

Roll No.



W-2111

B. C. A. (Part I) EXAMINATION, 2013

Paper First

DISCRETE MATHEMATICS

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt any two parts from each question. All questions carry equal marks.

Unit-I

1. (a) Prove that each of the following statements is a contradiction :

$$[(p \wedge r) \vee (q \wedge \sim r)] \Leftrightarrow [(\sim p \wedge r) \vee (\sim q \wedge \sim r)]$$

- (b) Explain the Algebra of Proposition.

- (c) Write the following sentences into symbols :

- (i) Two non-parallel coplanar straight lines have a common point.
(ii) If there is no prize, then a person does not purchase a ticket.

Unit-II

2. (a) Simplify the following by using Boolean algebra :

(i) $[a + (a' \cdot b)] \cdot [a' + (a \cdot b)]$

(ii) $a \cdot b + [(a + b') \cdot b]'$

- (b) Define partial order relation. Prove that the order relation \leq is partial order relation in a Boolean algebra.

- (c) Draw a simplified circuit of the expression :

$$F(x, y, z) = x \cdot y' \cdot z + (z + y) \cdot x'$$

Unit-III

3. (a) Explain the Boole's Expansion theorem.
 (b) Express the following function in conjunctive normal form :

$$f(x, y, z) = (xy' + xz)' + x'$$

- (c) Design a 3-terminal circuit which gives the real forms to the following both functions :

$$f = xzw + y'zw$$

$$g = xzw + y'zw + x'y'z$$

Unit-IV

4. (a) Let I be the set of non-zero integers and a relation R be defined by xRy if $x^y = y^x$, where $x, y \in I$. Is the relation R an equivalence relation ?
 (b) If X, Y, Z, W are four sets and f, g, h be three mappings given by :

$$f: X \rightarrow Y, g: Y \rightarrow Z, h: Z \rightarrow X$$

then prove that $(h \circ g) \circ f = h \circ (g \circ f)$.

- (c) If $f: A \rightarrow B$ is one-one and onto, then prove that $f^{-1}: B \rightarrow A$ is also one-one and onto.

Unit-V

5. (a) Show that the sum of the degrees of all vertices in a graph G is equal to twice the number of edges in G .

- (b) If a graph $G = (V, E)$ is defined by :

$$V = \{v_1, v_2, v_3\}$$

$$E = \{[v_1, v_2], [v_2, v_3], [v_1, v_3]\}$$

$$|V| = 3, |E| = 3$$

then find the adjacency matrix and the incidence matrix of the graph G .

- (c) Explain the planar graphs.

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B. C. A. (Part I) EXAMINATION, 2013

Paper Second

CALCULUS AND STATISTICAL METHODS

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt any two parts of each question. All questions carry equal marks. Only simple calculator is allowed.

Unit-I

1. (a) Find the limit of :

$$\lim_{x \rightarrow 1} \frac{x^2 - 1}{|x - 1|}$$

if it exists.

- (b) Show that the function :

$$f(x) = \begin{cases} x, & \text{when } 0 \leq x < \frac{1}{2} \\ 1, & \text{when } x = \frac{1}{2} \\ 1-x, & \text{when } \frac{1}{2} < x < 1 \end{cases}$$

is discontinuous at $x = \frac{1}{2}$.

- (c) Show that the function :

$$f(x) = \begin{cases} x^2 - 1, & \text{when } x \geq 1; \\ 1 - x, & \text{when } x < 1; \end{cases}$$

is not differentiable at $x = 1$.

Unit-II

2. (a) If $y = x^{\sin x}$, find $\frac{dy}{dx}$.
 (b) Find the value of $\frac{dy}{dx}$ when $\log xy = x + y^2$.
 (c) If $x = a(t + \sin t)$, $y = a(1 - \cos t)$, find the value of $\frac{dy}{dx}$.

Unit-III

3. (a) Find the tangent to the curve $y = be^{-x/a}$ where the curve crosses the axis of y .
 (b) In the curve $x^m + n = a^{m-n}y^{2n}$, prove that the m th power of the subtangent varies as the n th power of the subnormal.
 (c) Examine whether $x^{1/x}$ possesses a maximum or a minimum and determine the same.

Unit-IV

4. (a) A bag contains 3 red, 6 white and 7 blue balls. What is the probability that two balls drawn are white and blue?
 (b) What is the chance that two numbers, chosen at random, will be prime to each other?
 (c) State and prove Bayes theorem.

