

Electronics & Comp. Sci Enggi. 2nd Year To 3rd Year Apr_May 2025 (CBCS)

S.n	Year	Sem	Course	Dept.	Sub code	Subject
1	2	III	B Tech	ECS	91969	Engineering Mathematics III ✓
2	2	III	B Tech	ECS	91970	Electronics Devices ✓
3	2	III	B Tech	ECS	91972	Data Structures and Algorithms ✓
4	2	III	B Tech	ECS	91971	Digital Electronics ✓
5	2	IV	B Tech	ECS	79118	Environmental Studies ✓
6	2	IV	B Tech	ECS	91975	Electronic Circuits ✓
7	2	IV	B Tech	ECS	91976	Controls and Instrumentation ✓
8	2	IV	B Tech	ECS	91977	Computer Network ✓
9	2	IV	B Tech	ECS	91978	Microprocessors and Microcontrollers ✓
10	2	IV	B Tech	ECS	91979	Discrete Structures and Automata Theory ✓
11	3	V	B Tech	ECS	56537	Signal & System ✓
12	3	V	B Tech	ECS	56538	Power Electronics ✓
13	3	V	B Tech	ECS	56539	Computer Organization & Architecture ✓
14	3	V	B Tech	ECS	56541	Sensors & Applications ✓
15	3	VI	B Tech	ECS	56544	Digital Signal Processing ✓
16	3	VI	B Tech	ECS	56545	PLC & Automation ✓
17	3	VI	B Tech	ECS	56546	Software Engineering ✓
18	3	VI	B Tech	ECS	56547	Python Programming ✓
19	3	VI	B Tech	ECS	56550	Internet of Things(ECS) ✓

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3

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Database May. System.

Seat No. ECS-STN-500

QP-5381

Total No. of Pages : 3

MAR-APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Signal & System

Sub. Code: 56537



Total Marks: 70

Day and Date: MAY ,05-05-2025

Time: 02:30 PM To 05:00 PM

Instructions:

- Special Inst.:**
1. Q.1 is compulsory.
 2. Solve any 4 questions from remaining questions.
 3. Use non programmable calculator is permissible.
 4. Figures to the right indicates full marks.
 5. Assume suitable data, if required.

Q1) Solve following MCQ.

[10]

- i. For an energy signal _____
 - A. $E=0$
 - B. $P=\infty$
 - C. $E=\infty$
 - D. $P=0$
- ii. Determine the odd component of the signal: $x(t)=\cos t+\sin t$.
 - A. $\sin t$
 - B. $2\sin t$
 - C. $\cos t$
 - D. $2\cos t$
- iii. A system which is linear is said to obey the rules of
 - A. Scaling
 - B. Additivity
 - C. Both scaling and additivity
 - D. Homogeneity
- iv. Which one of the following is an example of a bounded signal?
 - A. $e^t \cos wt$
 - B. $e^t \sin w(-t)$
 - C. $e^{-t} \cos wt$
 - D. $e^t \cos w(-t)$
- v. If $F(s)$ is the Fourier Transform of $f(x)$, then $F[f(ax)]$ is
 - A. $sF(s/a)$
 - B. $1/a s(F/a)$
 - C. $1/s s(F/a)$

D. $aF(s/a)A$

- vi. The time system which operates with a continuous time signal and produces a continuous time output signal is _____
- CTF system
 - DTF System
 - Time invariant System
 - Time variant System
- vii. What is the ROC of the signal $x(n)=\delta(n-k)$, $k>0$?
- $z=0$
 - $z=\infty$
 - Entire z-plane, except at $z=0$
 - Entire z-plane, except at $z=\infty$
- viii. What is the ROC of the z-transform of the signal $x(n)=anu(n)+bnu(-n-1)$?
- $|a|<|z|<|b|$
 - $|a|>|z|>|b|$
 - $|a|>|z|<|b|$
 - $|a|<|z|>|b|$
- ix. In direct form-I realization, all-pole system is placed before the all-zero system.
- True
 - False
 - Not defined
 - None of these
- x. If M and N are the orders of numerator and denominator of rational system function respectively, then how many memory locations are required in direct form-II realization of that IIR filter?
- $M+N+1$
 - $M+N$
 - $\text{Min}[M,N]$
 - $\text{Max}[M,N]$

Q2) [15]

- Explain classification of signals. [7]
- Determine even and odd part of the following signal $x(n) = \{-1, -1, -1, 1, 1, 1, 1\}$ [8]

Q3) [15]

