

B.Sc. 2nd Semester Examination (ESE) 2022**Science (Hons & General)****Paper: AECCEV1T****Environmental Studies****Full Marks: 50****Time: 2 Hours**

(The figure in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable)

GROUP - A

Answer any ten questions: $2 \times 10 = 20$

1. What is food chain?
(খাদ্য শৃঙ্খল কাকে বলে?)
2. What is Sustainable development?
(সুস্থির উন্নয়ন কী?)
3. Write the full form of IUCN and WWF.
(IUCN এবং WWF -এর পুরা নাম লেখা)
4. Write the three category of IUCN.
(IUCN এর তিনটি ক্যাটাগরী লেখা)
5. State the differentiate between biodegradable and non-biodegradable substance.
(জৈব ভঙ্গুর ও জৈব অভঙ্গুর পদার্থের মধ্যে পার্থক্য লেখা)
6. Define IPCC
(IPCC -র সংজ্ঞা দাও।)
7. Define acid rain?
(অ্যাসিড বৃষ্টি কাকে বলে?)
8. Write a note on Montreal protocol.
(মন্ট্রিল প্রোটোকল সম্পর্কে টীকা লেখো।)
9. What is e-waste?
(ই-বর্জ্য কী?)

10. What is Habitat?
(হ্যাবিটেটকী?)
11. What is biological magnification?
(জীব বিবর্ধন কাকে বলে?)
12. Give example of one national park and one biosphere reserve in West Bengal?
(একটি করে পশ্চিমবঙ্গের জাতীয় উদ্যান ও বায়োস্ফিয়ার রিজার্ভের উদাহরণ দাও।)
13. Where did the sailent valley movement take place?
(সাইলেন্ট ভ্যালি আন্দোলন কোথায় হয়েছিল?)
14. Write any two example of conventional and nonconventional energy.
(দুটি করে প্রচলিত শক্তি ও অপ্রচলিত শক্তির উদাহরণ দাও।)
15. Mention the concept of 'Eutrophication'.
(‘ইউট্রোফিকেশন’ ধারনাটির উল্লেখ করা।)

GROUP – B

Answer any four questions:

$5 \times 4 = 20$

16. What are the criteria of Biodiversity hotspot? Discuss the causes of destruction of biodiversity. 2+3
(জীব বৈচিত্র্য হটস্পট কাকে বলে? জীব বৈচিত্র্য ধূংসের কারণগুলি আলোচনা করা।)
17. What are the effects of water pollution? Write the full form of PAN.
~ 4+1
(জল দূষনের ক্ষতিকর দিগন্তগুলি কি কি? PAN এর পুরা নাম কি?)
18. Define ozone hole depletion. Mention the causes of it. 2+3
(ওজোন ছিদ্র কাকে বলে? উহার কারণ উল্লেখ করা।) -
19. Write a short note on Chipko Movement. 5
(চিপকো আন্দোলন সম্পর্কে টিকা লেখো।)
20. Write down the benefits of using the solar energy. 5
(সৌরশক্তি ব্যবহারের সুবিধাগুলি কি কি?)
21. Briefly describe about Nitrogen cycle. 5
(সংক্ষেপে নাইট্রোজেন চক্র সম্পর্কে বর্ণনা দাও।)

GROUP - C

Answer any one question:

$10 \times 1 = 10$

22. What is green house? Mention the role of Green house gasses in Global warming. Explain the environmental impact of global warming on earth.

(গ্রীন হাউস কী? বিশ্ব উষ্ণায়নে গ্রীন হাউস গ্যাসগুলির ভূমিকা উল্লেখ কর। পৃথিবীতে বিশুষ্ণায়নের পরিবেশগত প্রভাব ব্যাখ্যা কর।)

23. Discuss the impact of Human Pollution growth on environment.

(পরিবেশের উপরে জনসংখ্যা বৃদ্ধির প্রভাব আলোচনা কর।)

• • •

IUCN → International Union
of conservation nature
and natural Resource.