Unit-V

5. (a) Find the simple and weighted arithmetic mean of the first n natural numbers, the weights being the corresponding numbers.

- (b) Fit a parabola of second degree to the following data :

X	Y
0	1
1	1.8
2	1.3
3	2.5
4	6.3

- (c) The variables X and Y are connected by the equation $aX + bY + c = 0$. Show that the correlation between them is -1 if the signs of a and b are alike and $+1$ if they are different.

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B. C. A. (Part I) EXAMINATION, 2013

Paper Third

INTRODUCTORY ELECTRONICS

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt all questions. All questions carry equal marks.

Unit-I

1. Discuss the working of CE amplifier and switching characteristics of transistor. 10

Or

Explain scale of integration. Discuss logic family RTL and its characteristics. 10

Unit-II

2. Explain integrated circuit technology, advantages and limitations of integrated circuit. 10

Or

Discuss monolithic integrated circuit technology. 10

Unit-III

3. (a) Discuss 1's and 2's complements with example. What are overflow and underflow codes ? 6
(b) Explain error detection and correcting codes. 4

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Or

- (a) What are data types ? Explain binary fixed point representation. 4
- (b) Discuss ASCII, Gray and BCD codes. 6

Unit—IV

4. State and prove De Morgan's theorem. Explain map simplification. 10

Or

What is K map ? Discuss sum of product and product of sum using example. 10

Unit—V

5. Explain the working principle of the following : 5 each
- (a) JK flip-flop
- (b) Shift register

Or

Differentiate the following : 5 each

- (a) Encoder and decoder
- (b) Multiplexer and demultiplexer

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B. C. A. (Part I) EXAMINATION, 2013

Paper Fourth

FUNDAMENTALS OF I. T. AND O. S.

Time : Three Hours]

[Maximum Marks : 100

Note : Answer any *two* parts from each question. All questions carry equal marks.

1. (a) Explain the different parts of a computer with a block diagram. Also describe the capabilities of a computer.
- (b) Define Data Processing. Write different steps involved in Data Processing.
- (c) Write the time span and characteristics of all computer system generations.
2. (a) What is the work of Input and Output device ? Explain any *four* Input and Output devices.
- (b) What is a storage device ? Explain different types of storage devices.
- (c) Write short notes on any *two* of the following :
 - (i) Indexed sequential access
 - (ii) Random access memory
 - (iii) Registers

3. (a) What is Application Software ? Differentiate between Application Software and System Software.
- (b) What do you mean by Operating System ? Explain different types of operating system.
- (c) Explain compiler, assembler and interpreter.
4. (a) Explain internal and external DOS commands with five commands of each type.
- (b) How do you perform the following tasks in DOS ?
 - (i) Make a Directory
 - (ii) Copy a file from one location to another location
 - (iii) Deleting a File
 - (iv) Deleting the Directory
 - (v) Listing directories
- (c) Write syntax and example of the following Unix Commands :
 - (i) chmod
 - (ii) grep
 - (iii) ps
 - (iv) who
 - (v) tail
5. (a) Write the salient features of Windows XP.
- (b) Explain the security and protection features of Windows operating system in detail.
- (c) Describe advantage and disadvantage of Windows operating system over DOS.

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B. C. A. (Part I) EXAMINATION, 2013

Paper Fifth

PROGRAMMING IN 'C' LANGUAGE

Time : Three Hours]

[Maximum Marks : 100

[Minimum Pass Marks : 40

Note : Attempt any two parts from each question. All questions carry equal marks.

1. (a) What are the different data types in C ?
(b) What are the differences between while and do-while loop ? Explain with example.
(c) Write a program in C to print all prime nos. from 1 to 100.
2. (a) Write a program in C to calculate factorial of no. using recursive function.
(b) Write the difference between call by value and call by reference.
(c) Write a program in C to sort elements of an array.
3. (a) What are the differences between structure and union ?
(b) Explain nesting of structure with an example.
(c) Write a program in C to demonstrate array within structure.

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4. (a) Write a note on pointer arithmetic.
 - (b) What are the different memory allocation functions ? Explain in brief.
 - (c) Write a program in C to demonstrate array of pointers.
5. (a) Explain command line arguments with an example.
 - (b) Write a program in C to demonstrate file accessing functions.
 - (c) Explain C preprocessor directives with an example.

