Electronics & Computer Science Engineering
OCT-NOV 2025
NEP 2.0-3rd sem & CBCS-3rd,4th,5th,6th,7th sem

SN	Sem.	Pattern	Branch	Year	Sub code	Subject
1	III	NEP 2.0	ECS	2	112465	Data Structure & Algorithm
2	III	NEP 2.0	ECS	2	112367	Computer Aided Design(MECHT)
3	III	NEP 2.0	ECS	2	113436	Entrepreneurship
4	III	NEP 2.0	ECS	2	112463	Control & Instrumentation
5	III	NEP 2.0	ECS	2	112464	Analog Circuits
6	III	B Tech	ECS	2	91971	Digital Electronics
7	III	B Tech	ECS	2	91969	Engineering Mathematics III
8	IV	B Tech	ECS	2	91979	Discrete Structures and Automata Theory
9	IV	B Tech	ECS	2	91975	Electronic Circuits
10	IV	B Tech	ECS	2	79118	Environmental Studies
11	IV	B Tech	ECS	2	91976	Controls and Instrumentation
12	IV	B Tech	ECS	2	91977	Computer Network
13	V	B Tech	ECS	3	56537	Signal & System
14	V	B Tech	ECS	3	56538	Power Electronics
15	V	B Tech	ECS	3	56539	Computer Organization & Architecture
16	V	B Tech	ECS	3	56540	Computer Network II
17	V	B Tech	ECS	3	56541	Sensors & Applications
18	VI	B Tech	ECS	3	56544	Digital Signal Processing
19	VI	B Tech	ECS	3	56545	PLC & Automation
20	VI	B Tech	ECS	3	56550	Internet of Things(ECS)
21	VII	B Tech	ECS	4	113053	Cloud Computing
22	VII	B Tech	ECS	4	113049	VLSI Design
23	VII	B Tech	ECS	4	113050	Machine Learning using Python
24	VII	B.Tech	ECS	4	113051	Digital Image Processing
25	VII	B.Tech	ECS	4	113052	Video Engineering

QP-9266

Seat No. ECS- 3rd. Sem

Total No. of Pages : 2

OCT-NOV 2025 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Data Structure & Algorithm

Sub. Code: 114454/112465

Day and Date: Friday ,05-12-2025 **Total Marks: 60**

Time: 02:30 PM To 05:00 PM

Instructions:

Special Inst.: For each question , Solve any 03 out of 04.

Q1) A. Define data structure & explain types of data structure with example. [5]

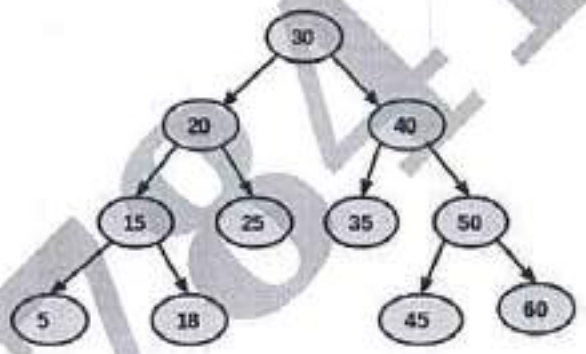
B. Convert infix to postfix expression [5]
K+L-M*N+(O^P)*W/U/V*T+G

C. Explain insertion at a specific position with example. [5]

D. Differentiate between linked list & array. [5]

Q2) A. Define tree & explain tree terms. [5]

B. Find preorder, inorder and postorder of following tree [5]



C. Explain binary tree & it's types. [5]

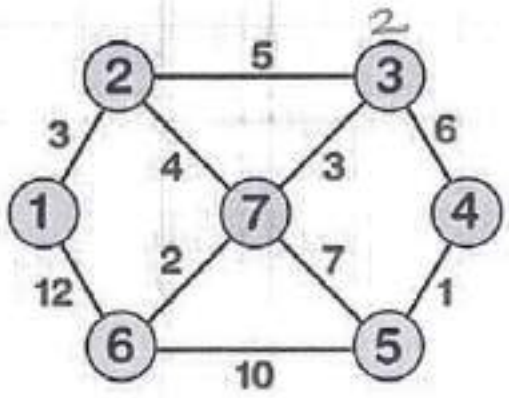
D. Construct binary search tree of following data &also explain step by step construction. [5]
27,33,39,31,42,59,47

Q3) A. Define graph & explain it's types of graph. [5]

B. Explain topological sorting with example. [5]

C. Explain traversal of graph. [5]

D. Write adjacency matrix and adjacency list of a following graph [5]



Q4) A. Explain linear search with example. [5]

B. Explain bubble sort with example. [5]

C. What are the characteristics of a good hash function? Describe any two commonly used hash functions with examples. [5]

D. Discuss in detail the collision resolution strategies used in open addressing—linear probing, quadratic probing, and double hashing. Compare their effectiveness. [5]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (114454) Data Structure & Algorithm Part 2 SEM 3

2] (11731) Bachelor of Technology (NEP-2.0) (112465) Data Structure & Algorithm Part 2 SEM 3

Seat No. MMD - CSE, ECS - 3rd Sem (3) AIML

QP-9811

Total No. of Pages : 2

OCT-NOV 2025 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Computer Aided Design (MECHT)

Sub. Code: 114426/112367

Day and Date: Wednesday, 10-12-2025 **Total Marks: 60**

Time: 02:30 PM To 05:00 PM

Instructions: 1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Figures to the right indicate full marks

Q1) Solve any Three [15]

a. Write down the benefits of the CAD system with suitable examples. [5]

b. Explain the purpose of layers, blocks, and dimensions in a 2D CAD drawing with suitable examples. [5]

c. Explain the different types of 3D modeling briefly. [5]

d. Write a note on Boolean operations in 3D modeling. [5]