B.Sc. 1st Semester Examination 2022**BCA (H)****Paper Code: BCAHCC1T****Introduction to Programming using C****Full Marks: 40****Time: 2 hours**


(The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable)

GROUP- A**Answer any FIVE questions from the following** **$2 \times 5 = 10$**

1. Write two differences between *while* loop and *do- while* loop.
2. What do you mean by derived data type? Name two examples of derived data types.
3. Name two library functions defined in *math.h* header file.
4. What is array?
5. Define program.
6. How does *malloc* differ from *calloc* Library function?
7. Give one example of each of the following: unary operator, binary operator, ternary operator.
8. What is function?

GROUP- B**Answer any FOUR questions from the following.** **$5 \times 4 = 20$**

9. What is algorithm? Explain *scant()* function with an example.
10. What is type casting? Explain it with suitable example.

11. What do you mean by storage class of variables? What are the different types of storage classes? When should we use static storage class?
12. Illustrate the call by value and call by address concepts in function.
13. Write a C programme that checks if a given number is prime or not.
14. Why do we need array? How do we declare an one dimensional array and a two dimensional array of integer type? Can we initialise array elements in time of its declaration?

GROUP - C

Answer any ONE question from the following.

$10 \times 1 = 10$

15. (a) What do you understand by a pointer variable?

(b) When should we use *int***?

(c) Write a short note on pointer arithmetic.

(d) Can we say "array name can be used like pointer to character"?

$2+2+5+1$

16. (a) Write a C programme to change all lower case characters to uppercase characters.

(b) What do you mean by recursion? Write a recursive function that computes GCD (greatest common divisor) of two integers.

$5+2+3$

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B.Sc. 1st Semester Examination 2022
BCA (H)
Paper Code: BCAHCC2T
Matty

Computer Fundamental with Digital Electronics

Full Marks: 40

Time: 2 hours

(The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable)

Group – A

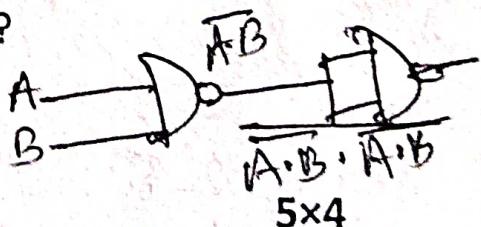


Answer any FIVE questions from the following.

- ✓ 1. Differentiate between positive logic and negative logic.
2. What are the weighted and unweighted codes? Explain with example.
- ✓ 3. Perform this: $(67.03 + 5.66)8$.
- ✓ 4. Show that realization of two-input AND gate using NAND gates only.
5. Consider the statement " $a \oplus b \oplus c = a \odot b \odot c$ ". Do you think this statement is correct?
6. How does one represent -11 using 8-bit sign magnitude representation?
- ✓ 7. Give two differences between combinational and sequential circuit.
- ✓ 8. What is the role of programme counter register?

$$\text{EXOR} = A \oplus B = \overline{AB} + A\overline{B}$$

Group - B



Answer any FOUR questions from the following.

5x4

- ✓ 9. Implement EX-OR gate using only two input NAND gates. How does a NAND gate differs from an AND gate? Convert the following binary numbers to their decimal equivalent 10111111. 2+2+1

P.T.O.

$$\begin{array}{r}
 \overline{A+B} \cdot \overline{A+B} \\
 \hline
 \overline{A \cdot B} + \overline{A \cdot B} \\
 \hline
 A \cdot B + A \cdot B = AB
 \end{array}$$

Page-1

$= AB$

positive logic refers to high voltage level as logic 1 and low voltage level as logic 0.