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B. C. A. (Part I) EXAMINATION, 2013

Paper Sixth

INTRODUCTION TO PC SOFTWARE AND INTERNET APPLICATIONS

Time : Three Hours]

[Maximum Marks : 100

[Minimum Pass Marks : 40

Note : Attempt any *two* parts from each Unit. All questions carry equal marks.

Unit-I

1. (a) Demonstrate the Auto Text feature of MS-Word.
- (b) Create a list of 10 best friends. Create a Thank You letter. Use Mail Merge feature of MS-Word to create a Thank You letter for each of your friends from the above two files.
- (c) What are the differences between Comment and Footnote ?

Unit-II

2. (a) Write any *five* mathematical formulas with their utility in MS-Excel.

- (b) Create a File in MS-Excel to store the following records :

Name	Sex	Post	Salary	Telephone
Justin	M	CEO	20000	4333178
Badrinath	M	Director	15000	4330375
Pratibha	F	Dy-director	14000	5525417
Gurung	F	Manager	12000	4254588
Karna	M	Officer	10000	6524587

Write queries for :

- one to display the salary of female staff and
 - another for male staff.
- (c) Explain the use of status bar in MS-Excel.

Unit – III

- Suppose you have created 4 slides on annual day of your college. Write the steps to do the following :
 - Header and Footer
 - Background Color
 - Insert Picture from Clip Art
 - Insert Slide Numbers
 - Write the steps for creating a table in MS-Access.
 - How can you add sound and movie into your MS-Power Point Presentation ?

Unit – IV

- Write the HTML code for any two the following :
 - Creating a webpage with a single background image not a tiled background.
 - Creating a bullet and number list.
 - Changing link colour when moving mouse over link.

- How do you Indent text on your web page or in HTML ?
- How do you close browser window with HTML code ?

Unit – V

- What are the tools required for image adjustment through Photoshop ?
 - Describe the importance of action scripts in 2 D/3D animation.
 - Write short notes on any two of the following in terms of Animation :
 - Object
 - Shapes
 - Transformation



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B. C. A. (Part I) EXAMINATION, 2013

Paper Seventh

PROGRAMMING IN VISUAL BASIC

Time : Three Hours] [Maximum Marks : 50

[Minimum Pass Marks : 20

Note : All questions are compulsory. Attempt any two parts from each question. All questions carry equal marks.

Unit—I

1. (a) Explain all data types in Visual Basic. What is variant data type ?
- (b) Differentiate between Event Driven Programming and Procedure Oriented Programming.
- (c) Write a program in VB to generate first 20 Fibonacci numbers.

Unit—II

2. (a) Write the difference between call-by-value and call-by-reference mechanism.
- (b) Explain all the types of functions in VB.
- (c) What are procedures and how do they benefit the application development ?

Unit—III

3. (a) What is the difference between SDI and MDI forms in VB ?
- (b) What do you mean by animation control ? Explain in brief.
- (c) Explain how to create MDI forms in VB. Give *two* real life examples which are developed using MDI.

Unit—IV

4. (a) Explain the reading and writing operations in random access file systems.
- (b) Explain the type of errors in Visual Basic.
- (c) Write short notes on the following :
- (i) Error Handling Routines
 - (ii) Error Trapping Tools

Unit—V

5. (a) What is data environment in Visual Basic ? Explain how to access the data using data environment.
- (b) Write a short note on crystal report writer.
- (c) What is Open Database Connectivity (ODBC) ? List the differences between ADO and RDO in VB.

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B. C. A. (Part I) EXAMINATION, 2013

Paper Eighth

COMMUNICATION SKILLS

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt all the five questions.