Q2) Solve any Three [15]

a. What is geometric transformation in CAD? [5]

b. Explain translation, rotation, scaling and reflection in CAD? [5]

c. What is a Bezier curve and how is it used in CAD modeling? [5]

d. What is the difference between parametric and non-parametric modeling [5]

Q3) Solve any Three

a. Write a note on CAD Data exchange. [5]

b. Differentiate between STEP file and STL file. [5]

c. Briefly explain PLM with application. [5]

d. Briefly explain IGES file format. [5]

Q4) Solve any Three

a. Define CAD and explain its role in product design and analysis. [5]

b. Explain the basic steps involved in CAD-FEA integration and state its advantages. [5]

c. What is CAD-CAM Integration? Discuss its significance in modern manufacturing systems. [5]

d. Explain Design optimization using CAD [5]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor / Student -
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1] (11731) Bachelor of Technology (NEP-2.0) (112367) Computer Aided Design(MECHT) Part 2 SEM 3
2] (1154) B.Tech. CBCS (114426) Computer Aided Design(MECHT) Part 2 SEM 3

QP-9918

Seat No. E&S P 33rd. Sem 5

Total No. of Pages : 2

OCT-NOV 2025 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Entrepreneurship

Sub. Code: 114503/113436

Day and Date: Friday ,12-12-2025 **Total Marks: 60**

Time: 02:30 PM To 05:00 PM

Instructions: 1. All questions are compulsory
2. Figures to the right indicate full marks

Special Inst.: Answer the following questions any 3 out 4

Q1) Answer the following questions (Write 3 out 4) [15]

a. Explain the key stages involved in the entrepreneurial journey. [5]

b. Define entrepreneurial discovery [5]

c. Explain how technology acts as a key driver of successful startups [5]

d. Discuss the various methods used for ideation [5]

Q2) Answer the following questions (Write 3 out 4) [15]

a. Explain the various sources of finance available to early-stage entrepreneurs [5]

b. Discuss how digital education and online learning platforms enhance entrepreneurship. [5]

c. State the role Government policies in boosting entrepreneurship. [5]

d. Elaborate on the role of incubators and accelerators in providing financial as well as non-financial support to startups. [5]

Q3) Answer the following questions (Write 3 out 4) [15]

a. Explain how India can transform programmes like Start-up India and Make in India from missions into measurable results [5]

b. Elaborate the Startup India scheme [5]

c. Discuss the common challenges faced by Beyond Founders entrepreneurs and Founder-Families entrepreneurs. [5]

d. Explain the need for risk-taking and innovation mindsets to build a sustainable entrepreneurial culture in the country. [5]

P.T.O.

Q4) **Answer the following questions (Write 3 out 4)** [15]

a. Explain the concept of Entrepreneurial Thermodynamics. [5]

b. Describe the role of MSMEs as engines of job creation in developing economies like India. [5]

c. Discuss the importance of innovation and technical expertise in startups [5]

d. Explain how entrepreneurship contributes to employment generation [5]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11731) Bachelor of Technology (NEP-2.0) (113436) Entrepreneurship Part 2 SEM 3
2] (1154) B.Tech. CBCS (114503) Entrepreneurship Part 2 SEM 3

QP-10161

Seat No. ECS- 3rd. Sem 7

Total No. of Pages : 3

OCT-NOV 2025 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Control & Instrumentation

Sub. Code: 114452/112463

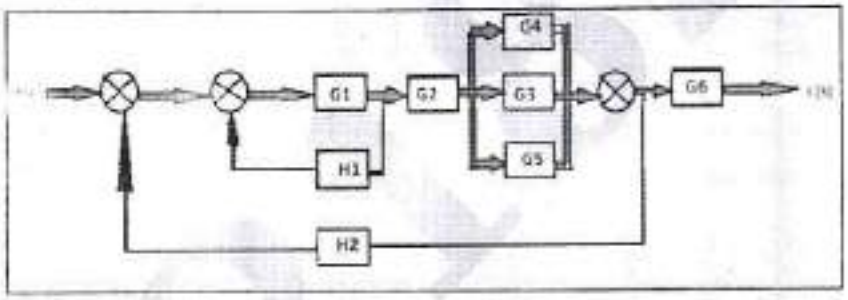
Day and Date: Tuesday ,16-12-2025 **Total Marks: 60**

Time: 02:30 PM To 05:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Draw neat labelled diagrams wherever necessary
4. Figures to the right indicate full marks
5. Use of calculator and statistical table is allowed

Q1) Attempt any Three of the following. [15]

a. Reduce following Block Diagram into single block using block reduction technique: [5]

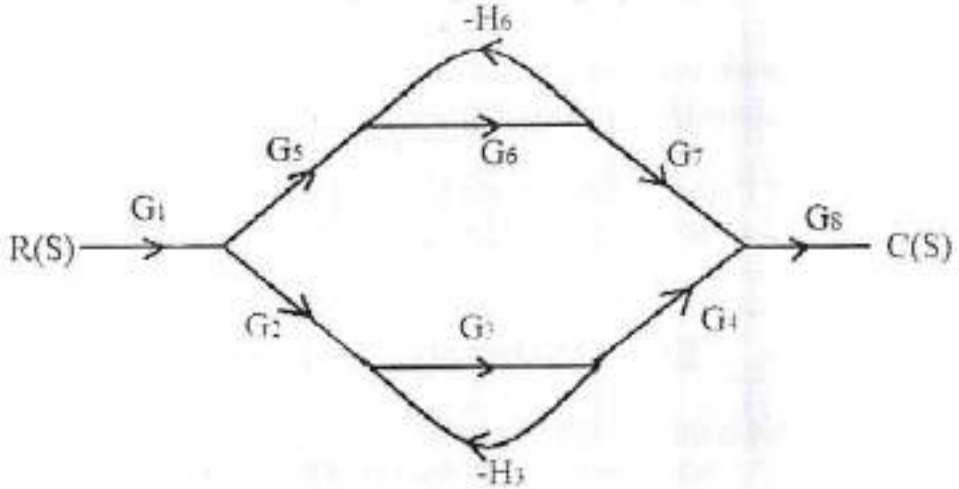


b. Using Hurwitz Stability criteria check whether system is stable or not, [5]