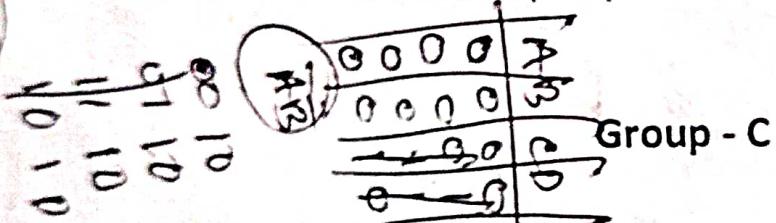
10. What is the difference between standard SOP and standard POS forms of logical expression? Simply Boolean expression $ABC + AB'C + ABC'$. 3+2
11. Design a logic circuit to give an output $X = ((AB)' + A'C)((AC+C)')$. Right down the difference between combinational and sequential circuit. 3+2
12. What is meant by edge triggered and level triggered? Write short note on propagation delay. 4+1

13. (a) Simplify the following Boolean function using Karnaugh map:

$$f(a, b, c, d) = \sum(m_0, m_1, m_2, m_3, m_6, m_8, m_{10}, m_{14})$$

- (b) Perform the subtraction $101 - 1110$ using 2's complement representation. 3+2

14. What is race condition in flip flop? Illustrate this using S-R flip flop. 2+3



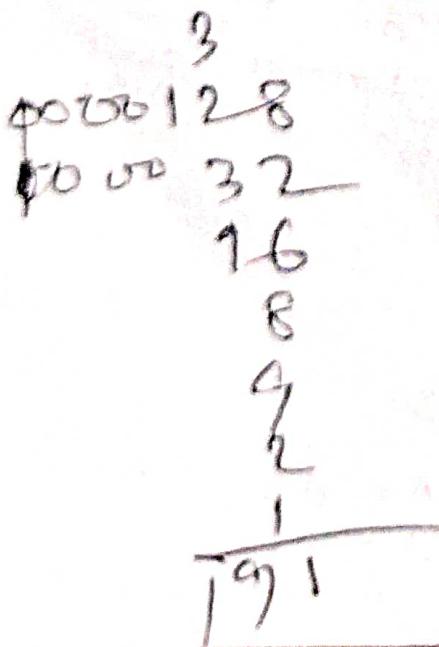
Answer any ONE question from the following.

10×1

15. Explain 4 bit parallel adder with suitable diagrams. What is buffer register? Write down the advantage of Master-slave flip flop. 6+2+2

16. Design a 4×16 line decoder using two 3×8 line decoder. Implement the following Boolean function multiplexer

$$f(w, x, y, z) = m(0, 1, 5, 6, 8, 10, 2, 15)$$
 with diagram. 3+7



$$\begin{aligned} f(w, x, y, z) &= AB' + A'B'C + A'BC' \\ &= AB' + A'C(B + B') \\ &= A' B + A(B + B')C \\ &= A' B + A(C + C) \\ &= A' B + A \\ &= A(B + B') \\ &= A \end{aligned}$$

B.Sc. 1st Semester Examination 2022

BCA (H)

Paper Code: BCAGE1T

Linear Algebra

Full Marks: 60

Time: 3 hours

(The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable)

Group-A

Answer any TEN questions from the following.

10X2=20

1. Find Eigen values of $\begin{pmatrix} 5 & 7 \\ 2 & 4 \end{pmatrix}$.2. Find x for which the matrix $\begin{pmatrix} 3-x & 2 \\ 3 & 4-x \end{pmatrix}$ is singular.3. Prove that $\begin{vmatrix} a+ib & c+id \\ -c+id & a-ib \end{vmatrix}$ is purely real.

