

2. Explain the stages of growth and development.

1. Explain the stages of growth and development.

Unit I

A Note: Attempt one question from each unit. II, III & IV.

Maximum marks: 60

Paper (Theory)

HEALTH AND PHYSICAL EDUCATION

CS0 / D-18
6. What are the precautions and remedies for posture?

7. Explain the gross anatomy of muscle.

8. Discuss the composition of human blood.


10. Write any two functions of blood.

10. What are the types of muscles?

(3)
UNIT-II (SYLLABUS)

1. Historical study and detailed description of Ragas

2. Write the Notation of Dhrupad in Ragas Purva Dhrupad or

3. Write about Dhrupad with their Dhyana and Chahar Laavances.

4. Write above Dhrupad with their Dhyana and Chahar Laavances.

5. Write the contribution of K.C.D. Bhattachar in Indian classical music.

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

Maximum marks: 40

TIME ALLOWED: 3 HOURS

PAPER-I (VOCAL)

MUSIC VOCAL THEORY

CGD / D-18

Principal Paper: 2

Roll No. .............
10. What is the difference between China and Japan? What is their relationship? Write about the detailed study of Japanese culture and compare it with Chinese culture.

9. Unit III (§3-§3)

8. Explain in detail about Lath Kala, which is the importance of music in Lath Kala's demarcation of Naluna system. Why is the importance of Naluna system? Where the musical and classical music.

7. Write the contribution of Pt. Vishwak Sen Parwathan in Indian...
Write a musical chord or any description of your syllabus.

1. Write the detailed description of any two passages of the following:

Section A (Page 2)

Each passage carries equal marks.

Note: All parts of questions in all sections carry equal marks.

Maximum marks: 80

Time allowed: 3 hours

Theory-

Paper I

MUSIC (Instrumental)

GS/D-18

Printed Pages: 3
8. Write the contribution towards music by Nishit Panacea.

7. Why do you know about the origin and development of Hindustani music in India?

6. Write any two details of the following with detailed description in detail.


4. What is Hindustani music? Write about origin and development.

3. What is the contribution of Lai Sahab Ali Khan in their development?

2. Describe the name of the following Raga and give the brief description of the Raga.

1. Recognize the name of the following Raga and give the brief description of the Raga.

2. Write the two details of the following with detailed description in detail.

FINANCIAL ACCOUNTING

Paper - Office Management

GSQ / D-18

Page dimensions: 612.0 x 792.0

Turn over

1. What do you mean by capital expenditure and revenue expenditure? Explain with suitable examples.

2. What are the basic principles of financial accounting? Explain.


4. Explain the role of financial accounting in ensuring the accountability of the management of an enterprise.

5. Discuss the role of accounts in business.

6. Discuss the role of accounts in management.

Note: Attempt any five questions. All questions carry equal marks.

Maximum marks: 80

Time allowed: 3 hours
The following journal entries must be passed in the books of both parties:

1. Give necessary journal entries in the books of both parties to record the sale of goods worth £2,000 to X, with 12% per annum for three months.

(a) Sales Return Book.

A return of goods worth £1,000 to X, was passed through

(b) Sales Book.

Sales of £1,000 to X were recorded as £100 in the

(c) No entry has been made for Sales Return of £450.

(d) £450 debit to current account.

(e) £500 paid as cost of the newly purchased furniture.

2. The Sales Book was overcast by £100.

(f) The Sales Book was overcast by £100.

3. The following figures to record the following costs: £200 per week.

(g) Give Journal Entries to record the following costs: £200 per week.

4. What do you mean by Bank Reconciliation Statement? When is

(h) What do you mean by Bank Reconciliation Statement? When is
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**Total Balance**

8.31 December, 2015 and the balance sheet as on that date.

31st December, 2015 and the balance sheet as on that date.

8. From the following trial balance and adjustments, prepare the trading and profit and loss account for the year ending 8th March, 2016.
Turn over

\[ P(x) = \frac{d}{dx} e^{\int f(t) \, dt} \text{ is differentiable on } [a, b] \text{ and } P = f \]

3. (a) If \( f, g \) is continuous, then show that

\[ \int_a^x f(t) dt + \int_x^b g(t) dt = \int_a^b f(t) dt \]

(b) \( f \) is also integrable on \([a, b]\)

(c) \( f \) and \( g \) are integrable functions on \([a, b]\) then prove that

\[ \int_a^b (f+g)(t) dt = \int_a^b f(t) dt + \int_a^b g(t) dt \]

Section 1

1. Show that \( \mathbb{R}^n \) is not compact.

2. (a) Show a Cauchy sequence and give an example of a Cauchy sequence.

(b) Define the boundary of a set in a metric space.

(c) Find the convergence of \( \int_0^\infty \frac{1}{x^2 - x} \, dx \). If \( x \leq 5 \), then show that \( x \) is the greatest integer.

3. (a) Compute \( \int [x] dx \) where \( [x] \) is the greatest integer.

Note: Answer four questions in all. Select one question from each section. Question No. 1 is compulsory.

Maximum marks: 27

Paper-BM-3SI gr 1

REAL ANALYSIS

G50/D.18

Printed Pages: 3

Roll No.
6. Show that every subset of a discrete space is an open set.

Section III

2%. \[ \int_0^1 \log x \, dx = \log \left( \frac{e + 1}{2} \right) \]

5. (a) Show that \( \sin \int_0^x \frac{1}{x^2 + 1} \, dx \) is convergent.

4. (a) Show that \( \int_1^a \frac{x - 1}{x} \, dx \) is convergent if and only if \( a > 1 \).

Section II

2%. \[ \int_0^{\pi/2} \cos x \, dx = \left. \sin x \right|_0^{\pi/2} = \frac{\pi}{2} \]

(b) Use fundamental theorem of calculus to compute...
number

Group under matrix multiplication. Here is a real
\[
\begin{bmatrix}
\sin a & \cos a \\
\cos a & -\sin a \\
\end{bmatrix}
\]

2. (a) Show that the set of matrices \( A = \) is a group.

Unit-1

1. \( Z \)

(e) \( Z \), \( Z, + \), , 1, 2, 3.

(d) Show that set of all multiples of 3 forms a subring of 2.

2. Group \( G \) and find their order.

(c) Let \( S = \{1, 2, 3\} \). Then write all elements of the symmetric

ifications of \( G \)

(b) Let \( G = \{1, 2, 3\} \). Then find all

(a) Let \( G = \{1, 2, 3\} \). Then find under multiplication, then

**Compulsory Question**

From each Unit. Question No. 1 is Compulsory.

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

Maximum marks: 25

PAPER: BM-352

GROUPS AND RINGS

CSG / D-18

1056
7. Let \( R \) be a ring with unity that has no ideals except \( R \) and \( \{0\} \) respectively. Let \( I \subseteq R \) be a ring homomorphism, then show that \( I \) is an ideal.

(a) Prove that an arbitrary intersection ofsubrings of a ring is a subring.

(b) Prove that a normal subgroup of a group is a subgroup.

(c) Let \( G \) be a group, \( H \) be a subgroup of \( G \). Prove that \( H \) is a normal subgroup of \( G \) if and only if \( gHg^{-1} = H \) for all \( g \in G \).