Unit – I

1. Give meaning of the following words/phrases and use them in sentences (any ten) : 10

- (i) Fatigue
- (ii) Import
- (iii) Information
- (iv) Discovery
- (v) Illegal
- (vi) Ring up
- (vii) Turn down
- (viii) Principle
- (ix) Magical
- (x) Wisdom
- (xi) Greed
- (xii) Efficient
- (xiii) Sacred



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- (xiv) Alter
- (xv) Marvellous
- (xvi) Council
- (xvii) Coarse

Unit-II

2. (a) Make simple sentences of any five of the following : 5
- (i) He is rich, yet he is not contented.
 - (ii) We must eat, or we cannot live.
 - (iii) I called him, but he gave me no answer.
 - (iv) This coat cannot be mine, for it is too big.
 - (v) Not only men, but women and children were put to death.
 - (vi) The boy was disobedient, and so the teacher punished him.
 - (vii) He neither returned the goods nor paid the bill.
 - (viii) Not only did his father gave him money, but his mother too.
- (b) Make complex sentences of any five of the following : 5
- (i) He confessed his crime.
 - (ii) He bought his uncle's library.
 - (iii) He worked hard to pass the examination.
 - (iv) Krishna wishes me to play for his team.
 - (v) I expect to meet Rama tonight.
 - (vi) The value of exercise is great.
 - (vii) Rana is happy in his present class.
 - (viii) The class-room is not the place for boys to play in.

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Unit-III

3. (a) Write the correct verb form in any five of the following : 5
- (i) Hurry up ! The programme
(will start, is about to start)
 - (ii) The plane at 3-30.
(arrives, will arrive)
 - (iii) Look at those black clouds. It
(will rain, is going to rain)
 - (iv) Unless we now we can't be on time.
(start, will start)
 - (v) I home next Sunday.
(go, am going)
 - (vi) The next term on 16th November.
(begins, is beginning)
 - (vii) Oh dear I
(will sneeze, on going to sneeze)
 - (viii) Help I fall.
(will, am going to)
- (b) Fill in the blanks with modals can, could, may, might, shall, should, will, must or dare (any five) : 5
- (i) It's raining. I take my raincoat.
 - (ii) They gladly accept the offer.
 - (iii) There is no other offer. I accept this job.
 - (iv) "..... I stay here tonight ?" said the stranger.

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P. T. O.

- (v) "You not go until you tell me the truth", said the police officer.
 (vi) be so foolish as to behave like this ?
 (vii) The country build submarines before the second world war.
 (viii) You leave, the office early today.

Unit-IV

4. Do as directed (any ten) : 10

- (i) She loves Savitri. (Change into Passive)
 (ii) The cat killed the mouse. (Change into Passive)
 (iii) Hari opened the door. (Change into Passive)
 (iv) I have sold my bicycle. (Change into Passive)
 (v) The peon opened the gate. (Change into Passive)
 (vi) The boy made a kite. (Change into Passive)
 (vii) "Are you coming home with me ?" he asked.
 (Change to Indirect Speech)
 (viii) "Do you really come from China ?" said the prince.
 (Indirect Speech)
 (ix) "Sit down boys," said the teacher.
 (Indirect Speech)
 (x) Rama said to Arjun, "Go away."
 (Indirect Speech)
 (xi) He said, "I am unwell."
 (Indirect Speech)
 (xii) He said, "My master is writing letters."
 (Indirect Speech)

Unit-V

5. (i) Write a letter to a friend, describing a book you have just read and strongly recommending it to him. 5

Or

Write a letter to a friend, describing a pleasant dream.

- (ii) (a) Write a letter to the Municipal Mayor complaining about the poor condition of the city. 5

Or

- (b) Write a letter to your brother/sister, describing your visit to an orphanage.



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B. C. A. (Part I) EXAMINATION, 2013

Paper Ninth

(Foundation Course)

GENERAL AWARENESS

Time : Three Hours]

[Maximum Marks : 50

नोट : सभी पाँच प्रश्नों के उत्तर दीजिए। सभी प्रश्नों के अंक समान हैं।

Attempt all the five questions. All questions carry equal marks.

1. भारतीय कला में विभिन्न संस्कृतियों के मेल पर एक लेख लिखिए।

Write an essay on Fusion of Cultures in Indian Art.

अथवा

(Or)

भारतीय वास्तुकला का संक्षिप्त विवरण दीजिए।

Give a brief account of Indian Architecture.

2. चारों वेदों के उद्गम एवं विषय-वस्तु का वर्णन कीजिए।

Describe the four Vedas in terms of their origin and content.

अथवा

(Or)

महाभारत पर एक लेख लिखिए।

Write an essay on the Mahabharata.

3. क्रांतिकारी आतंकवाद का मार्ग किन्होंने अपनाया एवं भारतीय आजादी के संघर्ष में इनका क्या योगदान था ?

