(b) Distinguish between the following : **4**

    (i) Conformation

    (ii) Configuration.

(c) Draw the various conformations of n-Butne and compare their relative stability. **6**

B. Tech. (CSE/IT) EXAMINATION, May 2023

(Second Semester)

CHEMISTRY–I

BSC-102

Time : 3 Hours   *Maximum Marks : 80*

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

1. (a) Give the salient features of crystal field theory. **4**

    (b) Draw Molecular orbital diagram of O_2 molecule and show the paramagnetism. **4**

    (c) Explain shielding and deshielding of protons. **2**

    (d) What types of molecules exhibit vibrational spectra ? **2**

    (e) What is effective nuclear charge ? **2**

    (f) What are Diastereomers ? **2**

Unit I

2. (a) Derive expression for the Eigen function and Energy for a particle in one-dimentional box and explain its application for conjungated molecules. **8**

    (b) Explain crystal field splitting in octahedral and tetrahedral complexes. **4+4=8**

3. (a) What is Band-structure of solids ? Discuss the role of Doping on Band-structure of solids. 8

(b) Draw Pi-Molecular orbitals for Butadiene and Benzene. 4

(c) Discuss the factors affecting the magnitude of crystal field splitting in octahedral complexes. 4

Unit II

4. (a) What is an electronic spectra ? Explain its selection rules. 8

(b) Derive expression for rotational energy of a diatomic molecule, taking it as rigid rotor. Also show that the lines in rotation spectra of diatomic molecule are equally spaced. 8

5. (a) What is the principle of NMR spectroscopy ? Explain shielding and deshielding of protons. 6

(b) What are P, Q and R branches of vibrational rotational spectra ? 6

(c) Write a short note on magnetic resonance imaging. 4

Unit III

6. (a) What is Ellingham diagram ? Discuss briefly the application of this diagram and also give its limitations. 8

(b) How the atomic radii of S and P block elements varies in group and period. 4

(c) Why do noble gases have zero election affinity values ? 2

(d) Electron affinity of F is less than that of Q. Why ? 2

7. (a) Derive Nernst equation for measurement of EMF of a cell and give its applications. 8

(b) Define Hard and Soft Acids and Basis with examples. 4

(c) What is ionization energy ? Discuss any *two* factors which affect the ionization energy of the element. 4

Unit IV

8. (a) Give the structure, preparation and uses of Paracetamol. 6

(b) What is chirality and optical activity ? How are they related ? 4

(c) Write a note on cyclization and ring opening realtions. 6

9. (a) Explain addition and elimination reacting with examples. 6

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B. Tech. (CSE/IT) EXAMINATION, May 2023

(Second Semester)

MATHEMATICS–III

BSC-104

Probability and Statistics

(Common with FT/ECE)

Time : 3 Hours   *Maximum Marks : 80*

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **9** is compulsory. All questions carry equal marks.

Unit I

1. (a) Define random variable and its types with example. Also define multinomial distribution.   **8**

(b) A continuous random variable X has a probability density function $f(x) = 3x^2$; $0 \leq x \leq 1$. Find the value of a and b s.t. :

(i) $P(X \leq a) = P(X > a)$

(ii) $P(X > b) = 0.05$.   **8**

2. (a) State and prove Chebyshev's inequality.   **8**

(b) Let the random variable X have the distribution :

$$P(X = 0) = P(X = 2) = p; \quad P(X = 1) = 1 - 2p,$$

for $0 \le p \le 1/2$.