(d) Prove that if \( Z \) is a cyclic group of order \( n \), then the map \( \phi: Z \to Z \) defined by \( \phi(x) = \frac{x}{n} \) is an isomorphism of \( Z \) onto \( Z \).

II

5. A prime ideal is a prime ideal that is a maximal ideal.

(a) Let \( R \) be a ring with unity. Show that every ideal is a submodule of \( R \).

(b) Let \( R \) be a ring with unity. Show that every submodule is a free module.

(c) Let \( R \) be a ring with unity. Show that every free module is a projective module.

(d) Let \( R \) be a ring with unity. Show that every projective module is a flat module.

(e) Let \( R \) be a ring with unity. Show that every flat module is an injective module.

(f) Let \( R \) be a ring with unity. Show that every injective module is a divisible module.

(g) Let \( R \) be a ring with unity. Show that every divisible module is a pure submodule.

(h) Let \( R \) be a ring with unity. Show that every pure submodule is a direct summand.

(i) Let \( R \) be a ring with unity. Show that every direct summand is a homomorphic image of \( R \).

(j) Let \( R \) be a ring with unity. Show that every homomorphic image of \( R \) is a quotient ring of \( R \).

(k) Let \( R \) be a ring with unity. Show that every quotient ring of \( R \) is an integral domain.

(l) Let \( R \) be a ring with unity. Show that every integral domain is a field.

(m) Let \( R \) be a ring with unity. Show that every field is a division ring.

(n) Let \( R \) be a ring with unity that has no ideals except \( R \) and \( \{0\} \) respectively. Let \( I \subseteq R \) be a ring homomorphism, then show that \( I \) is an ideal.
2.

(a) State and prove Newton's Forward Interpolation Formula.

2.

(b) Given \( f(x) = 329240 \), find the value of \( \int_{10}^{1} f(x) \text{d}x \) and \( f(x) = 42365 \) and \( f(10) = 175212 \).

Section 1

(e) Write recurrence formula of binomial distribution.

(d) State Simpson's \( \frac{3}{8} \) rule of integration.

(e) Define the diagonal matrix.

(d) What is Interpolation and Extrapolation?

(a) Prove that \( \Delta = 1 - E \), where each operator has its usual meaning.

1. Attempt all the following:

Compulsory Questions

Each section, question No 1 is compulsory.

Note: Attempt the questions in all the sections one question from each section.

Maximum marks: 20

Paper: BM-335

Numerical Analysis

GS0/D-18

Trun over
Section I

4. Find the eigenvalues of the matrix.

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

5. Transform the matrix into diagonal form.

\[ \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix} = A \]

6. Find the eigenvalues of the matrix.

\[ \begin{bmatrix} 3 & 0 & 0 \\ 0 & 2 & 1 \\ 1 & 6 & 1 \end{bmatrix} = A \]

Section II

3. Find the polynomial of the lowest possible degree with

\[ x + \lambda \]

4. Use the method to find the third approximation of the

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

5. Transpose the matrix into diagonal form.

\[ \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix} = A \]

6. Find the eigenvalues of the matrix.

\[ \begin{bmatrix} 3 & 0 & 0 \\ 0 & 2 & 1 \\ 1 & 6 & 1 \end{bmatrix} = A \]

Section III

1. Given that

\[ y = 2989 \quad 8.403 \quad 8.781 \quad 9.431 \quad 9.750 \quad 10.031 \]

\[ x = 1.0 \quad 1.1 \quad 1.2 \quad 1.3 \quad 1.4 \quad 1.5 \]
4. \[ f(x) = \frac{x^4}{4} - \frac{g(x)}{x} \int_0^x \] 

Show that the integral is non-zero.

4. \[ f(x) = \frac{x^4}{4} - \frac{g(x)}{x} \int_0^x \] 

Prove that a continuous function on \([a, b]\) is integrable.

Section 1

2. Define the closure of a set and describe its properties.

2. Define the open sphere for a discrete metric space.

2. Evaluate the improper integral on \([a, b]\).

\[ \int_0^\infty \frac{x^2}{1 + \int_0^x e^{-t^2} dt} \]

Partition \( P = \{1, 2, 3\} \)

and \( f(x) = 1 + x + x^2 \)

By

1. Compute \( L(f) \) and \( U(f) \) for the function defined

Note: Attempt five questions in all sections; one question from each section. Question No. 1 is compulsory.

Time allowed: 3 hours

Maximum marks: 70

PAPER-BM-351

REAL ANALYSIS

CSO / D-18

Problem Pages: 3

Roll No.
4. Prove that every closed subset of a compact metric space is a connected space.

5. Prove the set of real numbers with usual metric space is complete.

6. Prove that every sequentially compact metric space is complete.

Section III

7. Let \( (X, d) \) and \( (Y, d') \) be metric spaces and let \( f \) be a \( L^2 \) (X, d) \( \rightarrow \) metric space function of \( X \) into \( Y \). Then \( f \) is continuous if and only if \( f^{-1} (G) \) is open in \( X \) whenever \( G \) is open in \( Y \). Show that for any subset \( A \) of metric space \( (X,d) \), \( \overline{A} \) is complete.

8. Prove that a subspace \( Y \) of a complete metric space \( X \) is complete if \( Y \) is closed.

9. Prove that \( d(z, z') = |z - z'| \) is a metric on \( \mathbb{R} \). Points of \( X \) are in \( \mathbb{R} \), then prove that \( (X, d) \) is a metric space and \( X', Y', X \) are arc connected.

Section II

4. Prove that \( \frac{e^x - 1}{x} \) is integrable on \( \left[ 0, 1 \right] \) and \( \int_0^1 \frac{e^x - 1}{x} \, dx \) is definite integral.

5. Evaluate the improper integral of \( \int_0^\infty e^{-x^2} \, dx \) using \( \frac{e^x - 1}{x} \) as a primitive on \( \left[ 0, 1 \right] \).

6. Evaluate the improper integral of \( \int_0^\infty e^{-x^2} \, dx \) using \( \frac{e^x - 1}{x} \) as a primitive on \( \left[ 0, 1 \right] \).

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9. Evaluate the improper integral of \( \int_0^\infty e^{-x^2} \, dx \) using \( \frac{e^x - 1}{x} \) as a primitive on \( \left[ 0, 1 \right] \).
Section I

State and prove Lagrange's Theorem of Groups.

Let \( Z(G) \) be the centre of a group \( G \). If \( Z(G) \) is cyclic.

Section II

State and prove Lagrange's Theorem of Groups.

Every subgroup of a cyclic group is cyclic.

Only if one is contained in the other.

Show that union of two subgroups is a subgroup if and only if one is contained in the other. Show that \( G \) is Abelian.

Consecutive integers \( m \) for all \( a \in G \) show that \( G \) is Abelian.

If \( (G, \cdot) \) is a group in which \( (a \cdot b)^n = a^n \) for three consecutive integers.

Section I

Compulsory:

Answer five questions from each section. Question No. 9 is not.

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

Maximum marks: 40

Time allowed: 3 hours

PAPER-II-BM-352
GROUPS AND RINGS
CSE / D-18

Printed Pages: 3

Roll No. 1078
Define a field having no proper ideals.

Prove that a field has no proper ideals.