4. Define an idempotent matrix.

5. Find the $\text{adj}(A)$ where $A = \begin{pmatrix} 2 & 3 \\ 7 & 9 \end{pmatrix}$.

6. Define a subspace.

7. If $\begin{vmatrix} x+2 & 3 \\ x+5 & 4 \end{vmatrix} = 3$, then find the value of x .8. If $A = \begin{pmatrix} 2 & -1 \\ 1 & 3 \end{pmatrix}$, then prove that $A^2 + 5A + 7I_2 = 0$.9. Without expanding the determinant, prove that $\begin{vmatrix} \frac{1}{a} & a^2 & bc \\ \frac{1}{b} & b^2 & ac \\ \frac{1}{c} & c^2 & ab \end{vmatrix} = 0$.10. Find the rank of the matrix $\begin{bmatrix} 2 & 3 & 1 & -1 \\ 3 & 0 & 2 & 4 \\ 6 & 9 & -3 & 3 \end{bmatrix}$.11. If A be an orthogonal matrix then show that $A^{-1} = A^T$.

12. Define linear dependence and independence of set in a vector space with examples.

13. Prove that the set $S = \{(2,1,3), (1,2,9), (6,3,9)\}$ is linearly dependent in \mathbb{R}^3 .
14. Define and dimension of a vector space.

Group-B

Answer any FOUR questions from the following.

$4 \times 5 = 20$

15. Prove that 0 is an eigenvalue of any singular matrix.

16. Express $A = \begin{pmatrix} 2 & 3 & 5 \\ 9 & 3 & 6 \\ 3 & 8 & 10 \end{pmatrix}$ as sum of symmetric and skew symmetric matrix.

17. Prove that \mathbb{R}^2 is a vector space.

18. Solve by matrix method: $x + y + 2z = 4$

$$2x - y + 3z = 9$$

$$3x - y - z = 2$$

$$\left| \begin{array}{ccc|c} 1 & 1 & 2 & 4 \\ 2 & -1 & 3 & 9 \\ 3 & -1 & -1 & 2 \end{array} \right|$$

19. Find the eigenvalues and corresponding eigen vectors of the matrix

$$\begin{pmatrix} 2 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 3 \end{pmatrix}.$$

20. Is the intersection of two subspaces of a vector space V over a field F a subspace of V?

Group-C

Answer any TWO questions from the following. $10 \times 2 = 20$

21. (a) Find the rank of $A = \begin{pmatrix} 1 & 5 & 9 \\ 4 & 8 & 12 \\ 7 & 11 & 15 \end{pmatrix}$. ✓

- (b) Solve by Cramer's rule: $3x + y + z = 4$

$$x - y + 2z = 6$$

$$x + 2y - z = -3$$

22. Find a for which the system of equations is consistent and solve for each consistent case:

$$x + y + z = 1$$

$$2x + 3y - z = a + 1$$

$$2x + y + 5z = a^2 + 1$$

23. (a) If $A = \begin{pmatrix} 4 & 2 & 2 \\ 2 & 4 & 2 \\ 2 & 2 & 4 \end{pmatrix}$, show that $A^2 - 10A + 16I_3 = 0$. Hence obtain A^{-1} .

(b) Solve by Cramer's rule: $x + y + z = 6$

$$x + 2y + 3z = 14$$

$$x - y + z = 2$$

24. (a) Let A be a square matrix of order n . Prove that: $A \cdot adj A = adj A \cdot A = (det A) I_n$.

(b) Prove that $\begin{vmatrix} a^3 & a^2 & 1 \\ b^3 & b^2 & 1 \\ c^3 & c^2 & 1 \end{vmatrix} = (ab + bc + ca) \begin{vmatrix} a^2 & a & 1 \\ b^2 & b & 1 \\ c^2 & c & 1 \end{vmatrix}$.

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PANSKURA BANAMALI COLLEGE

(AUTONOMOUS)

2nd Internal Assessment 2022-23

Class: BCA Semester: 1st Paper: CC1(T)

Sub : Programming in C

Time - 60 Min.