- Convolve the sequence using graphical method $X(n) = \{2, 3, 1, 4\}$ [7]

$$H(n) = \{-1, 2, 3\}$$

- b. Check the following system is linear or not. [8]
 $Y(t) = x(t/2)$
 $Y(n) = x(n) + x(n-1)$

Q4) [15]

- a. State and explain different properties of DFT. [7]
 b. State and prove the change of scale properties of Fourier transform. [8]

Q5) [15]

- a. Write a short note on twiddle factor. [7]
 b. Explain the properties of region of convergence. [8]

Q6) [15]

- a. Develop direct form I and II realization of difference equation. [7]
 $Y(n) = b_0x(n) + b_1x(n-1) + b_2x(n-2) + b_3x(n-3) - a_1y(n-1) - a_2y(n-2) - a_3y(n-3)$
- b. Obtain Z transform of following finite durations. [8]
 i. $X(n) = \{1, 2, 4, 5, 0, 7\}$
 ii. $X(n) = \{1, 2, 4, 5, 0, 7\}$

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 (56537) Signal & System Part 3 SEM 5

Seat No. ECS-STR-508

(12)

MAR, APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Power Electronics

Sub. Code: 56538



Total Marks: 70

Day and Date: MAY, 06-05-2025

Time: 02:30 PM To 05:00 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.: Q.1 is compulsory.
Solve any 4 questions from remaining questions.

Q1) Solve following MCQ.

[10]

- i. For an SCR in the forward blocking mode (practically).
 - A. leakage current does not flow
 - B. leakage current flows from anode to cathode
 - C. leakage current flows from cathode to anode
 - D. leakage current flows from gate to anode
- ii. When the Silicon Controlled Rectifier starts conducting, then will lose all control
 - A. Gate
 - B. Cathode
 - C. Anode
 - D. None of the above
- iii. The power delivery and efficiency is low in _____ phase rectifier.
 - A. Three
 - B. Single
 - C. Both a and b
 - D. None of the above
- iv. The control circuit or triggering circuit not required in _____ rectifiers.
 - A. Controlled
 - B. Uncontrolled
 - C. Both a and b
 - D. None of the above
- v. The controlled rectifiers are used in _____ devices.
 - A. Power supplies

- B. Battery chargers
- C. DC motor controllers
- D. Both c and b

- vi. For a step-up chopper, when the duty cycle is increased the average value of the output voltage.
- A. increases
 - B. decreases
 - C. remains the same
 - D. none of the mentioned
- vii. If T is the time period for a chopper circuit and α is its duty cycle, then the chopping frequency is
- A. $T\alpha/\alpha$
 - B. $T\alpha/\alpha$
 - C. $\alpha/T\alpha$
 - D. $\alpha/T\alpha$
- viii. Which type of commutating circuit will have highest switching losses for same rating of all the components.
- A. current commutated chopper
 - B. voltage commutated chopper
 - C. load commutated chopper
 - D. forced commutated chopper
- ix. Which of the following method is adopted for controlling a DC motor.
- A. Resistance control
 - B. Motor-generator set
 - C. Inverter Rectifier
 - D. DC chopper
- x. _____ is used for critical loads where temporary power failure can cause a great deal of inconvenience.
- A. SMPS
 - B. UPS
 - C. MPS
 - D. RCCB

- Q2) A. Draw the V-I characteristics' of a Diac and explain its working principle. [8]
B. Explain the operation of single phase fully controlled bridge wave rectifier with R load draw waveforms. [7]
- Q3) A. Explain the operation of IGBT with VI switching characteristics. [8]
B. Explain with waveforms step up chopper. [7]
- Q4) A. Compare voltage source and current source inverter. [8]

- B. What are the difference between half and full bridge inverter. Draw circuit diagram of half bridge inverter and full bridge inverter. [7]
- Q5) A. Explain operation of single phase fully controlled full wave rectifier with RL load and draw waveforms. [8]
- B. Compare HWR and FWR. single phase full wave rectifier is supply with a voltage $V=300\sin(314)t$. if firing angle is 60 degree RL is 500ohm.find output load voltage and current. [7]
- Q6) A. Explain with waveforms single phase full bridge inverter. [7]
- B. Explain briefly Turn ON and Turn OFF methods of methods of SCR. [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 (56538) Power Electronics Part 3, SEM 5

Seat No. EES-5th Sem

13

QP-5609

Total No. of Pages : 3

MAR-APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Computer Organization & Architecture

Sub. Code: 56539



Total Marks: 70

Day and Date: MAY, 07-05-2025

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 following MCQ.