$$F(S) = S^3 + S^2 + S + 4$$

c. With a neat block diagram explain adaptive control system. [5]

d. Obtain the transfer function of given signal flow graph: [5]



P.T.O.

Q2) Attempt any Three of the following. **[15]**

a. With neat sketches, explain the construction, working principle and applications of a potentiometric displacement transducer. **[5]**

b. Describe the construction and working of a C-type Bourdon tube pressure gauge. **[5]**

c. What is a strain gauge? Explain the working of unbonded type strain gauges with suitable diagrams and mention their applications. **[5]**

d. Describe the working principle, operating range, characteristics and applications of Resistive temperature detector (RTD). **[5]**

Q3) Attempt any Three of the following. **[15]**

a. With a neat block diagram explain electronic instrumentation system. **[5]**

b. With a neat block diagram explain the important functional blocks of a SCADA system. **[5]**

c. What is cloud-based SCADA? Explain its architecture, working and advantages over conventional SCADA. **[5]**

d. What is fibre-optic instrumentation? Explain the working principle of fibre optic instrumentation and its industrial applications. **[5]**

Q4) Attempt any Three of the following. **[15]**

a. What is landline telemetry? Explain its working, advantages, limitations, and applications **[5]**

b. What is multiplexing in telemetry? List different types of multiplexing and explain FDM in detail. **[5]**

c. Explain instrument interfacing. Describe the working and applications of the 4–20 mA current loop in industrial communication. **[5]**

d. What is HART Communication Protocol? Explain its working, features, and advantages over conventional analog communication. **[5]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
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QP-10278

Seat No. ECS-3rd. Sem

Total No. of Pages : 2

OCT-NOV 2025 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Analog Circuits

Sub. Code: 114453/112464

Day and Date: Thursday ,18-12-2025 **Total Marks: 60**

Time: 02:30 PM To 05:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**
5. **Use of Scientific calculator is allowed**

Q1) Attempt any THREE.

a. Explain low pass RC circuit as integrator. [5]

b. Derive parameters: PIV, TUF, efficiency, ripple factor, form factor for full wave rectifier. [5]

c. Explain need of filer and discuss the working of half wave rectifier wit LC filter. [5]

d. Design Zener shunt regulator for following specifications: Vo=8V, Io=40mA, Vin=10 to 20V. [5]

Q2) Attempt any THREE.

a. Explain the need for transistor biasing and derive the generalized stability factor for fixed bias circuit(S). [5]

b. Draw and explain the voltage divider bias circuit, derive expressions for IC and VCE. [5]

c. Derive the expression for JFET self-bias drain current. [5]

d. With neat diagram explain N-Channel JFET & P-Channel JFET. [5]

Q3) Attempt any THREE.

a. Derive the hybrid-model for CC configuration and comment on the different parameters. [5]

b. Explain amplifier response to square wave and comment on sag calculations. [5]

c. Design single stage R-C coupled CE amplifier Vcc = 10V, hfe = 150, AV = 60, hie = 2.2KΩ, frequency range 20Hz to 20 kHz, S = 8. [5]

P.T.O.

d. Discuss JFET Biasing. [5]

Q4) Attempt any THREE.

a. Derive for CE short circuit & resistive current gain for high frequency amplifier model. [5]

b. Derive expression for lower 3dB frequency of CE amplifier by considering coupling capacitor [Cc]. Calculate Cc for R1 = 15KΩ, R2 = 10 KΩ, hie = 3.8KΩ, hfe = 100, Rs = 500Ω. [5]

c. Explain h-parameter model for CC configuration. [5]

d. A CB amplifier is drawn by a voltage source of internal resistance rs=1200 Ω, and load resistance RL=1000 Ω, the parameters are hib-22k Ω, hrb=3*10^-4, hfe=0.98 and hoe=0.5. Compute the input resistance, output resistance, voltage gain, current gain. [5]

End Of Question Paper

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1] (1154) B.Tech. CBCS (114453) Analog Circuits Part 2 SEM 3
2] (11731) Bachelor of Technology (NEP-2.0) (112464) Analog Circuits Part 2 SEM 3

QP-9570

Seat No. ECS-3rd-Sem II

Total No. of Pages : 3

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Digital Electronics

Sub. Code: 91971

Day and Date: Monday ,08-12-2025 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary

Special Inst.: Q.1 is compulsory
Solve any 4 questions from remaining questions.