Let \( P = (145)(123) \). Write \( P \) in cycle form.

How many generators are there of the cyclic group of order 100?

Section III

If \( G \) is a commutative subgroup of \( G \), then \( G \) is cyclic.

Write all the elements of symmetric group \( S \) as product of disjoint cycles.

Show that \( R \) is commutative.

The ring of integers is a Principal Ideal Ring.

An ideal of an integral domain is maximal iff it is generated by some prime number.

By some prime number.

(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

(i)

(j)

(k)

(l)

(m)

(n)

(o)

(p)

(q)

(r)

(s)

(t)

(u)

(v)

(w)

(x)

(y)

(z)

Find all units of \( \mathbb{Z} \).
Turn over

Problem 3

1. Define Newton-Cotes formula for Forward

\[ \Delta \text{tan} (cx + d) = \sin (c \cdot \sec (cX + d + \text{d}h) \]

Prove this

Section I

Write the formula for \( \frac{dy}{dx} \) using Newton's Forward

\( \Delta \) panel's backward interpolation formula.

\( \Delta \) panel's characteristic matrix and characteristic vector of

Write Langrange's interpolation formula.

Section II

Maximum marks: 30

Paper—BM-333

Numerical Analysis

GSD / D-18

Maximum marks: 30

Page No. 1079

9. (a) Given the approximate value of \( y \) when \( x = 0.2 \), find \( y \) at \( x = 0 \).

Applying \( K \)-method of fourth order to find

\[ \frac{dx}{d} = \frac{x + y}{x - y} \]

(a) \( y \) at \( x = 0 \).

Taking \( \frac{3}{4} \) time allowed:

Evaluate \( \int_{1}^{2} \frac{1}{x^{2} + 1} \) using Simpson's Rule

(b) \( \frac{x+1}{x} \) rule

(c) \( \frac{3}{4} \) rule

(d) \( \frac{3}{4} \) rule
8. (a) Evaluate the integral by applying Gauss's quadrature formula.

\[ \int_0^1 (x^3 + 2x) \, dx \]

\[ = \frac{1}{3} \left[ f(0) + 4f(\frac{1}{5}) + f(1) \right] \]

\[ = \frac{1}{3} \left[ 0 + 4 \cdot \frac{1}{25} + 1 \right] \]

\[ = \frac{1}{3} \cdot \frac{29}{25} \]

\[ = \frac{29}{75} \]

Section V

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

\[ f(x) = x^2 \]

\[ f'(x) = 2x \]

(b) Find the probability distribution of a number of successes in two tosses of a die, where a success is defined as a number greater than 4.

\[ P(X = 0) = \frac{1}{2}, \quad P(X = 1) = \frac{1}{2} \]

(c) Find the sum of the squares of the first 10 natural numbers.

\[ \sum_{i=1}^{10} i^2 = \frac{n(n+1)(2n+1)}{6} \]

\[ = \frac{10 \cdot 11 \cdot 21}{6} = 385 \]

Section III

(a) Find the first and second derivatives of the function \( f(x) = x^3 - 2x + 1 \).

\[ f'(x) = 3x^2 - 2 \]

\[ f''(x) = 6x \]

(b) Find the polynomial of the lowest possible degree which assumes the values \( 3, 1, 5 \) at \( x = 0, 1, 2 \) when \( x \) has the value 3.

\[ f(x) = ax^2 + bx + c \]

\[ \begin{align*}
3 &= a(3)^2 + b(3) + c \\
1 &= a(1)^2 + b(1) + c \\
5 &= a(2)^2 + b(2) + c \\
\end{align*} \]

Solving this system of equations gives:

\[ a = -2, \quad b = 3, \quad c = 3 \]

\[ f(x) = -2x^2 + 3x + 3 \]

(c) Given \( f(20) = 271.78 \) and \( f(20) = 440.6 \) and \( f(20) \), find the value of \( f(x) \).

\[ f(x) = \frac{1}{2} \int_{20}^{x} f'(t) \, dt \]

\[ = \frac{1}{2} \left[ -2t^2 + 3t + 3 \right]_{20}^{x} \]

\[ = \frac{1}{2} \left[ -2x^2 + 3x + 3 - 2(20)^2 + 3(20) + 3 \right] \]

\[ = \frac{1}{2} \left[ -2x^2 + 3x - 400 + 60 + 3 \right] \]

\[ = \frac{1}{2} \left[ -2x^2 + 3x - 337 \right] \]

\[ = -x^2 + \frac{3}{2}x - 168.5 \]
Unit I

2.

(a) What is a box I A? Why
(b) Why is it required in Ruby lasers?
(c) The coherence length of Na is 2.5 cm. Calculate the coherence length of Na.
(d) What do you mean by orthogonality of wave function?
(e) A Na.

3.

(a) Calculate the energy of a 1-R photon having wavelength 5560 Å.
(b) Calculate the energy of a 1-R photon having wavelength 5560 Å.
(c) Attempt any four of the following:

1. Compulsory (Question)

Calculator is allowed.

Select one question from each unit. Non-programmable calculator is allowed.

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

[Maximum marks: 40]  [Time allowed: 3 hours]

Quantum Mechanics and Laser Physics

Paper-IX

PHYSICS

GS0 / D-18

Printed Pages: 3

Roll No.

T.U.

Unit I
Why population inversion is necessary for laser action?

Calculate (refractive index of laser material).

Derive the expression for threshold condition of the laser.

In classical forbidden region, show that there is finite probability of localizing the particle.

Find the reflection and transmission coefficients.

Define a potential step. If the energy of the particle is $E > \Delta V$.

When is a potential barrier? Solve Schrödinger wave equation with coefficients when $E < \Delta V$.

and derive the expression of reflection and transmission coefficients.

What is a potential barrier? Solve Schrödinger wave equation of

Classical forbidden region.

Define a potential step. If the energy of the particle is $E > \Delta V$.

Calculate degree of monochromaticity.

For a source of light coherence time is $10^{-10}$ sec.

Orthogonally in lasers.

Explain the concept of directionalities and mono.

Explain the meaning of $\psi$ and $\psi'$.}

Explain the help of distinction of electron beam at a narrow slit.

State Heisenberg uncertainty principle. Explain it with the help of wave equation of an electron and in electron have energy of $K_e$ and $\theta$.
When are continuous and discontinuous X-rays?

3. (a) What is the binding energy per nucleon curve?
(b) Explain the significance of binding energy per nucleon.
(c) Explain the significance of those difficulties.
(d) What is the binding energy of a nucleon? How is it explained by nuclear theory.

2. Why is proton-electron theory could not explain the Unit I

2. (a) Why is the value of a reaction?
(b) Why can the electron not be accelerated using cyclotron?
(c) Why is the difference between decay and electron capture?
(d) Find the energy equivalent to 1 amu.

1. (a) Use of scientific calculator is allowed.
(b) Attempt five questions in all selecting at least one from each section. No credit is given from error until the question No. 1 is completed.