[10]

- i. Which unit is used to measure the CPU's processing power?
 - A. GIPS
 - B. LIPS
 - C. MIPS
 - D. Nanoseconds
- ii. The clock rate of CPU is measured in which unit?
 - A. Milliseconds
 - B. Microhertz
 - C. Nanoseconds
 - D. MHz or GHz
- iii. Central Processing Unit in a computer consists of which major components?
 - A. Arithmetic logic unit (ALU) and Control Unit
 - B. Control Unit (CU)
 - C. Registers
 - D. ALU, Control Unit, and Registers
- iv. Which among the following is the fastest memory in a computer that holds information?
 - A. Register
 - B. Cache
 - C. Main memory
 - D. RAM
- v. Which of the following is a characteristic of primary memory?
 - A. It is non-volatile
 - B. It stores data permanently
 - C. It is directly accessible by the CPU
 - D. It is slower than secondary memory

- vi. ROM (Read-Only Memory) is typically used for
- A. Storing temporary data
 - B. Permanent storage of firmware
 - C. Storing frequently used data
 - D. Fast access to volatile data
- vii. Flynn's classification of computer architectures divides them into how many categories?
- A. Two
 - B. Three
 - C. Four
 - D. Five
- viii. What is the purpose of a Process Control Block (PCB)?
- A. To store data for user applications
 - B. To maintain the status of processes during execution
 - C. To control memory allocation
 - D. To manage the CPU's processing unit
- ix. A process is in the "Waiting" state when
- A. It is ready to execute but waiting for the CPU
 - B. It is waiting for a specific event or resource
 - C. It has been completed and is waiting to be removed
 - D. It is not scheduled and is suspended
- x. Amdahl's Law is used to calculate:
- A. The time required for a parallel program to run on multiple processors
 - B. The maximum speedup achievable with parallel computing
 - C. The cost effectiveness of parallel processing
 - D. The number of processors required for a given task

Q2) [15]

- a. Draw and explain functional unit of computer [7]
- b. Define the following [8]
- a) Clock Rate b) Clock Speed c) Clock Cycle d) CPI

Q3) [15]

- a. Draw and explain basic control unit of computer system [7]
- b. Explain register organization in CPU with the diagram [8]

Q4) [15]

- a. Classify the memory of computer system and write a note on RAM [7]
- b. Explain memory interleaving in detail with neat diagram [8]

Q5) [15]

- a. What is process? Explain Process States diagram in detail [7]
- b. What is preemptive and non-preemptive scheduling? Explain FCFS scheduling in detail [8]

Q6) [15]

- a. What is parallel processing ? Explain Flynn's classification [7]
- b. Explain superscalar architecture with neat diagram [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 (56539) Computer Organization & Architecture Part 3 SEM 5

Seat No. 5th Sem - EUS

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QP-5795

Total No. of Pages : 3

MAR-APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Sensors & Applications

Sub. Code: 56541



Day and Date: MAY, 10-05-2025

Time: 02:30 PM To 05:00 PM

Total Marks: 70

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 calculator and statistical table is allowed

Special Inst.: Q-No.1 is compulsory

Answer any 4 questions from remaining questions

Q1) Solve following MCQ.

[10]

i. A transducer converts one form of _____ into another

- A. energy
- B. current
- C. voltage
- D. resistance

ii. Acoustic sensors are used to measure:

- A. Light
- B. Sound
- C. Temperature
- D. Current

iii. The pitot tube measures:

- A. Pressure difference
- B. Velocity head
- C. Static pressure
- D. Fluid viscosity

iv. Rotameter is a type of:

- A. Mass flow meter
- B. Variable area flow meter
- C. Ultrasonic flow meter
- D. Turbine flow meter

v. LVDT is used to measure:

- A. Pressure
- B. Displacement
- C. Temperature
- D. Humidity

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vi. Radiation detectors are primarily used in:

- A. Humidity sensing
- B. Medical imaging and safety
- C. Flow control
- D. Motion detection

vii. MEMS stands for:

- A. Magnetic Electro-Mechanical Systems
- B. Micro Electronic Mechanical Systems
- C. Miniature Electronic Measurement System
- D. Multi Energy Measuring Sensor

viii. Bulk micromachining removes material from:

- A. Surface layer only
- B. Substrate (bulk) of silicon
- C. Metal coatings
- D. Polymer sheets

ix. Directional control valves are used in:

- A. Weight measurement
- B. Flow path selection in fluid systems
- C. Voltage regulation
- D. Temperature control

x. Which actuator has high torque and is good for heavy loads?