Q1) Solve MCQ's (1 marks each) [10]

A. Any negative number is recognized by its _____ [1]
i) MSB ii) LSB
iii) Bits iv) Nibble

B. Which of the following binary numbers could be referred to as a nibble [1]
i) 11010 ii) 1001
iii) 100 iv) 10

C. Which of the following is not a logic gate? [1]
i) AND ii) OR
iii) IF iv) NOT

D. How many inputs does 2 by 1 mux comprises of? [1]
i) 1 ii) 2
iii) 3 iv) 4

E. A full adder adds: [1]
i) 1 Bits ii) 2 Bits
iii) 3 Bits iv) None of the above

F. Ripple counters are also called as [1]
i) SSI counters ii) Asynchronous counters
iii) Synchronous counters iv) VLSI counters

G. In S-R flip-flop, if Q = 0 the output is said to be _____ [1]
i) Set ii) Reset
iii) Previous state iv) Current state

H. In Moore machine, output is produced over the change of: [1]

i) Transitions ii) States
iii) All of the mentioned iv) None of the mentioned

I. Which of the following is not a common logic family [1]
i) TTL ii) CMOS
iii) ECL iv) LED

J. Which operator is used for concatenation operation in Verilog? [1]
i) & ii) |
iii) ^ iv) {}

Q2) a) What is Octal number system? Solve the following [15]

i) (12.2)8 – ( )10 ii) (89.625)10 – ( )2
iii) (5A7)16 = ( )10
(7M)

b) Define Gate? Explain Basic gates with truth table and logic gate diagram
(8M)

Q3) [15]

a) Define Integrated Circuit and briefly explain MSI, LSI and VLSI.
(7M)

b) Explain 4 bit Carry look ahead adder with neat block diagram
(8M)

Q4) [15]

a) What flip flop? Explain the operation of RS flip flop with gate diagram
(7M)

b) Explain SISO and PIPO shift registers with diagram
(8M)

Q5) a) Differentiate between Mealy and Moore machine [15]
(7M)

b) Classify the logic families and define noise margin, propagation delay and power dissipation
(8M)

Q6) a) Explain how to instantiate a module with full adder example [15]
(7M)

L3

b) Explain any four verilog arithmetic operators with example (8M)

End Of Question Paper

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1] (1154) B.Tech. CBCS (91971) Digital Electronics Part 2 SEM 3

QP-10142

Seat No. ECS-3rd Sem 14

Total No. of Pages : 3

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Engineering Mathematics III

Sub. Code: 91969

Day and Date: Tuesday ,16-12-2025 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions: 1. Figures to the right indicate full marks

Special Inst.: 1) Q.1 is compulsory
2) Solve any 4 questions from remaining questions

Q1) Solve following MCQ. **[10]**

i. The solution of $(D^4 + 2D^2 + 1)\, y = 0$ is

A. $C_1 cosx + C_2 sinx + C_3 x cosx$

B. $(C_1 + C_2 x)cosx + C_3 sinx$

C. $C_1 cosx + (C_2 + C_3 x)sinx$

D. $(C_1 + C_2 x)cosx + (C_3 + C_4 x)sinx$

ii. *If* $\phi = x^2y - 3y^2z^2$ *then* $\nabla\phi$ *at (1, -2, 1) is*

A. *-4i-23j-24k*

B. *4i-23j+24k*

C. *4i+13j+24k*

D. *-4i-13j+24k*

iii. *If X= {a, b, c, d} and A=* $\{\frac{0.8}{a}, \frac{0.3}{b}, \frac{0.1}{c}, \frac{0.01}{d}\}$ *then* $0.1 +_A$ =

A. *{a}*

B. *{a, b}*

C. *{a, b, c}*

D. *{a, b, c, d}*

iv. *In the Fourier series of f(x)=* x^2 *in* $(0, 2\pi)$ *value of* a_0 =

A. $\frac{2\pi^2}{3}$

B. $\frac{4\pi^2}{3}$

C. $\frac{\pi^2}{3}$

D. π^2

v. *The Laplace transform of f(t)= sin2t is*

A. $\frac{2}{S^2+2}$

15

B. $\frac{1}{S^2+4}$

C. $\frac{2}{S^2+4}$

D. $\frac{1}{S^2+2}$

Q2) Solve the following Questions [15]

a. Solve $(D^4 + 8D^2 + 16)y = \sin^2 x$ [7]

b. Solve $\frac{d^2y}{dx^2} + 2y = x^2e^{3x} + e^x \cos 3x$ [8]

Q3) Solve the following Questions [15]

a. If $\phi = x^3 + y^3 + z^3 - 3xyz$ then find 1) $\bar{F} \cdot \nabla \phi$ 2) div $\bar{F}$ and Curl $\bar{F}$ where $\bar{F} = \nabla \phi$ [7]

b. A vector field $\bar{F}$ is given by $\bar{F} = (y \sin z - \sin x)\, i + (x \sin z + 2yz)\, j + (x y \cos z + y^2)\, k$ then prove that it is irrotational and hence find its scalar potential. [8]

Q4) Solve the following Questions [15]

a. Find half range cosine series for $f(x) = \begin{cases} 1, & 0 < X < a/2 \\ -1, & a/2 < X < a \end{cases}$ [7]

b. Find the Inverse Laplace Transform of the following by Convolution theorem [8]

1) $\frac{s^2}{s^4+13s^2+36}$ 2) $\frac{1}{(s^2+1)(s^2+4)}$

Q5) Solve the following Questions [15]

a. A discrete random variable X has the following probability distribution [7]

X	-2	-1	0	1	2	3
P(X=x)	0.1	k	0.2	2k	0.3	3k

Then find 1) k 2) P ($X \geq 2$) 3) P ($-2 < X < 2$)

b. For a Normal variate with mean 2.5 and Standard deviation 3.5 find the probability that 1) $2 \leq X \leq 4.5$ 2) $-1.5 \leq X \leq 5.5$ [8]
(Given Area between Z=0 & Z=0.14 is 0.0557, Area between Z=0 & Z=0.57 is 0.2157, Area between Z=0 & Z=1.14 is 0.3729, Area between Z=0 & Z=0.8 is 0.2881)