Nuclear Physics
Paper X
PHYSICS
GSQ / D-18

Maximum marks: 40

Time allowed: 3 hours

Printed Pages: 3

Roll No.
7. Write principle, construction and working of GM

3 (q) Discuss the necessary condition for a Bhabha to acceptor

5. (e) Write principle, construction and working of heater

Unit-III

4. \( \alpha \)-decays

What is Celerer Nulll Law? Discuss the eatures of \( \alpha \)-decays

4 (p) \( \beta \)-decays

What is \( \beta \)-decays? Discuss the neutron halflives for

3 value thickness.

of doern to 25%. Find the absorption coefficient, half

is found that \( 9.6 \) can a lead sheet reduce the intensity

in absorption experiment of \( 1.4 \) MeV \( f \)-rays from \( Zn^{66} \).

5 (q) traversing through a medium.

4. (e) How a high charged particle loses its energy while

Unit-II

8. (a) Discuss the estimation of radius of nucleus

5. (e) Discussion the estimation of radius of nucleus

8 What were the outcomes of Rutherford scattering

(b)
Section A

1. (a) Calculate crystal field stabilization energy in case of d

2. (a) What is the term symbol for d

... (b) Behaviour above

(e) Formation of materials show normal paramagnetic

(f) The no. of unpaired electrons in Zn²⁺ is

(g) Our O³⁻ and H₂O, which one has more trans effect?

(h) The structure of [Ni(CN)₄]²⁻ ion is

(i) The higher energy is

(j) In non-polar covalent crystal field, the d-orbital with

(k) The d-orbitals which participate in d²p hybridization

(l) The colour of [Ti(H₂O)₆]³⁺ ion is due to

1. (a) The colour of [Ti(H₂O)₆]³⁺ ion is due to

Note: Attempt five questions in all, selecting at least two

Maximun marks: 32

Time allowed: 3 hours}

Importance Chemistry

Paper-XV-CH-301

CHEMISTRY

G5G / D-18

1088
Section A

1. Calculate the magnetic moment of Cu⁺⁺ ion by spin only.

2. Discuss the Orlov diagram for d⁹ and d⁸ system.

3. Calculate the number of microstates for different contributions.

4. Find the nodal points for each configuration.

5. Show the step-by-step substitution in the reaction:

6. Draw the shape of d⁸ orbital.

7. Why is the Cu⁺⁺ ion a paramagnetic substance?

8. Why are moderately strong spectra observed in certain cases?

9. What is the effect of spin-orbit coupling on the electronic transitions of d⁹ type in octahedral complexes?

10. What is the effect of spin-orbit coupling in octahedral complexes?

11. Why do you understand by overall magnetic moment?
one-dimensional box of length $a$.

2. Calculate $ax$ and $A(y)_{\text{real}}$ for a particle moving in

3. To show the eigenvalues of the Hamiltonian operator are all

4. Write the results obtained from the study of particle

5. Explain the special distribution of black-body radiations.

Section A

2. Section

(a) Write the name of the principle of quantum of energy.

(b) The molecular in various rotational energy levels.

(c) Write the Maxwell's distribution for the distribution of

(d) Define Bose-Einstein condensate with suitable example.

(e) Write the significance of $\gamma$, $\gamma'$ and $\gamma''$.

Composite Question

Composite questions from each section Question No. 1 is

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

Maximum marks: 32

Time allowed: 3 hours

Physical Chemistry

Paper XV-I-CH-302

Chemistry

CSS / D-18

Printed Pages: 2

Roll No.
8.6 x 10^{-19} \text{J}

3. Calculate the force constant for the bond in HCl from rotation spectroscopy (in) and rotation-Vibrational spectroscopy (iv).

3. Write the selection rules for following spectroscopies:

3. Explain H_2 molecule in terms of Polarizability.

3. Explain Rotation - Vibrational spectra for diatomic and linear molecules, and in linear molecules.

3. Derive the expression for energy of rotational energy levels in diatomic molecules.

3. Write a note on Born-Oppenheimer approximation.

Section B

3. Write a note on Dipole moment in Depes?

3. The bond length of H_2 bond is 1.60 \text{Å}. What is the

3. Defined anisotropy and Permanence.

3. Write the difference between Permanent and

4. Explain any one method.

4. Write the methods for measuring dipole moment and

4. Write the factors on which angle of rotation depends.
2.2.2

What is the procedure, precautions, proposed
mechanism for the formation of glucose reagent?

(c) Taking suitable examples,

Discuss the difference between anomers and enantiomers.

(b) Why is the conversion of glucose to mannose

(4) From the given structure of compound (a) find the

methylene ketone

(e) Write the following compounds using

appropriate Cram's nomenclature...

(d) How would you prepare the following compounds using

fructose

(c) Discuss the evidence in the favour of the structure of

(b) Write the modern mechanism for the formation of glucose

(a) Draw the structure of glucose

(i) D- (+) glucose

(ii) D- (-) glucose

(iii) D-glucose

(iv) Draw the Haworth projection formula of the following:

7.

8.

9.

1. (a) How many signals would you see in the NMR

spectra of each of the following compounds:

(i) Propylene

(ii) P-xylene

(2) The NMR spectra of a given compound C\textsubscript{4}H\textsubscript{6}O shows

The following compounds:

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spectra of each of the following compounds:

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(b) Write the modern mechanism for the formation of glucose

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8.

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(b) Write the modern mechanism for the formation of glucose

(a) Draw the structure of glucose

(i) D- (+) glucose

(ii) D- (-) glucose

(iii) D-glucose

(iv) Draw the Haworth projection formula of the following:

7.

8.

9.
Section 2.2.2

When the amount of the compound

- Double 1.9 G.H
- Methylene 2.0 H
- Proton 2.5 H
- Single 2.9 H

the following set of NMR data based on the compound having molecular formula C\textsubscript{10}H\textsubscript{14} shows:

- P-Deuterium
- Protons
- Methine

What kind of NMR peaks do you expect from:

- A peak on a narrow, single line or
- A peak on a broad, single line?

2. Therefore, when the amounts of the compound are compared with those of the single compound, the results shown below are obtained:

- A peak on a narrow, single line or
- A peak on a broad, single line?
Plant Physiology
Paper-I
BOTANY
G5/G-18

[Turn over]
What is seed dormancy? Describe the factors responsible for explaining the dormancy cycle in detail.

Give an account of mechanism of aerobic respiration by

(a) Xylose complex
(b) Hill reaction
(c) photorespiration
(d) Calvin cycle

Write short notes on:

1. SLACK Pathway in photosynthesis

2. Discuss the mechanism and significance of NATCH and

Section-B

3. Giant cells of stomata
4. Evaporation
5. Antistress factors
6. Cultivation

Write short notes on the following:

1. Plants

2. Describe how organic substances are translocated in

(2)
2. Write in detail about various effects of temperature on plants.

I. Explain the following:

1. Comprehension Question

Relate diagrams wherever necessary.
Questions carry equal marks. Draw well labelled diagrams if required.
Choose any five questions from each unit.
All units carry equal marks. Attempt five questions in all, selecting two questions from each unit.

Note: Attempt five questions in all, selecting two questions from each unit.

