উপযুক্ত উদাহৰণৰ সৈতে primary key ৰ ধাৰণাটো ব্যাখ্যা কৰা। Candidate key ৰ পৰা ই কেনেকৈ পৃথক?

(d) What is normalization in DBMS? Describe 1NF, 2NF and 3NF with suitable examples.

DBMS ত normalization কি? উপযুক্ত উদাহৰণৰ সৈতে 1NF, 2NF আৰু 3NF বৰ্ণনা কৰা।

(e) Write the differences between :

পাৰ্থক্য লিখা ঃ

(a) Entity set and relationship set

(b) Strong entity and weak entity

(c) Simple and composite attribute

(d) Single-valued and multi-valued attribute

(f) What is a foreign key? How is it different from primary key?

Foreign key কি? ই Primary key ৰ পৰা কেনেকৈ পৃথক?

———————

2024

COMPUTER SCIENCE/COMPUTER APPLICATION/INFORMATION TECHNOLOGY

(Honours Generic / Regular)

For Honours Generic

Answer the Questions from any one Option.

OPTION – A

(*Programming in Visual Basic/Gambas*)

Paper : CSC–HG–4016

OPTION – B

(*Information Security and Cyber Laws*)

Paper : CSC–HG–4026

OPTION – C

(*Web and E-commerce Technologies*)

Paper : CSC–HG–4036

OPTION – D

(*Computer System Architecture*)

Paper : CSC–HG–4046 / CSC–RC–4016

OPTION – E

(*Introduction to Database Management Systems*)

Paper : CSC–HG–4056/TCA–HG/RC–4016/TIT–RC 4016

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer **either** in English **or** in Assamese.

(ইংৰাজী অথবা অসমীয়াত উত্তৰ লিখিবা।)

Contd.

OPTION – A

(Programming in Visual Basic/Gambas)

Paper : CSC–HG–4016

1. Answer the following questions : 1×7=7

   (a) VB is a _____ programming language.
   (i) Procedural
   (ii) Object-oriented
   (iii) Even driven
   (iv) None of the above

   (Fill in the blank)

   (b) In VB a variable name cannot be more than _____ characters.
   (i) 255
   (ii) 300
   (iii) 125
   (iv) 400

   (Fill in the blank)

   (c) IDE stands for
   (i) International Development Environment
   (ii) Integrated Development Environment
   (iii) Integrated Deployment Environment
   (iv) Information Delayed Environment

   (Choose the correct answer)

   (d) _____ function converts a number to a string.
   (i) str()
   (ii) ucase()
   (iii) val()
   (iv) None of the above

   (Fill in the blank)

   (e) Constant variable is fixed size of value.
   (True/False)

   (f) The file extension of a project file is .vbp.
   (True/False)

   (g) The function procedures are by default private.
   (True/False)

2. Answer the following questions : 2×4=8

   (a) Define scope of a variable. What is the use of Boolean type variable? Give an example.

   (b) What is dynamic array? Write its syntax.

   (c) How to change font size and font colour in VB ?

3 (Sem–4/CBCS)CSC HG 1/2/3/4/5, RC/TCA HG/RC/TIT RC/G   2

3 (Sem–4/CBCS)CSC HG 1/2/3/4/5, RC/TCA HG/RC/TIT RC/G   3   Contd.

(d) Write the difference between sub procedure and function procedure.

3. Answer *any three* of the following questions : 5×3=15

(a) Explain the properties, events related and method associated with button, list box and combo box in VB.

(b) Write the difference between private and public sub procedure.

(c) Briefly explain data types of support in VB.

(d) What is FORM? How to customize a FORM?

(e) What is the usage of checkbox and image box controls? Explain with an example.

4. Answer *any three* of the following questions : 3×10=30

(a) Write a VB program to accept student details such as name, department, total marks and validate the input data and calculate the percentage and division.

(b) Explain the components of IDE.

(c) What is ActiveX Data Objects(ADO)? Explain different tools used to implement ADO.

(d) Explain the usage of different FORM events.

(e) Write a VB program to find out the largest of given three integer number.

(f) Write short notes on the following :

(i) MDI Form

(ii) Crystal and Data Report.

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OPTION – B

(Information Security and Cyber Laws)

Paper : CSC–HG–4026

1. Answer the following questions : 1×7=7

   (a) What do you mean by cyber security?

   (b) What is IP address?

   (c) What is digital signature?

   (d) Define IP spoofing.

   (e) What is protocol?

   (f) Which one is an application layer protocol?

      (i) UDP

      (ii) TCP

      (iii) IP

      (iv) HTTP

   (g) What are cyber laws?

2. Answer the following questions : 2×4=8

   (a) What is information security?

   (b) What do you mean by threats and attacks in cyber?

   (c) How does law differ from ethics?

   (d) Why is information security important in today's life?

3. Answer **any three** of the following questions : 5×3=15

   (a) Explain different types of cyber attacks.