Who followed the path of revolutionary terrorism and what were their contributions to the freedom struggle in India ?

अथवा

(Or)

दांडी नमक यात्रा का संक्षिप्त विवरण दीजिए।

Give a brief account of Dandi Salt March.

4. भारतीय संविधान के महत्वपूर्ण पक्षों पर प्रकाश डालिए।

Throw light on the important aspects of Indian Constitution.

अथवा

(Or)

भारतीय नागरिक के कितने मौलिक कर्तव्य हैं ? संक्षिप्त वर्णन कीजिए।

How many fundamental duties are enumerated for an Indian citizen ? Discuss in brief.

5. निम्नलिखित में से किन्हीं दो पर संक्षिप्त टिप्पणियाँ लिखिए :

- (i) हिन्दू त्रिमूर्ति
- (ii) असहयोग आंदोलन
- (iii) भारत में क्षेत्रवाद

Write short notes on any two of the following :

- (i) The Hindu Trinity
- (ii) Non-co-operation Movement
- (iii) Regionalism in India

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B. C. A. (Part I/II/III) EXAMINATION, 2013

ENVIRONMENTAL STUDIES

Time : Three Hours]

[Maximum Marks : 75

नोट : सभी प्रश्न अनिवार्य हैं। खण्ड 'अ' लघु प्रश्नोत्तरीय है, जिसके 25 अंक हैं। खण्ड 'ब' निबन्धात्मक है तथा प्रत्येक प्रश्न 10 अंक का है।

All questions are compulsory. Section 'A' is short answer type and carries 25 marks. Section 'B' is essay type and each question carries 10 marks.

खण्ड-अ

(Section-A)

1. निम्नलिखित में से किन्हीं पाँच पर संक्षिप्त टिप्पणियाँ लिखिए :

- (i) भू-अपक्षय
- (ii) प्राकृतिक गैस
- (iii) अपघटक
- (iv) जैवविविधता के तप्त स्थल
- (v) निवनीकरण
- (vi) भारतवर्ष की पाँच संकटापन्न पादप प्रजातियों के नाम लिखिये
- (vii) जन जागरूकता
- (viii) ध्वनि प्रदूषण

Write short notes on any five of the following :

- (i) Soil erosion
- (ii) Natural gas
- (iii) Decomposer
- (iv) Hot-spot of Biodiversity
- (v) Deforestation
- (vi) Write name of five endangered plant species of India.
- (vii) Public awareness
- (viii) Noise Pollution

खण्ड-ब

(Section-B)

2. प्राकृतिक संसाधन के संरक्षण में व्यक्ति की भूमिका का वर्णन कीजिये।
Describe the role of an individual in conservation of natural resources.

अथवा

(Or)

खनिज संसाधन क्या हैं ? प्रकृति में कितने प्रकार के खनिज संसाधन होते हैं ? समझाइये।

What are mineral resources ? How many types of mineral resources are present in the nature ? Explain.

3. वन पारिस्थितिक तंत्र एवं उसके विभिन्न घटकों का वर्णन कीजिये।

Describe forest ecosystem and its various components.

अथवा

(Or)

पारिस्थितिक पिरामिडों को समझाइये।

Explain ecological pyramids.

4. लुप्तप्राय प्रजातियाँ क्या हैं ? ये कितने प्रकार की होती हैं ? इनके संरक्षण के उपायों का संक्षिप्त वर्णन कीजिए।

What are endangered species ? Describe their types and methods of conservation of endangered species.

अथवा

(Or)

इन-सिटू संरक्षण एवं एक्स-सिटू संरक्षण पर एक टिप्पणी लिखिये।

Write a note on In-situ conservation and Ex-situ conservation.

5. वायु प्रदूषण पर एक लेख लिखिये।

Write an essay on Air Pollution.

अथवा

(Or)

प्राकृतिक प्रकोप से आप क्या समझते हैं ? बाढ़ के कारणों तथा प्रभावों का वर्णन कीजिये।

What do you understand by Natural Disaster ? Describe the causes and effects of floods.

6. हरित गृह प्रभाव पर एक लेख लिखिये।

Write an essay on green house effects.

अथवा

(Or)

पर्यावरण एवं मानव स्वास्थ्य में सूचना तकनीक के योगदान का वर्णन कीजिये।

Describe the role of information technology in environment and human health.