Time allowed: 3 hours

Maximum marks: 40

Paper-II

Ecology

B OTANY

C&G / D-18

Printed Pages: 2

Roll No. 097
Unit - II

5. When do you mean by population? Explain its characteristics.

8. Explain in detail composition of soil and its physical-chemical properties.

4. Scope of ecology.

4. Ecosystems.

8. Compare and contrast features of biophysics and xenophysics.

3. Write short note on the following.

(2)
Environmental Biology

Paper-I
ZOOLOGY
GSQ / D-18

1. Explain in brief:

Environmental Impact

2. Define Ecological Niche. Discuss in detail the three aspects of ecological niche.

3. Mention some examples of a niche giving suitable examples. Add a note on

Section A

(a) Aquatic Ecosystem
(b) Marine Ecosystem
(c) Terrestrial Ecosystem
(d) Desert Ecosystem
(e) Tropical Ecosystem
(f) Grassland Ecosystem

Total Marks: 40

Time allowed: 3 Hours

Note: Attempt five questions in all, selecting two questions from each Section A and Section B. Q. No. 1 is compulsory.
3. Explain the Edaphic Factors as Climatic Factors of an ecosystem.

6. Differentiate between predator-prey interactions and oscillatory interactions in nature.

7. Explain the term Population. Define the various characteristics of population. Explain environmental resistance and age distribution of population.


9. Describe in detail:
   (a) Fertilization
   (b) Management Strategies of Air Pollution
   (c) In-situ and ex-situ conservation of biodiversity
   (d) J-shaped and S-shaped Growth Curves

Section B

6. Differentiate between:
   (a) Tundra and Tundra Biomes
   (b) Coral and Desert Food Chains

3. Differentiate between:
   (a) Predator-prey interactions and oscillatory interactions in nature.

4. Define the term Population. Define the various characteristics of population. Explain environmental resistance and age distribution of population.
Section A

1. Explain the concept of industrial melanism.

2. a) Explain the theory of evolution.

Note: There are more questions in all papers as required.

Time allowed: 3 hours

Maximum marks: 90

Evolution and Developmental Biology

Paper II

Zoology

GSEB/D-18
6. Describe in detail:

Section B

Evolution

5. Explain the various physiological and biochemical evidence of

2. Homologous organs.

4. Write down the prominent characteristics of modern horse.

2.3. What is progressive speciation.

3. Describe the role of natural selection in speciation.
Discuss the memory reference instructions of SAP-II.

Unit II

8
4. Identify the memory reference cycle of SAP II instruction and draw
5. Discuss each and execution cycle of ADP instruction and draw
6. Draw SAP-I Architecture and explain each unit

Unit I

4.2
1. Explain immediate addressing in SAP II with examples.
2. Explain R0 instruction of SAP III with examples.
3. Why is the positive clock edge occurs halfway through each
4. Explain IOM and S" and "I control signals of 8085.

Computing Question

From each unit, Question No. 1 is compulsory.
Note: Attempt five questions in all. Selecting one question

Time allowed: 3 hours
Maximum marks: 40

Programming
Microprocessor Architecture and
Paper-I (Theory)
Electronics
CSE / D-18
XCHG, XTHL, SPHL, and PCHL

Discuss the following instructions of 8085:

What do you mean by fetch-execute overlap of 8085.

Draw and discuss the architecture of 8085 microprocessor.

Unit-I

Write a program between address 9000H to 90FFH. Suppose that 256 bytes of data are stored in memory at locations 5000H to 50FFH. Write a program that copies these bytes at address 9000H to 90FFH.

Discuss push and pop instructions in details.

Discuss extended push and pop instructions LXI and DX.

What is the difference between stack and stack pointer?

Unit-II

Kearth answer at 2500H. Also calculate program byte
2 & 8, where starting address is 2000H and stores the
while a source program the multiply decimal numbers
by the instructions of SAPP II computer.

Describe with examples one byte, two byte and three
byte instructions of MC68000 computer.

While a program that produces a time delay of

Approximately 500 micro second if the clock frequency is

( )
Title over

Eliminate class C amplifier generator. Why?

Explain, with the help of waveforms, how a grid-transmitter and the depth of modulation
device relation between the output power of an AM

Unit I

transmitter.

Why is the (f) different for the horizontal sine pulse?

Why are the lower and the back porch intervals provided

Why the advantages of frequency modulation?

QSS-SC:

What do you mean by SSS-SC? Write one advantage

one question from each unit

Attempt remaining four questions by selecting only

Question No. 1 is compulsory.

Attempt five questions in all

carry equal marks

There are nine questions in this paper. All questions

Instructions:

Maximum marks: 40

Time allowed: 3 hours

Paper: Electronics II

ELECTRONIC COMMUNICATION

CS6/ D-18

Page over
are the special applications.

the vision different from an image-motion and what
signal is developed in a vision camera? How is
the help of suitable sketches, how video
transmission?

When do you understand by compatibility in TV?

\( X = 0.39 + 0.59 C \), Why is the
signal set?

Explain how the \( X' \) and colour difference signals are
and (ii) hue in Colour TV.

(ii) complementatory colours (ii) add:ive colour mixing?

Explain in brief the terms: (i) primary colours,
(ii) complementory colours.

Union TV

What do you understand by resolution of a composite video
signal?

Discuss horizontal sync details of a composite video
signal.

Union II

What do you understand by vertical resolution or key-factors?

Diagram. Show how the vertical resolution increases with
increase in number of scanning lines.

Explain the reasons affecting video band width in TV signal?

Union III

Explain the working of fibre detector for AM signals.

What do you understand by the term demodulation?

modulation index.

Explain the instantaneous value of FM voltage and derive the
formula for

the instantaneous value of FM voltage. Also write disadvantages
of frequency modulation.

Define frequency modulation and derive the formula for

4. With the help of circuit diagram explain how the

4. Demonstrate relation between frequency selection and

4. A certain transmitter radiates 9 kW with the carrier

4. Explain in brief DSB-SC and SSB-TC techniques of

4. A certain transmitter radiates 9 kW with the carrier

4. Explain the working of fibre detector for AM signals.

4. What is the advantage of

4. What do you understand by the term demodulation?

4. What is the choice of a rectangular frame with which to

4. Explain the working of fibre detector for AM signals.

4. What do you understand by the term demodulation?
Unit-III

5. What do you mean by schema? Explain various type of

Unit-II

4. Explain Channel Server Architecture.

3. Describe the sequence of events when a client interacts
   with the database.
   
   (b) Differentiate between file system approach and data-
   based approach.

Unit-I

2. (a) Define: ER Diagram  
   (b) Database Users  
   (c) Entity and Attribute  
   (d) Data and Database

Note: Question No. 1 is compulsory. All questions carry
maximum marks: 40

Paper-I
Fundamentals of DB System

COMPUTER SCIENCE

GS/ D-18

Printed Pages: 2

Total No. of

Roll No. 

Time allowed: 3 hours
(3) With the help of an example explain when do we declare a member of a class static?

(b) Explain of each

(3) Difference between classes and objects with examples

UNIT I

1. Define class template.

2. What do you mean by unary operator overloading?

3. What do you mean by formatted I/O operations?

4. What is the purpose of destructor?

5. What do you mean by data hiding and encapsulation?

6. What is the significant feature of C++?

Compiler Question

question from each unit question No. 1 is compulsory

Note: Attempt five questions in all selecting atleast one

B.Sc. 40

Maximum Marks: B.A. 25

Time allowed: 3 hours

Programming in C++

Paper-1

COMPUTER SCIENCE

CGP /D-15

Rolld No. 1105
Unit I

8. Explain the following with C++ program:

(a) Exception handling
(b) Returning on exception
(c) C++ program for a function to implement bubble sort in C++


Unit II

Inheritance:

C++ program the concept of multiple inheritance and hybrid.