- A. Solenoid
- B. Pneumatic actuator
- C. Hydraulic actuator
- D. Stepper motor

Q2) A. Define the following terms:

1. Hysteresis
2. Accuracy
3. Precision
4. Fidelity

[8]

B. Draw the block diagram of instrumentation system and explain its blocks.

[7]

Q3) A. Explain the working principle of radiation temperature detector and write its advantages and disadvantages.

[8]

B. Explain humidity sensor in detail.

[7]

Q4) A. Derive the Bernoulli equation and write its application in flow measurement.

[7]

B. Write a short note on:

[8]

1. Flow Nozzle
2. Float level measurement

- Q5) A. Explain the construction and working of LVDT. [8]
B. List the characteristics of accelerometer and briefly explain any 5 of them. [7]
- Q6) A. What is MEMS? Explain micromachining processes for fabrication of MEMS. [7]
B. Explain mechanical switches, solid state switches along with their applications [8] in control systems.

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

सदरपी प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (1154) B.Tech. CBCS (56541) Sensors & Applications Part.3-SEM 5

8888431

Seat No. ECS-6th-50h

(15)

MAR-APR 2025 SUMMER EXAMINATION**11731 Bachelor of Technology (NEP-2.0)****Sub. Name: Digital Signal Processing****Sub. Code: 56544****Day and Date: MAY, 13-05-2025****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
3. Use of Scientific calculator is allowed

Special Inst.: Q1. is Compulsory
Answer any 4 Questions from remaining questions

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

- i. **Which of the following is true about Decimation-in-Time (DIT) FFT algorithm?**
 - A. It computes DFT from the frequency domain first.
 - B. It begins by splitting the input sequence into even and odd samples.
 - C. It is used for IDFT only.
 - D. It operates only in analog domain
- ii. **In the Fourier series method for FIR filter design, what is the main limitation?**
 - A. High cost
 - B. Long execution time
 - C. Infinite impulse response
 - D. Truncation causes Gibbs phenomenon
- iii. **In digital filter design, frequency warping is associated with:**
 - A. Impulse Invariant Method
 - B. Windowing Method
 - C. Bilinear Transformation
 - D. Fast Convolution
- iv. **Which is *not* a common effect of finite word length in digital filters?**
 - A. Round-off noise
 - B. Overflow
 - C. Aliasing
 - D. Quantization error
- v. **Pipelining in DSP processors helps to:**
 - A. Save power
 - B. Improve memory

- C. Reduce clock frequency
- D. Increase instruction throughput

vi. Which filter is essential in decimation to avoid aliasing?

- A. High-pass filter
- B. Comb filter
- C. Low-pass filter
- D. Band-pass filter

vii. Interpolation by a factor of I inserts how many zeros between samples?

- A. 1
- B. $I-1$
- C. $2I$
- D. $I+1$

viii. What is a practical application of multirate signal processing?

- A. Cryptography
- B. Audio format conversion
- C. Edge detection
- D. Histogram equalization

ix. Continuous Wavelet Transform provides:

- A. Frequency domain only
- B. Time domain only
- C. Time-frequency representation
- D. No practical value

x. Daubechies wavelets are:

- A. Non-orthogonal
- B. Discontinuous
- C. Compactly supported and orthogonal
- D. Used only in analog systems

Q2) A. Find the circular convolution of $x_1(n) = \{2, 1, 2, 1\}$ & $x_2(n) = \{1, 2, 3, 4\}$ using Stockham's method. [8]

B. Compute the DFT of $x(n) = \cos(n\pi/2)$, where $N=4$ using DIF-FFT Algorithm. [7]

Q3) A. List and explain different types of FIR filters? [7]

B. Determine the filter co-efficient $h(n)$ obtained by sampling the given frequency response for [8]

$$N=7. \quad H_d(e^{j\omega}) = \begin{cases} e^{-\frac{j(N-1)\omega}{2}} & \text{for } 0 \leq |\omega| \leq \frac{\pi}{2} \\ 0 & \text{for } \frac{\pi}{2} < |\omega| \leq \pi \end{cases}$$

Q4) A. List and explain different approximations of analog filter. [8]

As [2]

P.T.O.

- B. Design bandstop Butterworth filter for the given specifications; Stopband → [7]
100 to 500Hz, 20dB attenuation at 200 & 400 Hz, passband attenuation is 3dB.