For what p is the Var.(X) a maximum ? **8**

Unit II

3. (a) Explain normal distribution and write its properties (any *five*). **8**

(b) State and prove limiting case of Gamma function. **8**

4. (a) Explain exponential distribution and find mean, variance and moments. **8**

(b) State and prove Bayes' Theorem. **8**

Unit III

5. (a) Explain Binomial distribution and show that sum of probability is unity. Also find M.G.F. **8**

(b) Explain Skewness and Kurtosis in detail with their types. **8**

6. (a) Find the equation of line of Regression of Y on X and X on Y. **8**

(b) Explain the method of least squares–fitting of straight line. Also find rank correlation. **8**

Unit IV

7. (a) In a sample of 1,000 people in Maharashtra, 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this State at 1% level of significance ? **8**

(b) Explain test of significance for large sample test for single proportion and difference of S.D. **8**

8. (a) Define and explain Chi-square test for Goodness of fit. **8**

(b) Explain test of significance for the difference of S.D. **8**

(Compulsory Question)

9. (a) Explain Gamma distribution. Find its M.G.F. **4**

(b) Define Bernoulli trials, Probability spaces, Correlation coefficient, Random variables. **4**

(c) State and prove additive property of Poisson Distribution. **4**

(d) Define Population, Sampling and its types with example. **4**

Unit-2

4. (a) Write a program in C using if else for finding largest number. **8**

   (b) Explain various loops used in C Language. **8**

5. Write algorithm for bubble sort. Compare its performance with selection sort. **16**

Unit-3

6. What is a function ? Explain various types of functions. Discuss call by reference with an example. **16**

7. What do you understand by recursion ? Discuss, how is it different from function. List its features. **16**

Unit-4

8. What is a structure ? Write a program to maintain student records using structures. **16**

9. Discuss the importance and uses of pointers. Explain use of pointers in self-referential structures. **16**

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B. Tech. (CSE/IT) EXAMINATION, May 2023

(Second Semester)

PROGRAMMING FOR PROBLEM SOLVING

ESC-103

Time : 3 *Hours*   *Maximum Marks* : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

1. Explain the following :

   (a) Compiler

   (b) Looping

   (c) Call by value

   (d) Structure.

Unit-1

2. Explain various components of a computer system. Draw block diagram and discuss the importance of each component. **16**

3. (a) Write differences between an algorithm and a program.

   (b) What do you mean by syntax errors ? How are they different from logical errors ? Give example.

(m) One should respect his elders.

(n) My daughter is fond of fruits.

(o) I have finished my meals.

(p) The wages of sin are death.

5. (a) Fill in the blanks with the appropriate articles : **8**

   (i) ....huge building turned to dust due to............earthquake.

   (ii) ....famous band Beatles is coming to Texas tomorrow.

   (iii) Charles Babbage is considered as............father of computers.

   (iv) ....famous poem 'Ode to a Nightingale' is written by............Romantic poet John Keats.

   (v) ....Pacific Ocean is one of............five oceans of............world.

   (vi) ....painter drew............life-sized portrait of Mrs. Mary Poppins.

   (vii) ....history professor who taught us is retiring today.

   (viii) ....Eiffel Tower lights up at night.

B.Tech. (CSE/IT) EXAMINATION, May 2023

(Second Semester)

ENGLISH

HSMC-101

Time : 3 Hours   *Maximum Marks :* 80

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

1. Short Answer Type Questions :   **8×2=16**

   (a) Write two basic sentence structures with examples.

   (b) What is the importance of proper punctuation in a sentence ?

   (c) Fill in the blank with the appropriate article : My son is............apple of my eye.

   (d) Fill in the blank with the appropriate preposition : The soldiers are............war.

   (e) What is sensible writing ?

   (f) List the various types of writing styles.

   (g) List the various factors that are helpful in writing an essay.

   (h) What are the important rules for precis writing ?

Unit I

2. Write *one* synonym and *one* antonym of each of the following words : **16**

   (a) Candid

   (b) Belated

   (c) Fragile

   (d) Threat

   (e) Idea

   (f) Manage

   (g) Rain

   (h) Jocund.

3. Separate Prefixes or Suffixes from the following words : **16**

   (a) Ambivalent

   (b) Foredoom

   (c) Immortal

   (d) Regain

   (e) Forgettable

   (f) Romanticism

   (g) Homeless

   (h) Development

   (i) Hypertension

   (j) Enlarge

   (k) Biannual

   (l) Inactive

   (m) Superlative.

   (n) Qualify

   (o) Miserly

   (p) Dukedom.