What does inheritance mean in C++? Explain with the help of complex numbers.

6. What do you mean by operator overloading? Write the rules.

Unit III

5. Explain new operator using C++ program.

6. Functions in implementation

7. Difference between manipulators and I/O stream

4. Define constructor. Write the characteristics of constructors.

Unit IV

Write short note on processor directives.

3. What is a friend function? What are the merits and demerits of using friend function?

2. (b)
3. What do you mean by Search Engine? Discuss features of various ways to connect to Internet.

2. What is Internet? Write main uses of Internet. Also explain

Unh-1

1. What is the purpose of frame in HTML?
2. What does the attribute do?
3. Write short note on basic history of HTML.
4. Features of ISP.
5. Explain Internet Service Provider (ISP). Also discuss
6. What is World Wide Web?

Compulsory Question

All questions carry equal marks. Answer all questions selecting one question from each unit.

Note: Student will be required to answer five questions in all.

Maximum marks: 40

Time allowed: 3 hours

Paper-II
Web Designing
COMPUTER SCIENCE
GSE / D-18

Page 2

Roll No. 1106
4. Explain the steps to create a table. Discuss various attributes that can be used with `<table>` tag. Give appropriate example.

8. Explain the steps to insert an image in web page. How can you set the margins on images?

Unit – IV

6. Explain various HTML tags with examples for formatting the text. movement of text, ordered/unordered list, and page layout.

7. Define Hyperlink. Distinguish between internal and external links.

Unit – III

5. Define Web Hosting. What are the types of Hosting?

8. How can we develop a website. Write and explain various steps for developing a website.
(8) What is DBMS? Explain its advantages and disadvantages.

(8) Explain different types of keys with examples.

(8) Make an ER-Diagram for admission process of students in the college.

(8) Explain ER-Relations.

(8) What are the different types of attributes? Explain with examples.

(8) Compare different Record Based data models.

(8) Explain Client-Server Architecture of DBMS.

(8) Explain DML and its responsibilities.

(8) Explain DBA and its responsibilities.

(8) What is Relational Data Model? How it is different from ordinary?
Paper I
Desktop Publishing
Computer Application
CGP/D-18

Printed Pages: 3

Roll No.

1. Which is Desktop Publishing (DTP)? Discuss various applications of DTP.

2. When is Desktop Publishing (DTP) used? Discuss various applications of DTP.

3. When is text frame used? Explain briefly the evolution of Adobe Photoshop.

Note: Question No. 1 is Compulsory. Candidates are required to attempt five questions in all, selecting one question from each unit in addition to Compulsory Question. All questions carry equal marks. Time allowed: 3 hours

Maximum marks: 40
Y. t'
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#P
e iP 9i'3

a>

a;Oe-ii-

sF<6Aa;Eh R9 i e r I
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E P 3 :- d4

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E e.

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E-6dxaoasoa A O A 5 ^ 5

E

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P
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Fl'x f '
9..:
E:li^ti!
6 = i.l?
a
34N-;q
5

g< 5
s.
3

Q + q 9A

'' g a' D -
i 'd ei
''- - =,
{ : tq= a'?
:1 0a ij6
E o,EoA ^;A

(3)

Index creation

Text Wrapping

Paste special command

Console Pane

Wide Short note on the following:

1. Write steps to Check Spelling in a publication.
2. What is Spelling Error? What are its advantages?

Unit-III

4. Discuss various options of Spacing attributes dialog box.

5. What do you mean by Master Page? Explain steps to create a Master Page and edit frames in PageMaker.

6. What is a Grid? Explain steps to design a Grid in new table in PageMaker with a suitable example.

7. What is a table? Write steps for creating and setting a table.

Unit-II

4. Discuss briefly features of Adobe PageMaker.

3. Explain various common features of DTP.
3. Explain the concept of class and object with examples.

8

2. Discuss the features and benefits of object-oriented programming.

Unit I

(a) Inheritance
(b) Overriding
(c) This
(d) Friend
(e) Destructor
(f) Copy constructor
(g) Exception
(h) Abstraction

8 × 1 = 8

1. Define is computation.

Paper II

Programming Using C++

Computer Applications

CS0 1 18

Printed Pages: 2

Roll No.:
8 Explain operator overloading with examples.

8 Explain function overloading with examples.

UNIT IV

(a) This
(b) 
(c) 
(d) Deleter
(e) 
(f) New
(g) Friend Function

7. Briefly explain the following with examples:

4 × 2 = 8

UNIT III

8 Constructor could be overloaded.

5. What is constructor overloading? Explain with examples how

8 examples.

4 Explain the concept of constructor and destructor with

UNIT II

(2)
be cloned from adult cells?

What was the name and species of the first mammal to

be cloned from adult cells?

What is a cell repository?

List two methods for freezing cells.

media

At what temperature and pressure will you store culture

Give two characteristics of a continuous cell line.

Name two methods for selection of positive clones.

Diseases:

Name two recombinant vaccines widely used for animal

(1) Lactosylation

(2) Embryonic stem cells

(3) HAT selection

(4) Chimera

(5) Transfection

(6) Suspension culture

1. Define:

Section 1 (All questions compulsory)

Note: Attempt all sections as directed.

Maximum marks: 40

Time allowed: 3 hours

Animal Biotechnology

Paper-IX

BIOENGINEERING

PG 18

Printed Pages: 2

Roll No.
Section III (Attempt any two questions)

1. What are the advantages and disadvantages of gene therapy?

2. What is lymphoid leukemia?

3. Discuss the application of recombinant antibodies in animal diseases.

5. Vector and its introduction to host cell

6. Describe a method for obtaining a DNA fragment joining to

Section II (Attempt any two questions)

2. What do you mean by anchorage dependent cells?

3. How will you perform the genetic characterization of a

1. Maintenance of cells in a culture?

2. How are cell cultures stored?

3. Describe the conditions required for optimal growth of

2. What are the advantages and disadvantages of using

3. What are the applications of animal cell culture?
Complimentary Question (Additional 20)

1. Write briefly on the following:

2. Paper-302

DESIGNING
ADVANCE APPAREL AND TEXTILE

Maximum marks: 40

Time allowed: 3 hours
7. Explain the tools and methods of producing different effects in the

6. What are dyes? Give the classification of dyes.

Unit II (Part II)

5. What are the sources of fashion cycle and how they help in

4. What is knitting? Write about common knitting problems and

3. What is body proportion? How would you select clothing and

2. What is fashion? Explain factors influencing and resulting

1. Describe the history of fashion and its influences.
Unit 1 (Section 1)

Explain importance and scope of early childhood education.

2. Types of speech disorder

(i) Consonants

(ii) Vowels

Play Centre

(iii) Nursery school education

4 \times 2 = 8

I. Short answer type questions: 8 marks

Compulsory Questions: Full marks

Note: Attempt five questions all selecting at least two questions

Maximum marks: 40

Paper-303

CHILDREN WITH SPECIAL NEEDS

EARLY CHILDHOOD EDUCATION AND

CSE / D-18

Page 1161
9. Explain the welfare programme meant for children with special needs.

