B. Tech (Honours)

Class Test - II, March, 2022

(AICTE Scheme)

(Computer Science and Engineering Branch)

Professional Ethics& Life Skills

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(ii) The figure in the right-hand margin indicates marks.

I. (a)Define value education? [4]

(b) What are the morals & values required in life for dealing with people? [8]

(c) What is the role of gratitude & forgiveness in our life? [8]

(d) Define any Two: [8]
a) Humility
b) Sympathy showing
c) Self-reliance Believe yourself

II. (a) Define Society? [4]

(b)Explain Communities with reference to change in Ancient to Modern Era? [8]

(c) Why Security is important for any society & Community? [8]

(d) Explain Social consciousness & responsibility for society? [8]

B.Tech (Honours)

Class Test - II, March, 2022

(AICTE Scheme)

(Computer Science and Engineering Branch)

Language Writing Skills

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(ii) The figure in the right-hand margin indicates marks.

I. (a) What is speaking? . [4]

(b)Discuss the various aspect of speaking skills. [8]

(c)What is Group Discussion? Discuss the Do's and Don'ts of Group Discussion. [8]

(d)What is presentation? Discuss the various steps used for making a presentation.[8]

II. (a)What is reading and its types. [4]

(b)Discuss the elements of business letter. [8]

(c)What are the elements of formal report writing? [8]

(d)Discuss the importance of reading. [8]

B.Tech (Honours)

Class Test - II, March, 2022

(AICTE Scheme)

(Computer Science and Engineering Branch)

Environmental Science

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(ii) The figure in the right-hand margin indicates marks.

I. (a) What are the different types of biodiversity? [4]

(b) Define land degradation. Explain causes and effects of land degradation. [8]

(c) What are the different types of natural resources? Describe forest and water resources in brief. [8]

(d) Write short notes on Environmental Management System. [8]

II. (a) Draw population growth curve and explain briefly. [4]

(b) What is EIA? Explain the key elements of an EIA process. [8]

(c) What are the stages of HIV infection? Draw and explain the transmission cycle of HIV. [8]

(d) Write short notes on global warming and acid rain. [8]

B.Tech (Honours)

Class Test - II, March, 2022

(AICTE Scheme)

(Computer Science and Engineering Branch)

Foundation of electronics

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(ii) The figure in the right-hand margin indicates marks.

I. (a) Explain the Ebers-Mall model. [4]

(b) Explain in a detail (A) Linear and non linear devices. [4]

(B) PNP transistor with input and output characteristics. [4]

(c) Explain Fermi Dirac statistic and Boltzmann approximation to the Fermi dirac statistic. [8]

(d) Solve A and B

(A) Find the value of α and β for transistor having the value of $I_c = 4.85$ mA and $I_E = 5$ mA. [4]

(B) Find the value of I_{CBO} when collector current is 5mA and base current is 30μA with β=150. [4]

II. (a) Derive the Poisson's equation. [4]

(b) Explain the source follower in detail. [8]

(c) Explain the common emitter amplifier in detail [8]

(d) Solve A and B

(A) Find the value of drain current if I_{DSS} = 10 mA, $V_{GS(cut\ off)}$ = - 8V and V_{GS} = - 2V. [4]

(B) Explain the P channel D-MOSFET and drain and transfer characteristics. [4]

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B.Tech (Honours)

Class Test - II, March, 2022

(AICTE Scheme)

(Computer Science and Engineering Branch)

Learning Programming Concept with C

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(ii) Include suitable header file/s in all your program.
(iii) The figure in the right-hand margin indicates marks.

I. (a) What will be the output of the following code segment? [4]

```
char s1[] = "New Delhi";
char s2[] = "Bangalore";
strncpy(s1,s2,5);
printf("%s", s1);
```

(b) Define strcat (), strcmp () string function with syntax. Write a program to find the length of string without standard string function. [8]

(c) Write the basic differences between call by value and call by reference with a programming example. [8]

(d) Explain recursive function with some real time implementation area. WAP in C to find the factorial of any number through recursion. [8]

II. (a) What will be the output of the following code segment? [4]

```
int m [2];
*(m+1) =100;
*m= *(m+1);
printf ("%d", m [0]);
```

(b) Write the basic differences between structure and union. Define a structure data type called time containing three data members integer hour, integer minute and integer second. Develop a program that would assign values to the individual members and display the time in the following form: 16:40:51. [8]

(c) Describe various file handling functions with a syntax. WAP in C to copy the contents of one text file into another. [8]

(d) What is the principal difference between the functions malloc and calloc? Explain with an example. Why a linked list is called dynamic data structure? What are the advantages of using linked lists over arrays? [8]

B.Tech (Honours)

Class Test - II, March, 2022

(AICTE Scheme)

(Computer Science and Engineering Branch)

Environmental Science

Time Allowed: 1 hour 30 minutes

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(ii) The figure in the right-hand margin indicates marks.