Unit II

4. Correct the following sentences : **16**

   (a) His clothe is dirty.

   (b) Your trouser is torn.

   (c) Here are the news.

   (d) You and I are at fault.

   (e) Your's faithfully.

   (f) All they thanked me.

   (g) It is me who am at fault.

   (h) Each of the participants were willing to go there.

   (i) This book is too interesting.

   (j) We waited him.

   (k) I have lost a twenty rupees note.

   (l) Let we do it.

have had to resort to higher market borrowings even after the Centre hiked their share from tax inflows to 42% from 32%, starting 2015-16. The Centre has been short-changing States by relying on special levies such as surcharges, cesses and duties that are not considered part of the divisible tax pool. So, instead of a 10% rise in the States' share of gross tax revenue, the actual hike in 2015-16 was just 7.7%. The forthcoming Goods and Services Tax regime should, it is to be hoped, correct this anomaly to an extent. But there are other potential stress points : Pay Commission hikes, rising interest payments, the unstated risks from guaranteeing proxy off-budget borrowings by State enterprises, and the boisterous clamour for ad hoc loan waivers. The N.K. Singh panel on fiscal consolidation has recommended a focus on overall government debt along with fiscal deficit and a 20% debt-to-GDP ratio for States by 2022-23. Not just the Centre, but States (with outstanding liabilities to GDP of around 24% as of March 2017) also need to tighten their belts considerably from here, even as they await the constitution of the Fifteenth Finance Commission.

(b) Fill in the blanks with the appropriate prepositions : **8**

(i) This shop doesn't have the toys I was looking............... (up/for)

(ii) The teacher divided the sweets............all the children. (between/among)

(iii) Bruce did not fare well............his examination. (in/at)

(iv) The dog is grateful............its owner. (to/for)

(v) My brother's anniversary is............5th November. (on/in)

(vi) The boy............the store is quite young. (at/on)

(vii) Mahatma Gandhi was born............2nd October. (on/in)

(viii) Rupert is fond............muffins. (of/off)

Unit III

6. What do you mean by sensible writing ? Discuss in detail its nature and style. **16**

7. What are the various types of writing styles ? Discuss in detail. **16**

Unit IV

8. Write an essay on any *one* of the following: **16**

    Increase in Domestic Violence during Covid Lockdown in India

    Or

    How technology makes our lives easier ?

9. Read the following passage and answer the given questions : **16**

    For the first time in 11 years, in 2015-16 the combined fiscal deficit of India's 29 States as a proportion of the size of their economies breached the 3% threshold recommended as a fiscally prudent limit by successive Finance Commissions. The Reserve Bank of India has warned that the States' expectation to revert to the 3% mark in their 2016-17. Budgets may not be realised, based on information from 25 States. While the Central government has projected a fiscal deficit of 3.2% of GDP for this year, States expect to bring theirs down further to 2.6% still higher than the average of 2.5% clocked between 2011-12 and 2015-16.

    Whichever way one looks at it, the steady gains made in States' finances over the past decade seem to be unravelling. Chief Economic Adviser Arvind Subramanian has asserted that the 3% of GDP benchmark for the fiscal deficit of the States or the Centre is not a magic number. Yet, it serves as an anchor for fiscal discipline in a country whose two biggest crises in recent decades - the balance of payments trouble in 1991, the currency tumble in 2013 — were precipitated by fiscal irresponsibility. Taking on the massive debt of their chronically loss-making power distribution companies, as part of the UDAY restructuring exercise steered by the Centre, has surely dented the States' fiscal health significantly over the past couple of years. With private investment remaining elusive, the States' focus on bolstering capital expenditure in sectors such as transport, irrigation and power is welcome (States' capital expenditure as a proportion of their GDP has been higher than the Centre's since 2011-12). But it is important that such funding remains sustainable and States stay solvent. Tepid economic growth hasn't helped, and States

(vii) Choose the word which is MOST OPPOSITE in meaning of the word printed in bold as used in the passage.