F.M. 20

Mony

Answer any five $5 \times 2 = 10$

1. What is function ?
2. What are the modifier available in c programming language ?
3. Write 4 example of except sequence .
4. What is dangling pointer ? *the pointer variable*
5. What is the use of header file ? *are the address of memory area located in header files*
6. What do mean EOF ? *area located in file pointer*
7. What are the difference between abs() and fabs() . *called data -*
8. What is array ? *function pointer*

Answer any two $2 \times 5 = 10$

1. What do you mean by ternary operator? Explain with suitable example. Why we use ternary operator? (2+2+1)
2. Write a program in c to describe yourself in a text file? (5)
3. What do you mean by call-by value and call-by reference with example? ($2\frac{1}{2} + 2\frac{1}{2}$)
4. What are the function of strcat() and stralen()? What are the difference between " = " and " == " ? ($1\frac{1}{2} + 1\frac{1}{2} + 2$)
5. Check the given string is palindrome or not . (5)

PANSKURA BANAMALI COLLEGE (AUTONOMOUS)

2nd Internal Assessment, 2022

1st Semester

Paper :- BCAGE1T

Full Marks: 20

$2 \times 5 = 10$

$A^n - (-)A^n + (-)A = IA$
Time: 1 hour.

1. Answer any two questions :

$2 \times 5 = 10$

- a) Extend the set S to obtain a basis of the vector space \mathbb{R}^3 , where $S = \{(1,1,0), (1,1,1)\}$.
- b) Verify Cayley-Hamilton theorem for the matrix A and express A^{-1} as polynomial in A , where $A = \begin{pmatrix} 1 & 2 & 1 \\ 1 & -1 & 1 \\ 2 & 3 & -1 \end{pmatrix}$. Compute A^{-1} also.
- c) Find the eigen values and the corresponding eigen vectors of the matrix $\begin{pmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{pmatrix}$.
- d) If X_1, X_2, X_3 be three eigen vectors of a square matrix over a field corresponding to three distinct eigen values, then prove that X_1, X_2, X_3 are linearly independent.

2. Answer any one question :

$1 \times 10 = 10$

- a) i) Find the dimension of the subspace $S \cap T$ of \mathbb{R}^3 where $S = \{(x, y, z) \in \mathbb{R}^3 : x + y - z = 0\}, T = \{(x, y, z) \in \mathbb{R}^3 : 2x - y + z = 0\}$. 5
- ii) Examine the solvability of the following system of equations and solve if possible, $x + y + z = 1, 2x + y + 2z = 2, 3x + 2y + 3z = 5$. 5
- b) i) Define basis and dimension of a vector space. Let $\{\alpha, \beta, \gamma\}$ be a basis of a real vector space V and c be a non-zero real number. Prove that $\{\alpha + c\beta, \beta, \gamma\}$ is a basis of V . 5
- ii) Define eigen value and eigen vector of a square matrix A . If λ be an eigen value of a non singular matrix A , then prove that λ^{-1} is an eigen value of A^{-1} . 5

$$\left\{ \begin{array}{l} x = 1 \\ y = 1 \end{array} \right. \quad \left\{ \begin{array}{l} x = 1 \\ y = 1 \end{array} \right.$$

$$\begin{array}{l} 1 \\ 2 \\ 3 \end{array}$$

$$x = 1 \quad y = 1 \quad z = 1$$

Panskura Banamali College (Autonomous)
B.Sc.Hons. & Pass Internal Assessment 2022

AECC - ENVS

Semester - I

Full Marks: 20 (Theory)

Time: 1 hour

Group-A

1. Answer any two questions: $2 \times 5 = 10$

- a) Distinguish between renewable and nonrenewable energy resources. 5
- b) Write the criterion of hotspot. Name two endangered species in India. 3+2
- c) Differentiate between in-situ & ex-situ conservation? Give one example of National park in India. 4+1
- d) Write shortly the causes and impacts of global warming on environment.

Group- B

Answer any one question:

1x10

2. What is biodiversity? Write the four importance of biodiversity in natural environment. Describe about the 3R concept in waste management system.