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Class Test - II, March, 2022

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(Computer Science and Engineering Branch)

Foundation of electronics

Time Allowed: 1 hour 30 minutes

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(ii) The figure in the right-hand margin indicates marks.

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(b) Explain in a detail (A) Linear and non linear devices. [4]

(B) PNP transistor with input and output characteristics. [4]

(c) Explain Fermi Dirac statistic and Boltzmann approximation to the Fermi dirac statistic. [8]

(d) Solve A and B

(A) Find the value of α and β for transistor having the value of I_c= 4.85 mA and I_E = 5 mA. [4]

(B) Find the value of I_{CBO} when collector current is 5mA and base current is 30μA with β=150. [4]

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(A)Find the value of drain current if I_{DSS} = 10 mA, $V_{GS(cut\ off)}$ = - 8V and V_{GS} = - 2V. [4]

(B) Explain the P channel D-MOSFET and drain and transfer characteristics. [4]

B.Tech (Honours)

Class Test - II, March, 2022

$\frac{d^2u}{dx^2} + \frac{d^2y}{}$

(AICTE Scheme)

(Computer Science and Engineering Branch)

Engineering Mathematics-I

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(ii) The figure in the right-hand margin indicates marks.

I. **(a) VerifyingGreen's Theorem for $F_1 = x^2 - coshy, F_2 = y + sinx$ and C is the rectangle with vertices $(0,0),(\pi,0),(\pi,1),(0,1)$.** **[4]**

(b)What is the importance of divergence of vectorfield ? Verified Gauss's divergence theorem and prove that $\iint[(x^3 - yz)i - 2x^2yj + 2k].ndS = \frac{a^5}{3}$, $Where\ S$ is a surface of cube bounded by the plane x=0, x=a, y=0, y=a, z=0, z=a. **[8]**

(c)State that Milne Thomson's Method. Find the analytic function, its real part $e^{-x}\{(x^2 - y^2)cosy + 2xy\ siny\}$ **[8]**

(d) Define Harmonic function. Prove that $u = \frac{log(x^2+y^2)}{2}$, is harmonic function. And also find its harmonic conjugate. **[8]**

II. **(a) State that Stoke'sTheorem ? Write two importance of curl of vector field.** **[4]**

(b)Define full range Fourier series. Find Fourier series of function $f(x) = x^2, -\pi < x < \pi$. **[8]**

(c)Define Fourier series with period $2l$. Find the Fourier Series , where function Define as

$$f(x) = \begin{cases} -1, & -3 < x < 3 \\ 0, & x = 0, \\ 1, & 0 < x < 3. \end{cases}$$

(d) Define Fourier Series of even and odd functions. And find Fourier Series for $f(x) = x, -\pi < x < \pi$. **[8]**

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Class Test - II, March, 2022

(AICTE Scheme)

(Computer Science and Engineering Branch)

Fundamentals of Computational Biology

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40

Minimum Pass Marks: 14

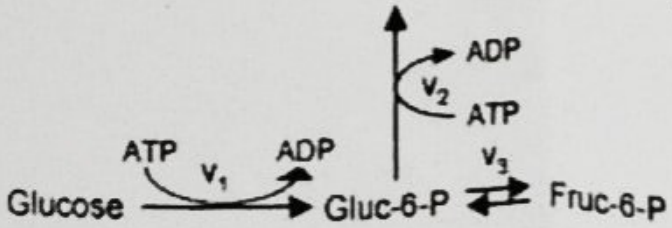
Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(ii) The figure in the right-hand margin indicates marks.

I (a). Assume the data set X is provided, Size of the data set is 10 x 3 (matrix). Write MATLAB code plotting the data set as scatter plot involving following conditions. 4

i) Plot only 1st and 3rd column neglecting 2nd column.
ii) Change the marker types while plotting for each selected column
iii) Write axis titles, legends and linewidth as 1.5.
iv) Plot 2nd column as bar plot including axis details.

(b) Write detailed notes on cellular respiration. Include short notes on glycolysis and TCA cycle. 4 + 4

(c) Write ODE model for glycolytic pathway including only following metabolites. 8



(d) In detail discuss blood flow mechanism in human body. Also include flow properties including streamline and turbulent flow. Mention the mathematical expression with description for Reynolds number. 4+2+2

II (a) State the difference between breathing and respiration. 4

(b) What do you understand by molecular switch? Explain with examples. 8

(c) Describe flux balance analysis with examples with applications in detail. 5 + 3

(d) For a simple network mentioned below, please write linear differential equations when velocities are provided in the form of v(i) and e(i). 8

Or

Write stoichiometric matrix for the network given below.

Hint: include rate of change of A, B and C with velocities of v1 to v4 and e1 to e3.