Clamour

(a) Disturbance

(b) Make noise

(c) Dissonance

(d) Calm

(e) Demand

(viii) Choose the word which is MOST OPPOSITE in meaning of the word printed in bold as used in the passage.

Bolstering

(a) Hinder

(b) Support

(c) Fortify

(d) Tone up

(e) N.O.T.

Questions :

(i) How much fiscal deficit has been projected by the central government in this year ?

(a) 2.5%

(b) 32%

(c) 3.7%

(d) 3%

(e) 3.2%

(ii) The States' focus on bolstering capital expenditure in which of the following sector(s) ?

1. Power

2. Economics

3. Transport

(a) Only 1

(b) Only 3

(c) Only 1 and 2

(d) Only 1, 2 and 3

(e) Only 1 and 3

(iii) Which of the following two biggest crises happened in recent decades ?

1. Problem in transportation

2. Interdisciplinary culture

3. The currency tumble in 2013

4. The balance of payments trouble in 1991

5. Macroeconomics

(a) only 3

(b) only 2 and 3

(c) only 3 and 4

(d) only 5

(e) only 2 and 5

(iv) Which of the following is true according to the passage ?

(a) Tepid economic growth has helped, and States have had to resort to higher market borrowings even after the Centre hiked their share from tax inflows to 42% from 32%, starting 2015-16

(b) Tepid economic growth hasn't helped, and States have had to resort to higher market borrowings even after the Centre hiked their share from tax inflows to 47% from 32%, starting 2015-16

(c) Tepid economic growth hasn't helped, and States have had to resort to higher market borrowings even after the Centre hiked their share from tax inflows to 42% from 32%, starting 2015-16

(d) Tepid economic growth hasn't helped, and States have had to resort to higher market borrowings even after the Centre hiked their share from tax inflows to 42% from 33%, starting 2015-16

(e) None of the above

(v) Choose the word which is MOST SIMILAR in meaning of the word printed in bold as used in the passage.

Unraveling

(a) Resolve

(b) Confuse

(c) Twist

(d) Fuddle

(e) Throw

(vi) Choose the word which is MOST SIMILAR in meaning of the word printed in bold as used in the passage.

Tumble

(a) Order

(b) Collapse

(c) Rise

(d) Surface

(e) Ascend

Unit II

4. What are the Basic Counting Techniques ? Explain. **16**

5. Write notes on the following : **2×8=16**

   (a) Validity and Satisfiability

   (b) Logical Equivalence

Unit III

6. Explain the following : **2×8=16**

   (a) Congruence Relation and Quotient Structures

   (b) Semigroups and Monoids

7. Write notes on the following : **2×8=16**

   (a) Boolean Algebra and Boolean Ring

   (b) Disjunctive and Conjuncitve Normal forms.

Unit IV

8. Explain Graph and their properties in detail. **16**

9. Write notes on the following : **2×8=16**

   (a) Weighted tree and Prefix codes

   (b) Bi-Connected Component and Articulation Points

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B. Tech. (CSE/IT) EXAMINATION, May 2023

(Fourth Semester)

DISCRETE MATHEMATICS

PCC-CS-202

Time : 3 Hours   *Maximum Marks : 80*

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

1. Attempt all the following : **4×4=16**

   (a) Define Schroeder-Bernstein theorem.

   (b) Differentiate Syntax and Semantics.

   (c) Define the term Morphism.

   (d) What is the Colouring Edges ? Explain.

Unit I

2. What is Set ? Explain operations and Laws of Sets with suitable example. **16**

3. Explain the following : **2×8=16**

   (a) Power Set Theorem

   (b) Euclidean Algorithm

Unit II

4. State and explain Banker's Algorithm with suitable example. Identify the safe state sequence.   **16**

5. (a)   What is dining philosopher's problem ? Explain. **8**

   (b)   Discuss necessary conditions for deadlock.   **8**

Unit III

6. Explain the concept of internal and external fragmentation. How is it different from compaction ? Give example. **16**

7. Compare FIFO and LRU paging algorithms with suitable example.   **16**

Unit IV

8. Discuss various types of file access methods. List merits and demerits of each.   **16**

9. Explain various methods used for free space management. Discuss about bad blocks.   **16**

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B.Tech. (CSE/IT) EXAMINATION, May 2023

(Fourth Semester)

OPERATING SYSTEM

PCC-CS-206

Time : 3 *Hours*   *Maximum Marks* : 80

Note :   Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

1. Explain the following :   **4×4=16**

   (a)   Virtual Machine

   (b)   Race Condition

   (c)   Logical and Physical Address

   (d)   Disk formatting.