8. Explain the educational provisions for the children suffering from mental retardation.

8. Discuss the role of parents and teachers in case of gifted children.

6. Explain the characteristics and needs of the child with special

Unit-II (कक्षा-II)

8. What is the criteria for the selection of equipment for indoor

and outdoor games.

7. Discuss Rousseau's theory of nursery school education.

6. Discuss about Kindergarten and Monessori education.

5. Discuss about the early childhood education.

3. Discuss about the child development in early childhood.
For door and wall covering

3. Explain the various essential characteristics of stone and tiles used

2. Write in detail the meaning and characteristics of Ideal House.

Unit-I (Part-I)

CSR & GSR

(a) Objectives of CSR

(b) Flexibility in House

(c) Difference between House and Home

(d) Flexibility while constructing house;

Q. Answer the following briefly:

Compulsory Question (5 marks)

Note: All Questions must be attempted and full marks will be awarded. Select the two questions from each unit.

Time allowed: 3 hours

Paper-304

Housing

CSE D-18
9. Explain the important symbols used for grading house plans.

8. Describe the role of light and ventilation in houses.

7. Which base is considered for designing rooms in a house? Discuss

6. Explain different types of plans with reference to the need for

Unit-II (Fract-II)

5. Describe the role of Nationalized banks and private banks for

4. Discuss one site that is very important for construction of good house.

3. Explain the importance of choosing a house.

2. Explain the importance of choosing a house.
1. Explain the following terms:

Computer Question

Explain the following computer terms:

Web Designing Fundamentals

BCA / D-18
suitable example:

9. Where is table ? Describe steps to create a table by using

(a) <table>
(b) <p>Frame</p>
(c) <form>
(d) <ol>
(e) <ul>
(f) <li>

8. Explain the following tags in HTML:

LI-R I-V

8. Define i.e. Explain various types of HTML tags.

8. Various types of margin in HTML.

7. (a) When do you mean by margin ? What steps to set the

(i) margin
(ii) margin
(iii) margin
(iv) margin

8. Explain the following tag in HTML:


6. (a) When is Hyperlink ? Distinguish between Internal &

LITE-III

8. What is Web Design ? Explain the various principles

5. (a) What is Domain Name System ? Why register a Domain ?
3. Explain Multi-Processing Operating System in detail.

10

(b) Explain Operating System as a Manager of Resources.

4. 2

(a) What do you mean by an Operating System? Give some examples of Operating System.

Unit-1

8 x 2 = 16

4. (a) Briefly introduce computer virus?

(b) What do you mean by the concept of a file system?

(c) What do you understand by the term ‘Deadlock’?

(d) Define the term ‘Swapfile’.

(e) When is a Thread?

(f) Difference between a Program and a Process.

(g) When do you mean by Spooling?

(h) Define Real Time Operating System.

Compulsory Questions

5. Question from each unit. Question No. 1 is compulsory.

Note: Attempt any five questions in all, selecting at least one from each unit.

Time allowed: 3 hours

Maximum marks: 80

Paper-BCA-352

Operating System-I

BCA / D-18
5. Discuss various steps of developing an Expert System.

6. Explain the characteristics of an Expert System.

4. What are the different categories of an Expert System?

Unit I

16

2. Explain the concept of Artificial Intelligence.

8 x 2 = 16

(a) Local Maximum means

(b) NLP stands for

(c) What is Heuristic Search?

(d) Define Depth First Search.

(e) What is Rule Based Expert System?

(f) What is Expert System?

(g) Name different components of Artificial Intelligence.

(h) What is Intelligence?

1. (a) Each question is allotted to 3 hours.

(a) Answer five questions in all, selecting one question from each unit in addition to compulsory question no. 1.

Note: Maximum marks: 80

Time allowed: 3 hours

Paper: BCA-353
ARTIFICIAL INTELLIGENCE
BCA/D-18

Printed Pages: 2

Total No. 1243

8. Discuss the various pruning techniques.

9. Discuss Demand Paging in detail.

16

7. Explain the concept of Process in detail.

16

6. (a) Write down the Bankers' Algorithm.

3.3

Deadlocks?

(a) Write a note on Process Control Block.

Unit III

16

5. Explain Multi-level Feedback Queue Scheduling.

8

(b) Discuss the various Operations on Processes.

8

(a) Write a note on Process Control Block.
PAPER-BCA-354

COMPUTER NETWORKS

BCA / D-18

Time allowed: 3 hours

Maximum marks: 80

(2)
9. What do you mean by Routing? Discuss different types ofRouting Algorithms with its advantages.
   (a) Static routing
   (b) Dynamic routing

8. Explain the following in detail:
   (a) Explain different error detection techniques in detail.
   (b) Explain how media access control and MAC protocol works.
   (c) Explain cyclic redundancy check (CRC) in detail.
   (d) Explain different flow control protocols.

7. (a) What is data communication and how is it explained?
   (b) Explain pulse code and Delta modulation in detail.

6. (a) What does mean by transmission media. Explain switching techniques.
   (b) What does mean by transmission mode. Explain different types of transmission modes.
   (c) What is data transmission mode. Explain different types of transmission mode.

Unit II
Discuss the following elements of user interface:

1. Explain optional arguments in VB.
2. Explain Subroutines.
3. Differentiate between static and dynamic arrays.
4. Explain For Next loop in VB.
5. Explain Print Statement.
6. Define variables in VB.
7. When is a Frame?
8. When is GIF?

II. Attempt the following questions in short:

Compulsory Question

All questions carry equal marks.

Attempt four questions from each unit. Question no. 1 is compulsory.

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

Maximum marks: 80

Time allowed: 3 hours

PAPER-BCA-355

PROGRAMMING USING VISUAL BASIC

BCA / D-18

Prime Pages: 3

Roll No.
8. Explain sorting in VB with example.
  9. What is a function? How it is different from
     procedure?

Unit IV
  (a) What is array of arrays?

Unit III
5. Explain various controls for IO in VB with example.

Unit II
4. (c) Explain use defined data-type in VB.
6. (b) Give the comparison between List-box and
     Combo-box.
3. (a) Explain Form Color and Color Dialog box in detail.
8. (b) Explain Message Box statement in detail with
Turn over

2. What are different components and applications of Multimedia?

Unit-I
(a) Define Compression ratio.
(b) Name the various MPEG standards.
(c) What do you mean by Digital Audio?
(d) What is MIDI?
(e) What is HDTV?
(f) Define Chroma Subsampling.
(g) Give some examples of Presentation Tools.

2x8=16

1. (a) What is the difference between Hypermedia and Multimedia?

(Compulsory Question)

All questions carry equal marks.

Note: Attempt five questions in all, selecting at least one from each unit.

Time allowed: 3 hours

Paper-BCA-356

MULTIMEDIA TOOLS

BCA/D-18

Printed Pages: 2

Roll No. 1246
6. Explain the process of digitization of sound. Also explain various digital audio file formats.

Unit III

8. Explain various types of video signals.
(b) What do you mean by analogue and digital video?

5. (a) Explain CCIR standards for digital video.

