B. Tech (Honours)

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

Roll No-29

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 diagrams and graphs wherever required.
(iii) The figure in the right-hand margin indicates marks.

I. (a) What do you understand by order of a reaction? Explain with example. **[4]**

(b) Write MATLAB script for creating and calling a function with an example. **[8]**

(c) Write the steps involved in plotting a 2D graph using MATLAB, also write the commands for writing legends, changing the colour of graph. **[8]**

(d) In the reaction $H_2O_2(aq) \rightarrow H_2O(l) + \frac{1}{2} O_2(g)$, the initial concentration of H_2O_2 is 0.2546 M, and the initial rate of reaction is 9.32×10^{-4} M s^{-1}. What will be $[H_2O_2]$ at $t = 35$ s? What are the units of the rate constant for a zero order, first order and second-order reaction? **[8]**

II. (a) What do you understand by molecular switches? Briefly explain with an example. **[4]**

(b) Discuss the different components of blood. What are the factors that determine the rheology of blood? **[8]**

(c) What do you understand by Newtonian and Non-Newtonian fluids? Write down the different models of blood flow. **[8]**

(d) What do you understand by tidal volume? Discuss the factors that play an important role in modelling respiration. Draw the simulink diagram for Fick's law of diffusion. **[8]**

B.Tech (Honours)

Class Test - II, March, 2022

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(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

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

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

B.Tech (Honours)

Class Test - II, March, 2022

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Environmental Science

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Roll No - 23

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)

Learning Programming Concept using C

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Roll No - 29

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 is the output of the following program. Explain the output. [4]

```
void main () {
        int m, n, p;
        for ( m = 0; m < 3; m++ )
        for ( n = 0; n < 3; n++ )
        for ( p = 0; p < 3; p++ )
        if ( m + n + p == 2 )
        goto print;
        print:
        printf ("%d, %d, %d", m, n, p);
}
```

(b) Write a program to multiply two matrices and print the result in matrix form. [8]

(c) What is recursion? Write a program that calculates factorial for a given number using recursive function. [8]

(d) Explain declaration and initialization of a one-dimensional integer array. Write a function to search an element in an array. [8]

II. (a) Explain the difference between structure and union. [4]

(b) Explain Dynamic Memory Allocation using malloc(), calloc(), free(), andrealloc(). [8]

(c) Explain with suitable examples the concept of call by value and call by reference and differentiate between them. [8]

(d) Write a program in C to copy the content of a file to another file. [8]

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

Roll No- 29

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
c) Self-reliance

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)

Foundation of electronics

Time Allowed: 1 hour 30 minutes

Maximum Marks: 40
Minimum Pass Marks: 14

Roll No - 29

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]

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

Roll No - 29

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]