2+4+4

3. Write the term about desertification. Describe about the Silent valley/ Bishnoi movement in India. 2+8

Animals "Shon tor."

PANSKURA BANAMALI COLLEGE (AUTONOMOUS)

M

Paper Code: - CC1-T

Full Marks: 10

BCA 1st Internal Assessment , 2022
1st Sem.

Subject: BCA

Paper Name: Programming in C

Time: 30 minutes

Answer any five :

$$5*2=10$$

1. What is variable? Explain with example.
2. What is the use of pre processor directive?
3. Define Statics storage class.
4. What is the importance of key word in c?
5. Write a for loop to print 10 to 1.
6.

```
for(i=1;i<=n;i++)
```

{

f=f*i;

c=c+f;

}

If n=5 then what will be value of c ?(Initial value of c=0,f=1)

7.

```
int a= 10,b=3;d=5.
```

```
clrser();
```

```
if(d+b=a+b)    !
```

{

```
printf("You are very bad")
```

```
d=b;
```

```
b=c;
```

}

Find the error of the error code .

8. Correct the following code

```
int a=10;b=3,c;
```

```
c=a/b
```

```
printf("%f"+c)
```

PANSKURA BANAMALI COLLEGE (AUTONOMOUS)

BCA 1st Internal Assessment , 2022
1st Sem.

Paper Code: - CC2T

Paper Name:Digital Electronics

Subject: BCA

Full Marks: 10

Time: 30 minutes

Answer any five :

Mujib

: 5*2=10

1. What are the advantages of digital techniques over analog?
2. Differentiate between positive logic and negative logic.
3. For what reason binary number system commonly used in digital electronics?
4. Perform this: $(67.03+5.66)_8$
5. Draw K-map and simplify the following Boolean expression $Y(A,B,C,D)=\sum(0,1,2,3,8,9,10,11,12,13,14,15)$
6. Convert the following logic expression in to canonical form: $A(A+B+C)$
7. Prove that $(x+x'y')(x'+y') + yz = y' + z$
8. Simplifying the following expression $w'y'z' + wz + y'z + xyz$

PANSKURA BANAMALI COLLEGE (AUTONOMOUS)

BCA 1st Internal Assessment, 2022

1st Sem.

Paper :- GE1

Chitra Subject : Linear Algebra

Full Marks: 10

Time: 30 minutes.

Answer any five questions

$5 \times 2 = 10$

- 1) Define commute matrix. If A and B be commuting matrices then prove that A^t and B^t commute.

Q1 If $A = \begin{pmatrix} 4 & -5 & 6 \\ 3 & 0 & -1 \\ 5 & -7 & 9 \end{pmatrix}$ then find $\text{adj}(\text{adj } A)$.

- 3) Examine if the set S is a subspace of \mathbb{R}^3 where $S = \{(x_1, x_2, x_3) \in \mathbb{R}^3 : 2x_1 + 3x_2 - 5x_3 = 0\}$.

- 4) In \mathbb{R}^3 , $\alpha = (5, a, -7)$, $\beta = (2, -3, 3)$, $\gamma = (4, 6, 3)$ if α is a linear combination of β and γ then find the value of a .

- 5) A and B are real orthogonal matrices of the same order and $\det A + \det B = 0$. Show that $A + B$ is a singular matrix.

Q2 Prove without expanding the determinant $\begin{vmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{vmatrix} = \begin{vmatrix} 1 & a & bc \\ 1 & b & ca \\ 1 & c & ab \end{vmatrix}$.

- 7) Examine the sets of vectors are linearly independent in \mathbb{R}^3 $\{(-1, 2, 3), (0, 5, -4), (3, 1, -2)\}$.