Q6) Solve the following Questions [15]

a. Find α-cuts and strong α-cuts of fuzzy set A for α = 1, 0.99, 0.1 where [7]

$A(x) = \frac{100}{1+10x}$ on X = {10, 20, 30, 40, 50}

b. Find the Fuzzy Cardinality of the Fuzzy Set defined by $A(x) = 1 - \frac{x}{5}$ on X = {0, 1, 2, 3, 4, 5} [8]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
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1] (1154) B.Tech. CBCS (91969) Engineering Mathematics III Part 2 SEM 3

QP-9235

Seat No. ECS - 4th Sem 17

Total No. of Pages : 3

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Discrete Structures and Automata Theory

Sub. Code: 91979

Day and Date: Friday ,05-12-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions: 1. Draw neat labelled diagrams wherever necessary
2. Figures to the right indicate full marks
3. Use of Scientific calculator is allowed

Special Inst.: 1. Q. 1 is compulsory.
2. Solve any 4 questions from remaining questions.

Q1) Solve following MCQ. **[10]**

i. A/B =.....
   A. A∩B
   B. A∩Bc
   C. Ac∩Bc
   D. AUB

ii. "Every rose is red" is an example of .....
   A. Universal quantifier
   B. Nested quantifier
   C. Existential quantifier
   D. None of these

iii. Let A= {p,q,r,s} & B={0,1,2} & f : { (p,0)(q,1)(r,2)(s,2) }≤ A×B then the range of function f is
   A. {p,q,r,s}
   B. {0,1,2}
   C. {(p,0)(q,1)(r,2)(s,2)}
   D. None of these

iv. For any set A there is a function from A into A which sends each element into itself. It is called as
   A. Inverse function
   B. Bijective function
   C. Identity function
   D. One one function

v. ..... has one node with indegree one.
   A. Ordered tree
   B. Rooted tree

C. Directed tree
D. Binary tree

vi. Number of states require to accept string ends with 10.

A. 3
B. 2
C. 1
D. cant be represented

vii. Language of finite automata is.
A. Type 0
B. Type 1
C. Type 2
D. Type 3

viii. Which of the following is not a regular expression?
A. [(a+b)*-(aa+bb)]*
B. [(0+1)-(0b+a1)*(a+b)]*
C. (01+11+10)*
D. (1+2+0)*(1+2)*

ix. PDA works as Finite Automata when the number of auxiliary memory it has is
A. 3
B. 2
C. 1
D. 0

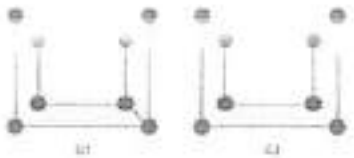
x. The entity which generate Language is termed as:
A. Automata
B. Tokens
C. Grammar
D. Data

Q2) A. Suppose n(U) = 70 , n(A) = 30 , n(B) = 45 & n(A∩B) = 10 then find 07M **[15]**
a. n(AUB)
b. n(Ac∩Bc)
c. n(Ac) & n(Bc)
d. n(AeB)
B. Prove that 1+4+7+.....+(3n-2) = n(3n-1)/2 by mathematical induction. 08M

Q3) A) Let R be a relation defined on the set Z+ such that a,b ∈ Z+, aRb iff a/b then show that R is a partially ordering relation on Z+ & draw the hasse diagram for poset A={1,2,3,4,6,8,12,24}. 07 M **[15]**

B) Define injective, surjective & bijective functions. Find a formula for g°f °g(x) for f(x) = x+2
& g(x) = x2.
08 M

Q4) A. Write regular grammer for following language **[15]**
07 M
i. R = (01)*01
ii. R = aa(a+b)*
B. Define Isomorphism of graphs Explain why the following two graphs are not isomorphic. 08 M



Q5) A. Design a DFA corresponding to regular expression (a+b)*aba (a+b)* 07 **[15]**
M
B. Write NFA for accepting regular expression (b+ab)*(ba*+b) 08
M

Q6) A. Write a short note on Chomsky Hierarchy & formal definition of PDA. **[15]**
07 M
B. Define context free diagram. Obtain the CFG for following regular expression 08 M (110+11)*(10)*

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (91979) Discrete Structures and Automata Theory Part 2 SEM 4

Seat No. ECS-4th Sem 20

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Electronic Circuits

Sub. Code: 91975

Day and Date: Saturday ,06-12-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions: **1. Assume suitable data wherever necessary and mention it boldly**
2. Draw neat labelled diagrams wherever necessary

Special Inst.: **3. Q.1 is compulsory**
4. solve any four questions from remaining questions

Q1) Solve following MCQ. **[10]**

i. The input based impedance of a common source MOSFET is ____?
   A. High
   B. Low
   C. Zero
   D. Minimum

ii. Full form of CMRR is
   A. Cascade mode ratio relate
   B. cascade make resistance ratio
   C. Common mode rejection ratio
   D. closed mode rejection ratio

iii. If ground is applied to the (+) terminal of an inverting op-amp, the (−) terminal will:
   A. Not need an input resistor
   B. Virtual short
   C. Virtual ground
   D. Have high reverse current

iv. Find the output voltage of an ideal op-amp. If V1 and V2 are the two input voltages
   A. VO= V1-V2
   B. VO= A×(V1-V2)
   C. VO= A×(V1+V2)
   D. VO= V1×V2

v. Which of the following is not the characteristic of ideal OPAMP
   A. Av=∞
   B. BW=∞
   C. Output Resistance is Zero