Unit I

2. (a)   Explain various types of operating systems. Discuss OS Services in brief.   **8**

   (b)   Compare Monolithic and Layered architecture.   **8**

3. (a)   Write about various states of a process. Discuss the role of PCB.   **8**

   (b)   Compare FCFS and SJF scheduling algorithms. Give suitable example.   **8**

Unit II

4. What is dynamic programming ? Explain, how is it different from greedy method. Give illustration. **16**

5. State and explain optimal binary search tree problem in detail. **16**

Unit III

6. Compare BFS and DFS. Give suitable example. **16**

7. What is transitive closure ? Explain minimum spanning tree in brief. **16**

Unit IV

8. Explain computability classes : **16**
P, NP, NP-complete and NP-Hard.

9. Explain approximation algorithm with suitable example. **16**

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B.Tech. (CSE/IT) EXAMINATION, May 2023

(Fourth Semester)
DESIGN AND ANALYSIS OF ALGORITHMS
PCC-CS-208

Time : 3 *Hours*   *Maximum Marks* : 80

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

1. Explain the following : **4×4=16**
   (a) Asymptotic analysis
   (b) Backtracking
   (c) Topological Sort
   (d) Cook's Theorem.

Unit I

2. Explain about various characteristics of algorithms. Write in brief about best, average and worst case behavior. **16**

3. Compare recursion tree and substitution method for recurrence relations. Give suitable example. **16**

5. (a) Explain factors of stress and differentiate between Eustress and Distress. **8**

तनाव के कारकों की व्याख्या कीजिए और यूस्ट्रेस और संकट के बीच अंतर कीजिए ।

(b) Psychoanalytic Theory or Trait Theory of Personality. **8**

व्यक्तित्व का मनोविश्लेषणात्मक सिद्धांत **या** लक्षण सिद्धांत ।

Unit III (इकाई III)

6. Explain the types of group and factors influencing group cohesiveness, types of conflict and types of leadership style. **16**

समूह के प्रकार और समूह सामंजस्य, संघर्ष के प्रकार और नेतृत्व शैली के प्रकार को प्रभावित करने वाले कारकों की व्याख्या कीजिए ।

7. Write in detail about the characteristics of a leader and explain briefly Behavioral theory of Leadership. **16**

एक नेता की विशेषताओं के बारे में विस्तार से लिखिए और नेतृत्व के व्यवहार सिद्धांत को संक्षेप में समझाइए ।

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B.Tech. (CSE/IT) EXAMINATION, May 2023

(Fourth Semester)
MANAGEMENT—I
HSMC-202
Organizational Behaviour

Time : Three Hours]　　　　　[Maximum Marks : 80

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

प्रत्येक इकाई से **एक** प्रश्न चुनते हुए, कुल **पाँच** प्रश्नों के उत्तर दीजिए । प्रश्न संख्या 1 अनिवार्य है । सभी प्रश्नों के अंक समान हैं ।

1. Write in brief about the following (any *eight*) : **8×2=16**
   (a) Management function
   (b) Managerial ethics
   (c) Management Information System (MIS)
   (d) Types of Personality
   (e) Strategies to handle Stress
   (f) Qualities of a good Leader
   (g) Types of Control
   (h) Any *two* types of Organizational Structure
   (i) Reasons for Organizational Change

(j) Features of Learning

(k) Group Process

(1) Sources of Organizational Conflict

(m) Strategies needed for effective decision making

निम्नलिखित के बारे में संक्षेप में लिखिए (कोई **आठ**) :

(अ) प्रबंधन कार्य

(ब) प्रबंधकीय नैतिकता

(स) प्रबंधन सूचना प्रणाली (एम.आई.एस.)