   (b) What do you mean by data encryption and decryption?

   (c) What are the objectives of cyber laws?

   (d) What are different crimes happening in social media?

   (e) Explain how software based data security differs from physical data security.

4. Answer **any three** of the following questions : 10×3=30

   (a) Explain briefly about various applications of information security and threats in protecting important data.

(b) Explain the following terms :

   (i) Encoding

   (ii) Decryption

   (iii) Hashing techniques

(c) Explain about the processing of secure Information with suitable example.

(d) What do you mean by Firewall? Explain, its functions in E-commerce.

(e) What is the primary goal of Information security within an organization ? How do you apply if to protect data securely ?

(f) Write short notes on *any two* of the following

   (i) Software piracy

   (ii) E-Wallet

   (iii) Security protocols

   (iv) Black Box Testing.

OPTION – C

(Web and E-commerce Technologies)

Paper : CSC–HG–4036

1. Answer the following questions :   1×7=7

   (a) What is E-commerce ?

   (b) What is Internet ?

   (c) Name *any two* network devices.

   (d) What is Internet Service Provider (ISP)?

   (e) What is Electronic Data Interchange (EDI) ?

   (f) Write *any two* types of electronic payment system.

   (g) What is digital signature ?

2. Answer the following questions :   2×4=8

   (a) Name any two computer crimes.

   (b) Differentiate between LAN and MAN.

   (c) Write two applications of EDI.

   (d) What are authorization and authentication in Internet security ?

3. Answer **any three** questions from the following : 5×3=15

   (a) Describe the technical components of E-commerce technologies.

   (b) Write a short note on credit card system.

   (c) What is payment gateway ? What is its role in electronic payment services ?

   (d) What is computer virus ? How does it spread ? How can a computer system be protected from computer virus ?

   (e) Describe secret key cryptography and public key encryption.

4. Answer **any three** questions from the following : 10×3=30

   (a) Explain various types of E-commerce.

   (b) Discuss the problems and issues related to internet based E-commerce.

   (c) How does electronic data interchange work ? Explain.

   (d) Discuss the issues related to enabling technologies for SCM and E-commerce.

   (e) Discuss the strategies for developing electronic commerce web sites.

   (f) Explain the E-cycle of Internet marketing.

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(Computer System Architecture)

Paper : CSC–HG–4046/CSC–RC–4016

1. Fill in the blanks :   1×7=7

খালী ঠাই পূৰণ কৰা ঃ

(a) In Boolean algebra, A.(B+C) = _____.

Boolean algebra ত A.(B+C) = _____ ।

(b) In Boolean algebra, $\overline{(A+B)}$ = _____.

Boolean algebra ত $\overline{(A+B)}$ = _____ ।

(c) A _____ is a sequential circuit which consists of single binary bit.

_____ sequential circuit ত এটা binary বিট সঞ্চিত হৈ থাকে।

(d) _____ is also known as a data selector.

_____ ক data selector কোৱা হয়।

(e) _____ is a special type of sequential circuit used to count the pulse.

Pulse গণিবলৈ ব্যৱহাৰ হোৱা sequential circuit ক _____ বোলে।

(f) Full form of DMA is _____.

DMA ৰ পূৰ্ণ ৰূপ হল _____ ।

(g) Full form of MAR is _____.

MAR ৰ পূৰ্ণ ৰূপ হল _____ ।

2. Define the following terms :   2×4=8

সংজ্ঞা লিখা ঃ

(a) Combinational circuit

(b) Register

(c) Bus system

(d) Micro-operation

3. Answer **any three** of the following questions :   5×3=15

যিকোনো তিনিটা প্ৰশ্নৰ উত্তৰ লিখা ঃ

(a) Simplify the Boolean function

$$F(A, B, C, D) = \sum(0, 1, 2, 3, 12, 13, 14, 15)$$

Boolean function

$$F(A, B, C, D) = \sum(0, 1, 2, 3, 12, 13, 14, 15)$$

তো সৰল কৰা।

(b) Explain how floating point numbers are represented.

Floating point number বোৰ কেনেকৈ চিত্ৰিত কৰা হয় ব্যাখ্যা কৰা।

(c) Briefly explain instruction cycle.

Instruction cycle চমুকৈ ব্যাখ্যা কৰা।

(d) Explain microprogrammed control.

Microprogrammed control ব্যাখ্যা কৰা।

(e) What is addressing mode? Explain.

Addressing mode কি? ব্যাখ্যা কৰা।

4. Answer *any three* of the following questions : 10×3=30

যিকোনো তিনিটা প্ৰশ্নৰ উত্তৰ লিখা ঃ

(a) Draw the logic diagram and explain working of 8 × 1 multiplexer.

8 × 1 multiplexer ৰ লজিক চিত্ৰ আঁকা আৰু ইয়াৰ কাম-কাজৰ ব্যাখ্যা কৰা।

(b) Write a brief description of computer registers.