D. Input Resistance is Zero

vi. If capacitor is placed in feedback path of an opamp then the circuit can act as
A. Integrator
B. Multiplier
C. Divider
D. Subtractor

vii. Zero crossing detectors is also called as
A. Square to sine wave generator
B. Sine to square wave generator
C. Sine to triangular wave generator
D. All of the mentioned

viii. A Wien bridge oscillator uses ..... Feedback
A. Only positive
B. Only negative
C. Both positive and negative
D. None of the above

ix. Pin number 1 in IC555 timer is for
A. Reset
B. output
C. +Vcc
D. Ground

x. A multi vibrator circuit generates
A. Square wave
B. Sine wave
C. Triangular wave
D. saw tooth wave

Q2) i) Explain Single stage MOSFET amplifier in CS mode. (8M) [15]

ii)Advantages & Disadvantages of MOSFET cascade amplifier. (7M)

Q3) i) Draw pin diagram of IC-741, Explain each pins (7M) [15]
ii) Explain Virtual short and Virtual ground concepts (8M)

Q4) i) With neat diagram explain Adder using OP-AMP. Derive the expression. (7M) [15]
ii) Explain Voltage to current converter with floating load & ground load (8M)

Q5) i) With neat diagram explain RC phase shift Oscillator (7M) [15]
ii) With neat diagram explain ZCD (8M)

Q6) i) Draw internal Block diagram of IC555 and Explain its pin configurations [15]

(7M)

ii)Explain the operation of monostable multivibrator (8M)

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (91975) Electronic Circuits Part 2 SEM 4

QP-9612

Seat No. CSE, ECS, CE, EE - 4th Sem 23 23 Total No. of Pages : 6

OCT-NOV 2025 WINTER EXAMINATION

11670 Bachelor of Science (B.Sc.) NEP 2.0

Sub. Name: ENVIRONMENTAL STUDIES

Sub. Code: 94282/91270/67043/78928/79089 /79118/83229/84775/91147/91155 /91166/91246/91270/91294/91302 /91437/91457/91555/91656/91966 /92943/93227/77942/93448/93546 /94220/94787/94884/96146/83818 /93528/67042/73487/78887/91680 /80344/91186/94746/67072/98758 /93704/110924/91697/97471/92965 /94950/94093/78951/67043/110993 /64275/51077/67074

Day and Date: Sunday ,07-12-2025 **Total Marks: 70**

Time: 02:30 PM To 05:30 PM

Instructions: 1. All questions are compulsory
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks.

Q1) Solve following MCQ. **[10]**

i. Which of the following is a point source of water pollution?
खालीलपैकी कोणता केंद्रीय जल प्रदूषणाचा एक स्रोत आहे ?
A. Agricultural lands
शेतजमीनी
B. Suburban land
उपनगरीय जमीन
C. Industry
कारखाना
D. None of the above
वरीलपैकी काहीही नाही

ii. The pyramid of numbers is inverted in the case of----
------च्या बाबतीत संख्यांचा मनोरा उलटा आहे
A. Parasitic food chain
परजीवी अन्न साखळी
B. Grassland ecosystem
गवताळ प्रदेश परिसंस्था
C. Forest ecosystem
वन परिसंस्था
D. Lake ecosystem
तलाव परिसंस्था

iii. Best method of proper solid waste disposal is ---------?
घनकचरा विल्हेवाट लावण्याची सर्वोत्तम योग्य पद्धत --------- आहे ?
A. Disposed into land
जमिनीत विल्हेवाट

B. Burning
जाळणे
C. Disposed into the ocean
समुद्रात विसर्जित
D. Sanitary landfill
जमिनीत न झिरपता पुरने

iv. PAN is a type of ---------- pollutant.
पॅन (PAN) हा एक प्रकारचा ---------- प्रदूषक आहे.
A. Primary pollutant
मुख्य प्रदूषके
B. Secondary pollutant
द्वितीय प्रदूषके
C. Tertiary pollutant
तृतीय प्रदूषके
D. None of the above
वरीलपैकी काहीही नाही.

v. The organisms which feed on dead organisms and excreta of living organisms are known------
जे जीव मृत जीवांना खातात आणि सजीवांच्यावर जगतात ------
A. Decomposers
विघटन करणारे
B. Renewable
अक्षय
C. Abundant
मुबलक
D. None of the above
वरीलपैकी काहीही नाही.

vi. What percentage of its geographical area of a country should be under forest cover?
देशाच्या भौगोलिक क्षेत्राचा किती टक्के भाग जंगलाखाली असावा ?
A. 23%
२३%
B. 33%
३३%
C. 43%
४३%
D. 53%
५३%

vii. The order of basic processes involved in succession is---
परिस्थितिकीय उन्नत अनुक्रम समाविष्ट असलेल्या मूलभूत प्रक्रियेचा क्रम आहे----
A. Nudation->stabilization-> competition and co action->Invasion->reaction
ओसाड जागेचा विकास > स्थैर्य > स्पर्धा आणि सहक्रिया > शिरकाव >प्रतिक्रिया

B. Nudation->Invasion-> competition and co action->reaction->stabilization
ओसाड जागेचा विकास > शिरकाव > स्पर्धा आणि सहक्रिया >प्रतिक्रिया > स्थैर्य

C. Invasion-> Nudation->competition and co action->Reaction->stabilization
शिरकाव >ओसाड जागेचा विकास >स्पर्धा आणि सहक्रिया >प्रतिक्रिया > स्थैर्य

D. Invasion->stabilization-> competition and co action->Reaction->nudation
शिरकाव > स्थैर्य > स्पर्धा आणि सहक्रिया > प्रतिक्रिया >ओसाड जागेचा विकास

viii. Which is the largest ecosystem on Earth?
पृथ्वीवरील सर्वात मोठी परिसंस्था कोणती आहे ?