(द) व्यक्तित्व के प्रकार

(इ) तनाव से निपटने की रणनीतियाँ

(फ) एक अच्छे नेता के गुण

(ग) नियंत्रण के प्रकार

(ह) किन्हीं **दो** प्रकार की संगठनात्मक संरचनाएँ

(ई) संगठनात्मक परिवर्तन के कारण

(ज) सीखने की विशेषताएँ

(क) समूह प्रक्रिया

(ल) संगठनात्मक संघर्ष के स्रोत

(म) प्रभावी निर्णय लेने के लिए आवश्यक रणनीतियाँ ।

Unit I (इकाई I)

2. Define Problem Solving. What are the special managerial skills required in an organization ? Also explain the benefits of Corporate Social Responsibility.   **16**

समस्या समाधान को परिभाषित कीजिए । किसी संगठन में आवश्यक विशेष प्रबंधकीय कौशल क्या हैं ? कॉर्पोरेट सामाजिक उत्तरदायित्व के लाभों की भी व्याख्या कीजिए ।

3. Write in brief about the following :   **4×4=16**

(a) Henry Fayol's 14 Principles of Management

(b) Functions of management

(c) Managerial levels, Role and Skills of Manager in an organization

(d) Process of Problem Solving

निम्नलिखित के बारे में संक्षेप में लिखिए :

(अ) हेनरी फेयोल के प्रबंधन के 14 सिद्धांत

(ब) प्रबंधन के कार्य

(स) एक संगठन में प्रबंधकीय स्तर, प्रबंधक की भूमिका और कौशल

(द) समस्या समाधान की प्रक्रिया ।

Unit II (इकाई II)

4. Write in brief about the following :

(a) Pavlov's classical conditioning theory of Learning. **8**

(b) Maslow's Need Hierarchy Theory of Motivation. **8**

निम्नलिखित के बारे में संक्षेप में लिखिए :

(अ) पावलॉव का सीखने का शास्त्रीय कंडीशनिंग सिद्धांत

(ब) प्रेरणा का मास्लो का आवश्यकता पदानुक्रम सिद्धांत ।

Unit IV (इकाई IV)

8. Differentiate between the following :

(a) Formal and Informal Organizational Structure **8**

(b) Organizational Culture and Organizational Climate. **8**

निम्नलिखित के बीच अंतर कीजिए :

(अ) औपचारिक और अनौपचारिक संगठनात्मक संरचना

(ब) संगठनात्मक संस्कृति और संगठनात्मक जलवायु ।

9. Give a detailed description of Organizational Change (Meaning, feature, types and factors for resistance to change). **16**

संगठनात्मक परिवर्तन (अर्थ, विशेषता, प्रकार और परिवर्तन प्रतिरोध के कारक) का विस्तृत विवरण दीजिए ।

Unit II

4. Write explanatory notes on the following : **2×4=8**

   (i) Ecological succession

   (ii) Grassland ecosystem.

5. Explain in brief about Indian hot spots of Biodiversity. How can we conserve biodiversity of our Country ? **8**

Unit III

6. Write explanatory notes on the following : **2×4=8**

   (i) Effects of Water Pollutants

   (ii) Causes and effects of cyclone.

7. How does climate change affect living beings on the earth ? Discuss about causes, effects and control of global warming. **8**

Unit IV

8. Write explanatory notes on the following : **2×4=8**

   (i) Human rights

   (ii) Value education.

9. Why control of Human Population is necessary ? Discuss about family welfare programme of India. **8**

4952

B.Tech. (CSE/IT) EXAMINATION, May 2023

(Fourth Semester)

ENVIRONMENTAL SCIENCE

MC-202

Time : 3 Hours *Maximum Marks : 40*

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

1. Write brief notes on the following : **4×2=8**

   (i) Scope of environmental studies

   (ii) Endangered species of India

   (iii) Causes and effects of acid rain

   (iv) Role of IT in environment health.