- 8) Determine k so that the set S is linearly dependent in \mathbb{R}^3 where $S = \{(k, -2, 3), (-2, k, 0), (-1, k, 1)\}$

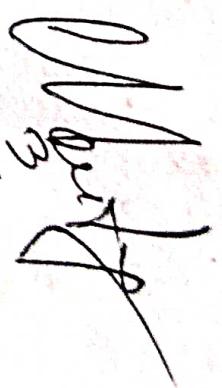
1st Internal Internal Assessment 2022

Semester: I

Subject: BCA

Paper code: AECCEV

Paper name: Environmental studies


M
3

Full marks: 10

(Answer *any five* of the following)

1. What is ecotone?
ଇକୋଟୋନ କିମ୍ବା?
2. Write the structure of pond eco system.
ପଣ୍ଡ ସର୍ବର ବାଯୁତରେ ଶିଖିନଗତ ତ୍ୟାଗିତାଳି କିମ୍ବା ଏହି ଏହି ?
3. What do you mean by renewable resources?
ପ୍ରିନ୍ତର୍ବୀର୍ଯ୍ୟନିଆଜ୍ ଅନ୍ଧାଦ ବଳାତେ କିମ୍ବା ବୋଯା ?
4. What do you mean by food chain?
ଫ୍ରୋଡ଼୍ୟୁଲ୍ୟ ବାକେ ବାଲେ ?
5. What is ecological pyramid?
ଇକୋଲୋଜିକାଲ୍ ପିରାମିଡ କିମ୍ବା ?
6. Write the lienderman's 10% law.
ଲିଂଡର୍ମାନ ଏବଂ ୨୦୦. ଅନ୍ତରି ଲୋଧ୍,
7. State about edge effect.
ଏଜ୍- ଏଫେକ୍ସି ବାଲେ ?
8. Write the name of sources of river eco-system.
ନାନୀର ବାନ୍ଧତରେ ଉତ୍ସୁକାଳିର ନାମ ଲୋଧ୍,

Time: 30 minutes

**PANSKURA BANAMALI COLLEGE
(AUTONOMOUS)**

B.Sc.(H) 1st Semester 2nd Internal Assessment 2023
Subject: BCA Paper:CC2T.

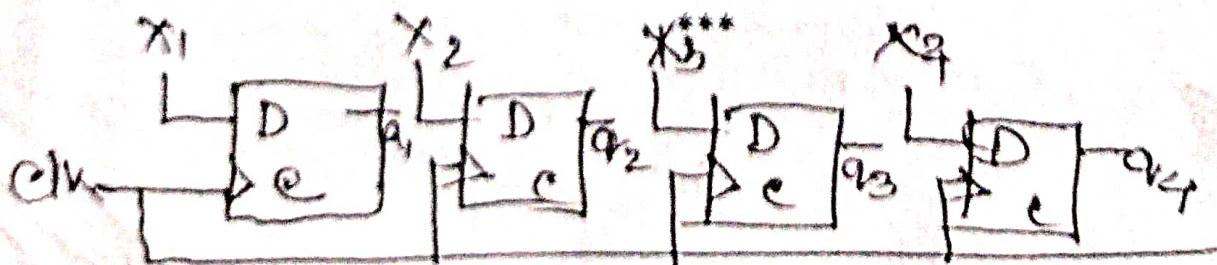
Paper Name: Computer Fundamental with Digital Electronics
Time : 1 Hour F.M. 20

A. Answer any five of the following questions: 5x2=10

- i. What is propagation delay?
- ii. Write down the difference between combinational circuit and sequential circuit.
- iii. Write down the difference between latch and flip-flop.
- iv. What do you mean by register?
- v. What do you mean by T flip-flop.
- vi. What is BCD?
- vii. What is counter?
- viii. What do you mean by buffer flip-flop.

B. Answer any two of the following questions: 2x5=10

- i. Briefly describe about serial in serial out register.
- ii. Briefly describe about Mod-5 counter
- iii. Briefly describe about buffer register.
- iv. How to make SR flip-flop by JK flip-flop.



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