A. Desert
वाळवंट

B. Grassland
गवताळ प्रदेश

C. Ocean
महासागर

D. Forest
जंगल

ix. What role human plays in food chains?
अन्नसाखळीत मानवाची भूमिका काय आहे ?

A. Producer
उत्पादक

B. Consumer
ग्राहक

C. Decomposer
विघटन करणारा

D. None of the above
वरीलपैकी काहीही नाही

x. The surface area from which runs off rainwater is collected is called -----
ज्या पृष्ठभागावरून पावसाचे वाहत जाणारे पाणी एकत्र केले जाते त्याला ------ म्हणतात

A. Rainwater Harvesting
पावसाच्या पाण्याचे संकलन

B. Catchment Area
पाणलोटक्षेत्र

C. Water establishment
पाणी स्थापना

D. None of the above
वरीलपैकी काहीही नाही

Q2) Answer any three from the following खालीलपैकी कोणतेही तीन उत्तर द्या [15]

a. Q1. Describe the structure of the pond ecosystem.
Q2. Define deforestation and list the causes of deforestation.

Q3. Define soil erosion and list the causes.
Q4. Explain genetic, species and ecosystem diversity with examples.
Q5. What are the causes of marine pollution?
Q1. तलावाच्या परिसंस्थेच्या संरचनेचे वर्णन करा
Q2. जंगलतोड परिभाषित करा आणि जंगलतोडीची कारणे सूचीबद्ध करा.
Q3. मातीची धूप परिभाषित करा आणि कारणे सूचीबद्ध करा.
Q4. उदाहरणांसह जनुकीय विविधता ,प्रजातीय विविधता व परिसंस्था विविधता स्पष्ट करा.
Q5. सागरी प्रदूषणाची कारणे कोणती ?

Q3) Write Short note on any three कोणत्याही तीनवर लहान टीप लिहा **[15]**

a. Q1. Solid waste pollution
Q2. Biodiversity hotspot
Q3. Forest resources
Q4. Population growth
Q5. Detritus food chain and Grazing food chain
Q1. घनकचरा प्रदूषण
Q2. जैवविविधतेचे संवेदनशील प्रदेश
Q3. वन संसाधने
Q4. लोकसंख्येची वाढ
Q5. मृतोपजीवी अन्नसाखळी व चराऊ अन्नसाखळी

Q4) Explain in detail the Air (Prevention and Control of Pollution) Act **[10]**
OR
Briefly discuss the various types of terrestrial and aquatic ecosystems.

हवा (प्रदूषण प्रतिबंध आणि नियंत्रण) कायद्याचे तपशीलवार वर्णन करा.
किंवा
विविध प्रकारच्या स्थलीय आणि जलीय परिसंस्थेची थोडक्यात चर्चा करा.

Q5) Describe the threats to biodiversity and the various methods used in the Conservation of Biodiversity. **[10]**
OR
Explain in detail definition, Causes, effects and control measures of water pollution.
जैवविविधतेलाअसलेले धोके आणि जैवविविधतेच्या संवर्धनासाठी वापरल्या जाणाऱ्या विविध पद्धतींचे वर्णन करा
किंवा
जलप्रदूषणाची व्याख्या, कारणे, परिणाम आणि नियंत्रणाचे उपाय तपशीलवार स्पष्ट करा.

Q6) What are the roles of an individual in the prevention of pollution? Explain your Point of view and control measures. **[10]**
OR
What is disaster management? Explain with cyclones, tsunamis or landslides.
प्रदूषण रोखण्यासाठी व्यक्तीची भूमिका काय आहे ? तुमचा दृष्टिकोन आणि नियंत्रण उपाय स्पष्ट करा.
किंवा
आपत्ती व्यवस्थापन म्हणजे काय ? चक्रीवादळ, त्सुनामी किंवा भूस्खलनासह स्पष्ट करा.

Seat No. ECS-4th Sem 27

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Controls and Instrumentation

Sub. Code: 91976

Day and Date: Monday ,08-12-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **Assume suitable data wherever necessary and mention it boldly**
2. **Draw neat labelled diagrams wherever necessary**
3. **Figures to the right indicate full marks**
4. **Use of Scientific calculator is allowed**

Special Inst.:
1. **Q.1 is compulsory**
2. **Solve any 4 questions from remaining questions.**

Q1) Solve following MCQ. **[10]**

i. **The device can send a message to the host by taking part in _____ for the communication path.**
   A. Arbitration
   B. Polling
   C. Prioritizing
   D. None of the mentioned

ii. What is the maximum length of the HART communication cable?
   A. 500 meters
   B. 1 kilometer
   C. 2 kilometer
   D. 5 kilometer

iii. **What is the full form of SCADA?**
   A. Supervisory Control and Document Acquisition
   B. Supervisory Control and Data Acquisition
   C. Supervisory Column and Data Assessment
   D. Supervisory control and Data Assessment

iv. **Identify the element which is not part of a data acquisition system:**
   A. Digital to analog converter
   B. Filter
   C. Display
   D. Timer

v. **In LVDT both secondary windings are connected in**
   A. Series
   B. Series Opposition
   C. Parallel

D. None of the above 28

vi. **What is the relation between output response and input signal in closed loop system?**
- A. Non linear
- B. Linear
- C. Exponential
- D. Parabolic

vii. **Which of the following element is not used in an automatic control system?**
- A. Final control element
- B. Sensor
- C. Oscillator
- D. Error detector