Unit I

2. How an individual can play an important role in conservation of natural resources ? Elaborate. **8**

3. Write explanatory notes on the following : **2×4=8**

   (i) Environmental impacts of mineral extraction

   (ii) Agricultural activities and environmental pollution.

Unit II

4. What is ambiguity ? Discuss the role of parser. Explain about push down automata.   16

5. (a) Compare LALR and SLR with suitable example. **8**

   (b) Compare top down and bottom up parsing.   **8**

Unit III

6. Define semantic analysis. Explain evaluation and flow of Attribute in a syntax tree.   **16**

7. What is symbol table ? Describe the structure of symbol table and its attributes.   **16**

Unit IV

8. (a) Compare local and global code optimization.   **8**

   (b) Explain about register allocation.   **8**

9. What is peep hole optimization ? Discuss its features and role in code improvement.   **16**

4956

B.Tech. (CSE) EXAMINATION, May 2023

(Sixth Semester)

COMPILER DESIGN

PCC-CS-302

Time : 3 Hours   *Maximum Marks : 80*

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

1. Explain the following :   4×4=16

   (a) Scanner generator

   (b) Context free grammar

   (c) Memory allocation

   (d) Instruction Scheduling.

Unit I

2. Define the term compiler and explain its various phases with suitable illustration.   **16**

3. Explain the concept of finite automata. Write procedure for converting it to regular expression.   **16**

Unit II

4. Discuss various flow control and error control protocols used in DLL and MAC. **16**

5. (a) Compare the features of Pure ALOHA and Slotted ALOHA. **8**

(b) Discuss about CSMA/CD/CA. **8**

Unit III

6. Explain architecture of IPV6 and compare it with IPV4. **16**

7. What is address mapping ? Explain about ARP and RARP. **16**

Unit IV

8. What is congestion control ? Discuss role of TCP and SCTP. **16**

9. Write short notes on the following : **16**

(a) FTP

(b) DNS.

4958

B.Tech. (CSE/IT) EXAMINATION, May 2023

(Sixth Semester)

COMPUTER NETWORKS

PCC-CS-304

Time : 3 Hours   *Maximum Marks : 80*

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

1. Explain the following :   **4×4=16**

(a) Virtual LAN

(b) Hamming Distance

(c) Switching

(d) Firewalls.

Unit I

2. Explain in detail about OSI reference model. Discuss role of each layer and illustrate using suitable diagram. **16**

3. (a) What is multiplexing ? Discuss its role in communication and brief about its types. **8**

(b) Write in brief about transmission media. **8**

4959

B.Tech. (CSE/IT) EXAMINATION, May 2023

(Sixth Semester)

ELECTIVE-II

CLOUD COMPUTING

PEC-CS-312

Time : 3 Hours   *Maximum Marks :* 80

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

1. (a) What is cloud computing ? Explain its applications in brief.

    (b) Discuss cloud authorization management in brief.

    (c) What are key privacy concerns in cloud ?

    (d) What are storage systems ? Explain.   **4×4=16**

Unit I

2. (a) What is on demand computing virtualization at infrastructure level ? Also discuss CPU virtualization.

    (b) Discuss SPI framework for cloud computing and traditional software model.   **2×8=16**

3. Which are barriers to adopt the cloud in any enterprise ? Explain. Also discuss cloud deployment models in detail. **16**

Unit II

4. (a) What is infrastructure security ? Discuss it at host and application level.

   (b) What is data security and storage ? Discuss. Also discuss aspects of data security. **2×8=16**

5. What are trust boundaries and IAM ? Discuss IAM challenges and practices for cloud services ? Explain. **16**

Unit III

6. (a) What are security management standards ? Differentiate privacy issues in PaaS and PaaS.