Computer register বোৰৰ চমু বিবৰণ দিয়া।

(c) What is instruction format? Explain zero-address, one-address, two-address and three-address instruction formats.

Instruction format কি? Zero-address, one-address, two-address and three-address instruction format ব্যাখ্যা কৰা।

(d) What are the modes of data transfer? Explain each.

Data transfer ৰ mode বোৰ কি? প্ৰত্যেকৰে বৰ্ণনা দিয়া।

(e) Describe arithmetic and logical micro-operations.

Arithmetic আৰু logical micro-operation ৰ বৰ্ণনা দিয়া।

(f) Write short notes on : 5×2=10

চমু টোকা লিখা ঃ

(i) Assembly language

(ii) I/O interface

_____

OPTION – E

(*Introduction to Database Management Systems*)

Paper : CSC–HG–4056

TCA–HG/RC–4016

TIT–RC–4016

1. Answer the following questions as directed :

1×7=7

তলত দিয়া প্ৰশ্নবোৰৰ নিৰ্দেশানুযায়ী উত্তৰ লিখা ঃ

(a) A _____ is a collection of interrelated data and a set of programs to access those data.

_____ হৈছে আন্তঃসম্পৰ্কীয় তথ্যৰ সংকলন আৰু সেই তথ্যসমূহ access কৰা প্ৰগ্ৰেমৰ এটা গোট।

(খালী ঠাই পূৰ কৰা)

(b) _____ command is used to delete or remove a table in database.

_____ কমাণ্ড ডাটাবেছত থকা টেবুল এখন delete বা আঁতৰাবলৈ ব্যৱহাৰ কৰা হয়।

(খালী ঠাই পূৰ কৰা)

(c) The _____ model uses a collection of tables to represent both data and the relationships among those data.

_____ মডেলে data আৰু সেই data ৰ মাজৰ সম্পৰ্ক দুয়োটাকে প্ৰতিনিধিত্ব কৰিবলৈ টেবুলৰ সংকলন ব্যৱহাৰ কৰে।   *(খালী ঠাই পূৰ কৰা)*

(d) Select is an operator in relational algebra.

(True/False)

Select হৈছে relational algebra ত এটা operator।

(সঁচা/মিছা)

(e) A foreign key cannot contain NULL value.

(True/False)

এটা foreign key ত NULL মান থাকিব নোৱাৰে।

(সঁচা/মিছা)

(f) In one-to-one mapping cardinality, an entity in A is associated with at most one entity in B, and vice-versa.

(True/False)

One-to-one mapping cardinality ত, A থকা এটা entity, B ৰ সৰ্বাধিক এটা entity ৰ সৈতে জড়িত হব পাৰে, আৰু বিপৰীতভাৱে।

(সঁচা/মিছা)

(g) The participation of an entity set E in a relationship set R is said to be partial if every entity in E participates in at least one relationship in R.

(True/False)

এটা relationship set R ত, এটা entity set, E ৰ participation বুলি কোৱা হয় partial যদি E ৰ প্ৰতিটো entity R ত অন্ততঃ এটা সম্পৰ্কত অংশগ্ৰহণ কৰে।   *(সঁচা/মিছা)*

2. Define the terms : 2×4=8

   সংজ্ঞা দিয়া ঃ

   (a) Database

   (b) DBMS

   (c) SQL

   (d) ERD

3. Answer **any three** of the following questions : 5×3=15

   যিকোনো তিনিটা প্ৰশ্নৰ উত্তৰ লিখা ঃ

   (a) What is data independence ? Briefly explain the logical data independence property of DBMS.

   Data independence কাক বোলে ? DBMS ৰ logical data independence ৰ সম্পৰ্কে চমুকৈ ব্যাখ্যা কৰা।

   (b) Explain the basic concepts of entity-relationship data model.

   Entity-relationship data model ৰ মূল ধাৰণাসমূহ ব্যাখ্যা কৰা।

   (c) Briefly discuss the fundamental operations in relational algebra.

   Relational algebra ত fundamental operations ৰ বিষয়ে চমুকৈ আলোচনা কৰা।

   (d) How to convert an ER diagram to relational schema ?

   ER diagram এটাক relational schema লৈ কেনেকৈ ৰূপান্তৰ কৰিব পাৰি ?

   (e) Briefly explain the advantages of DBMS.

   DBMS ৰ সুবিধাসমূহ চমুকৈ ব্যাখ্যা কৰা।

4. Answer **any three** of the following questions : 10×3=30

   যিকোনো তিনিটা প্ৰশ্নৰ উত্তৰ লিখা ঃ

   (a) Explain the DBMS architecture with suitable diagram.

   উপযুক্ত diagram ৰ সৈতে DBMS architecture ব্যাখ্যা কৰা।

   (b) Discuss the relational data model.

   Relational data model ৰ বিষয়ে আলোচনা কৰা।

   (c) Explain the concept of primary key with suitable example. How is it different from candidate key ?