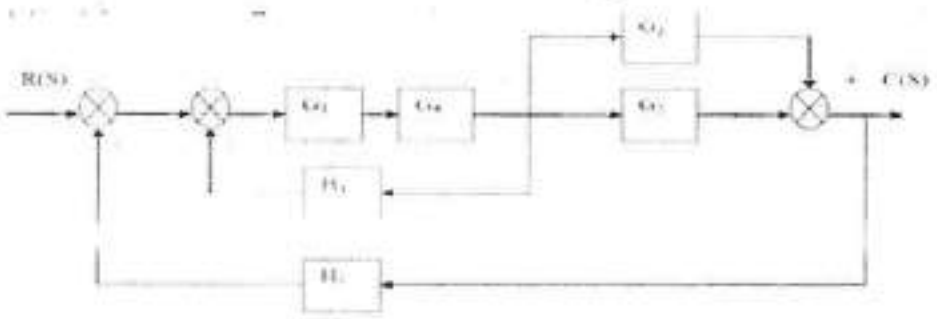
viii. **For Nyquist contour, the size of radius is _____**
- A. 25
- B. 0
- C. 1
- D. ∞

ix. **Stability of a system implies that :**
- A. Small changes in the system input does not result in large change in system output
- B. Small changes in the system parameters does not result in large change in system output
- C. Small changes in the initial conditions does not result in large change in system output
- D. All of the above mentioned

x. **The overall transfer function of two blocks in parallel are :**
- A. Sum of individual gain
- B. product of individual gain
- C. Difference of individual gain
- D. Division of individual gain

Q2) **a)** Explain block diagram algebra. Describe any four rule of block diagram algebra. **[7]** **[15]**

b) Using block diagram reduction technique find closed loop transfer function C(s) / R(s) shown in figure below: **[8]**



Q3) a) Explain steady state error and error constant for unit, ramp and impulse input. [7] [15]

b) Obtain the rise time, peak time, maximum peak overshoot and settling time of unit step response of closed loop system given by,

C(s) / R(s) = 16/(S2+2S+16) [8]

Q4) a) Explain adaptive control system with block diagram and state advantages and limitations of it. [7] [15]

b) What is RS 232 for communication and what are the advantages and disadvantages of RS 232 as compared modern communication standards. [8]

Q5) a) Give the comparison between RTD and Thermistor. [7] [15]

b) Explain the construction and working of C Type Bourdon tube. [8]

Q6) a) State different types of SCADA system in detail. [7] [15]

b) Which steps included while design of pressure and temperature measurement system using DAS? [8]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (91976) Controls and Instrumentation Part 2 SEM 4

Seat No. Ecs - 4th Sem 30

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Computer Network

Sub. Code: 91977

Day and Date: Tuesday ,09-12-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **Assume suitable data wherever necessary and mention it boldly**
2. **Draw neat labelled diagrams wherever necessary**
3. **Figures to the right indicate full marks**
4. **Use of Scientific calculator is allowed**

Special Inst.:
1. **Q.1 is compulsory**
2. **Solve any 4 questions from remaining questions**

Q1) Solve following MCQ. **[10]**

i. With which of the following characteristics, the design issue of a physical layer does not deal?
   A. Mechanical
   B. Electrical
   C. Functional
   D. None of the above

ii. Two Networks and Transport-layer protocols commonly used on Internet are
   A. TCP and SPX
   B. TCP and IP
   C. RIP and NLSP
   D. None of the above

iii. A device operation at the physical layer is called a
   A. Bridge
   B. Router
   C. Repeater
   D. None of the above

iv. Encryption and decryption are functions of
   A. Transport layer
   B. Session layer
   C. Presentation layer
   D. None of the above

v. TELNET, FTP, SMTP, Protocols fall in the following layer of OSI reference model
   A. Transport Layer
   B. Internet Layer

C. Network Layer
D. Application Layer

vi. Which error detection method involves polynomials?
A. CRC
B. Simple parity check
C. Two dimensional parity check
D. checksum

vii. The maximum throughput for pure ALOHA is _____ percent.
A. 12.2
B. 18.4
C. 36.8
D. none of the above

viii. An organization is granted a block of classless addresses with the starting address 199.34.32.0/27. How many addresses are granted?
A. 8
B. 16
C. 32
D. none of the above

ix. A ..... routing table is updated periodically using one of the dynamic routing protocols.
A. static
B. dynamic
C. hierarchical
D. non static

x. Which one of the following source needs to pass information to all routers visited by datagram, the option used in
A. IP-by-IP option
B. Header-by-Header option
C. Hop-by-Hop Option
D. Loop-by-loop Option

Q2) A. change the following IPV4 addresses from dotted decimal notation to binary notation. [7]
a. 111.56.45.78
b. 221.34.7.82

B. The UDP header in hexadecimal format is as: 0632000D001CE217 obtain the following form it. [8]
1.Source port number 2. Destination port number 3. Total length
4.Lengh of the data 5. Name of client process

Q3) A. Define Netid and Hostid .Discuss the reverse resolution protocol. [8]

	B.	What are the responsibilities of transport layer. Compare TCP and UDP.	[7]
Q4)	A.	Explain the types of transmission modes	[7]
	B.	Write a short note on 1.IEEE 802.11 standards 2. Fast Ethernet 3. 10-Gigabit ethernet 4. Standard Ethernet	[8]
Q5)	A.	Explain various protocol with noisy channel.	[7]
	B.	Explain TCP/IP reference model with neat diagram.	[8]
Q6)	A.	Explain Domain name space (DNS), file transfer protocol. (FTP) and firewall.	[8]
	B.	Define the congestion. What are causes to occur the congestion.	[7]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (91977) Computer Network Part 2 SEM 4