   (b) What is data life cycle ? Explain. Also discuss, How can you protect privacy in cloud ? **2×8=16**

7. What are legal and regulatory implications in cloud ? Discuss international laws for cloud security. Also discuss risk management and its compliance. **16**

Unit IV

8. (a) What is internal policy compliance in cloud ? Discuss GRC parameters.

   (b) How the cloud audit performed for compliance ? Discuss regulatory external compliance. **2×8=16**

9. What are data intensive computations ? How are they characterized ? What are the storage systems and programming platforms ? Discuss. **16**

Unit II

4. What do you understand by neural network ? Explain difference between supervised and unsupervised learning.

16

5. (a) Explain Adaptive Resonance architectures in neural networks. **8**

(b) Define reinforcement learning. **8**

Unit III

6. Explain the term genetic algorithm and list its applications in machine learning. **16**

7. Discuss the role of knowledge acquisition in machine learning. **16**

Unit IV

8. List various components of neural network toolbox and give suitable illustration. **16**

9. Write the features of fuzzy logic toolbox. Give example.

16

B.Tech. (CSE/IT) EXAMINATION, May 2023

(Sixth Semester)

ELECTIVE-III

SOFT COMPUTING

PEC-CS-318

Time : 3 Hours *Maximum Marks : 80*

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

1. Explain the following : **4×4=16**
   (a) Machine Learning
   (b) Feedforward networks
   (c) Knowledge acquisition
   (d) Matlab.

Unit I

2. Define the term soft computing. Discuss various components of soft computing. Brief the role of computational intelligence. **16**

3. (a) Explain various operations performed on fuzzy sets. Give example of Each. **8**

(b) Explain about Fuzzy inference system. **8**

Unit II

4. Explain list and various methods to process list in python.

16

5. Explain Dictionary, various operations on dictionary and ordered dictionary in python. **16**

Unit III

6. (a) Explain inheritance and multiple inheritance with suitable example in python. **8**

   (b) Discuss about modular programs and packages in python. **8**

7. (a) Explain data frames in panda and creation of data frames from .csv files using suitable example. **8**

   (b) Discuss the concept of data aggregation and concatenation in python. Give example. **8**

Unit IV

8. (a) Explain NumPy and different NumPy array attributes. **8**

   (b) Explain slicing and indexing of NumPy array. **8**

9. (a) Explain the concept of stacking and splitting of NumPy arrays. **10**

   (b) Differentiate between Array views and copies. **6**

4961

B. Tech. (CSE/IT) EXAMINATION, May 2023

(Sixth Semester)

DATA ANALYTICS USING PYTHON

Open Elective-I

OE-CS-326

Time : 3 Hours *Maximum Marks :* 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

1. Explain following : **4×4=16**

   (a) Operators and its types

   (b) Functions and recursive function

   (c) Exception handling with suitable example.

   (d) Create a multidimensional array.

Unit I

2. Explain different types of data types in python. Give syntax and example of each. **16**

3. Explain Input-Output Statement and various types of control statements in python. **16**

3. What is IoT ? Write its various characteristics. Discuss physical and logical design of IoT in brief. **16**

Unit II

4. Explain various survey routing protocols. **16**

5. What is data aggregation and dissemination ? Explain in detail with illustration. **16**

Unit III

6. (a) Compare the architecture of IoT and web of things. **8**

 (b) Explain various WoT portals in brief. **8**

7. What is cloud computing ? Explain cloud standards in detail. **16**

Unit IV

8. Discuss various applications of IoT in : **16**

 (a) Industry

 (b) Home automation.

9. Explain the procedure for resource management in IoT. **16**

4965

B.Tech. (CSE/IT) EXAMINATION, May 2023

(Eighth Semester)
INTERNET OF THINGS
ELECTIVE-VI
PEC-CS-404

Time : 3 Hours *Maximum Marks :* 80

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

1. Explain the following : **4×4=16**

 (a) Communication Model of IoT

 (b) Data aggregation

 (c) Pillars of Web

 (d) Clustering.

Unit I

2. (a) Discuss various functional block of IoT. Give suitable illustration. **8**

 (b) Explain the concept of M2M. Compare it with IoT. **8**