8. Explain in brief various graphics/image data types.

4. (a) What do you mean by file formats? Describe any file

Unit II

(2)
2.
Explain with one example of each:

Unit-1

2 each

(d) What is difference between tap and an interrupt?
(e) What are I/O versus memory bus load?
Example:

Consider three separate instruction pipelines. Illustrate the concept of delayed load and delayed branch with an example.

I. (a) Explain one address and two address instructions.

(Compulsory Question)

(carry equal marks)

Each unit question No. 1 is compulsory. All questions
Note: Attempt five questions in all selecting one question from

Time allowed: 3 hours

Paper-BSIT-501

COMPILER SYSTEM ARCHITECTURE-I

BSIT / D.18

12676
5. Write notes on following systems:

(a) 2's complement system
(b) 1's complement system

(c) A two bus computer system
(d) A unibus computer system

6. Explain how an RISC (Reduced Instruction Set) computer is more complex and slower compared to a more powerful processor. Explain how an RISC computer Set

7. Perform NOR and XOR operations on the binary strings:

8. Explain what is a micro engine? Design a simple bus micro

9. What is a micro engine with necessary diagrams.

10. Explain PUSH and POP operations using SP (Stack)

11. Differentiate in instruction pipeline and arithmetic

12. Perform OR and XOR operations on the binary strings.

13. Applications of Microprogramming

14. Micro program optimization

15. 32K words of memory, each word to be addressable.

16. A computer is designed with the specifications:

17. Answer the following questions:

2 x 4 When CPUs registers are needed.
(c) Can a floating point number be represented in this word
(d) When is the number of bits in an instruction
(e) What is the format of an instruction

18. 64 operation codes and 80P's (General purpose registers)
1. Explain the structure of C++ with an example.

2. Explain the basic concepts of OOPs.

3. (a) Explain the structure of C++ with an example.

4. (b) Explain the circumstances by giving suitable examples.

Unit-II

Explain with an example.

4. (b) When is an enumeration? How is an enumeration defined?

2. (a) What is a destructor? Can it be overloaded?

2. (e) Describe inline functions with an example.

2. (d) Describe the type of function included in the pointer declaration.

2. (c) How is a pointer variable declared? When is the purpose of

3. (a) Difference between while and do-while loop.

(Cumulative Question)

All questions carry equal marks.

Maximum marks: 40

Time allowed: 3 hours

Paper: BSc-I.02

Programming C++

BSc I-18

Principled Papers: 2
5. Explain the following terms with examples:
   (a) Nested Structures
   (ii) Array of Structures

8. (a) Explain the Following:
   (i) Class

10. Explain the Various Types of Argument Passing in C++ with Examples:
   (b) Explain the concept of Function Overloading with an Example.

11. (a) Explain the purpose and syntax of Default Arguments in C++:

9. What is a constructor? Explain the Various Types of Constructors with Examples.
   (ii) Member Functions
   (iii) Accessor Functions
   (iv) Operator
1. Describe the basic structure of an HTML document.

2. Two types of tags existing in HTML: distinguish between <HR> and <IMG>.

3. What do you mean by HTML tags? Describe the basic structure of an HTML document.

4. Examples of each type.

I. Where short notes on following.

Compulsory Question

Compulsory:

Note: Attempt five questions in all selecting at least one from each unit. Question number 1 is compulsory.

Time allowed: 3 hours.

Maximum marks: 40

Paper-BSTT-029

DESIGN TOOLS-I

WEB SITE DESIGN IMPLEMENTING BASIC

BSTT/D-18
<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Elements</th>
<th>Type</th>
<th>Number of Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTML</td>
<td>1</td>
<td>0000</td>
<td>2</td>
</tr>
<tr>
<td>HTML+</td>
<td>2</td>
<td>1500</td>
<td>1</td>
</tr>
<tr>
<td>HTML+</td>
<td>2</td>
<td>2000</td>
<td>0</td>
</tr>
<tr>
<td>HTML+</td>
<td>2</td>
<td>1000</td>
<td>1</td>
</tr>
</tbody>
</table>

8. Write HTML code to generate following table:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

8. Explain following attributes of <TABLE>

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4x2</td>
<td>dimensions</td>
</tr>
<tr>
<td>Width</td>
<td>Width of table in pixels</td>
</tr>
<tr>
<td>BackColor</td>
<td>Background color of table cells</td>
</tr>
<tr>
<td>Valign</td>
<td>Vertical alignment of table cells</td>
</tr>
<tr>
<td>CellPadding</td>
<td>Padding between cells of table</td>
</tr>
</tbody>
</table>

8. Explain linking and bookmarking tools.

(a) Linking with specific E-mail address

(b) Briefly describe steps for Internal linking

(g) What do you mean by Internal linking? How it differs from External linking?

8. Write short notes on following:

(a) This and that elements

(b) Briefly describe Phrase elements

(c) Briefly describe Block elements

What these differ from text level elements? State three

8. Write the HTML code for following:

(a) Describing color setting in HTML

(b) What is the importance of hexadecimal numbers in HTML?
Paper-BSET-504
APPLICATIONS-I
INTERNET CONCEPTS AND
BSET / D-18

[Printed Pages: 2]
8. What is ISDN? Discuss its advantages and disadvantages.

Unit IV

(a) Web Server
(b) HTTPS
(c) HTPP
(d) HTP

8. Write short notes on:

7. Write down the steps to search a web directory.


Unit III

5. Explain the importance of TCP/IP protocol in Internet.

(2)
Diagram 2

Invert 4 KB of RAM with 8255 using 8255 with suitable

4. Explain CVP structure of 8255.

Unit-II

Microprocessor system that runs at 20 MHz.

3. Write a VTB to generate 200 microsecond delay using a

(a) Discuss how parameters are passed to processor.

2. Discuss stack structure of 8086.

4. From main program

(a) Define subroutine and how parameters passed in subroutine

2. What do you mean by masking the interrupt?

Unit-I

Write down the disadvantages of 8085 processor.

4. Write in the function of SOC signal in ADC

(c) Explain why Memory Mapped I/O interrupting is not

1. Give the role of A9 and BHE pins of 8086 in memory

Computer Questions

Each unit Question No. 1 is compulsory.

Note: Attempt five questions in all. Select one question from

Maximum marks: 40

PAPER-BIT-505

AND PROGRAMMING-III

MICROPROCESSOR ARCHITECTURE

BIT/ D-18

12680

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Roll No.
4. Discuss the disadvantages of RISC processors.
5. Discuss salient features of Pentium.
6. Discuss advantages of RISC processors.
7. Discuss the difference between 80286 & 80386 features.

Unit IV

6. Suitable diagram.

(b) Integrate 8 bit DAC 0800 with 8086 using 8255 with

(c) Discuss multiport memory configuration, key features,

(d) Discuss multiport memory configuration in detail.

(e) What are interconnection topologies? Explain star and loop

(b) INT

(i) 0S0 and OS1

(f) various signals of 8087:

(i) 80 pin diagram of 8087 and discuss the function of

Unit III

4. With 8086, integrate two 8K RAM chips and two 2K EPROM chips

(b) Discuss the examples of

(i) Discuss memory-mapped and I/O mapped devices with