- Q5) A. List and explain the features of DSP TMS3200C67XX Processor. [7]
B. Obtain the Parallel form realization of given transfer function, [8]

$$H(Z) = \left(\frac{1}{(1 - \frac{1}{4}z^{-1})(1 + \frac{1}{4}z^{-1})} \right).$$

- Q6) A. List out the Application of multirate DSP and with neat block diagram explain [8]
how multirate DSP is used in CD Player.
B. List out the Limitations of Fourier Transform that Wavelet Transform has [7]
overcome.

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
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सदरची प्ररनपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1) (1154) B.Tech. CBCS (56544) Digital Signal Processing Part 3 SEM 6

MAR-APR 2025 SUMMER EXAMINATION**11731 Bachelor of Technology (NEP-2.0)****Sub. Name: PLC & Automation****Sub. Code: 56545/109677****Total Marks: 70****Day and Date: MAY, 15-05-2025****Time: 02:30 PM To 05:00 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.: Q.1 is compulsory.
Solve any 4 questions from remaining questions.

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

- i. ----- is used to view past values of the Tag and you can configure them to See any past data.
 - A. Real time trend
 - B. Historical trend
 - C. Text data
 - D. All of above
- ii. Scada software display page includes
 - A. Graphical representation of process
 - B. Alarm list
 - C. Reports and trends
 - D. all above
- iii. SCADA system encompass the transfer of data between central host computer and number of ----- And/or PLCs and central host and operator terminal.
 - A. Microcontrollers
 - B. Remote Terminal Units (RTUs)
 - C. Input Output Modules
 - D. Motor Control Center
- iv. Benefit of historical machine data is
 - A. Faster trouble shooting
 - B. Predictive maintenance
 - C. Inventory management
 - D. All above
- v. The Programming line known as _____ uses in LADDER Logic for PLC.
 - A. Wrong
 - B. Rung

- C. Right
- D. None of these

- vi. Which of following display is not commonly used in DCS.
- A. Trend display
 - B. Graphic display
 - C. Overview display
 - D. CRT display
- vii. Which of following are field devices in DCS.
- A. Data logger, alarm control
 - B. Actuators, sensors
 - C. Graphic display
 - D. All of above
- viii. DCS is used for
- A. Controlling switches
 - B. Controlling pneumatic values
 - C. Controlling complex processes
 - D. Both B and C
- ix. The function of control module in DCS is.
- A. Value manipulation of variable by comparing with set point
 - B. To display trend data and messages
 - C. Monitoring the running process
 - D. All above
- x. DCS tends to be used where
- A. large continuous process plants to be controlled
 - B. high reliability and security is important
 - C. control room is not geographically remote
 - D. All above

- Q2) A. Write a note on SCADA. [7]
B. Explain architecture of PLC. [8]

- Q3) A. Write a note on Timer. [7]
B. Draw the ladder diagram for two lamp red and yellow having the following [8]
condition.

- I. when start button is pressed red and yellow will be ON.
- II. When stop button is pressed red lamp will off after 10sec.

- Q4) A. Explain communication topology of SCADA. [7]
B. Draw the ladder diagram for two motor operation for the following condition. [8]
I. Start button push starts motor M1 and M2.
II. When stop button push stop motor M2 first and after 10sec motor M1

stops.

- Q5) A. Explain TCP/IP protocols. [7]
B. Explain PLC maintenance. [8]
- Q6) A. Explain the function of RTU and SCADA system. [8]
B. Draw the ladder diagram for Boolean expression [7]
 $AB+CD+E=Y1, \overline{F}GH+IJ=Y2, Y1+Y2=Q.$

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 (56545) PLC & Automation Part 3 SEM 6

1380333

MAR-APR 2025 SUMMER EXAMINATION**11731 Bachelor of Technology (NEP-2.0)****Sub. Name: Software Engineering****Sub. Code: 56546/109678****Total Marks: 70****Day and Date: MAY, 19-05-2025****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
 3. Figures to the right indicate full marks
 4. No drawing paper, tracing paper or its cutting is to be brought from outside or taken out from examination hall

Special Inst.: Q1 is compulsory.
Attempt any 4 questions from remaining questions

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

- _____ means the capability to modify the software so as to do corrections, improvement.

 - A. Portability
 - B. Efficiency
 - C. Reliability
 - D. Maintainability
- Project developed with less cost and time and with high quality is called as _____.

 - A. Unsuccessful Project
 - B. Successful Project
 - C. Both A&B
 - D. None of the above
- SRS stands for _____.

 - A. Software Ready Specification
 - B. Software Requirement Software
 - C. Software Resource Specification
 - D. None of the above
- _____ takes the responsibility of choosing their team

 - A. Management
 - B. Software Project Manager
 - C. Company
 - D. All of the above
- In Software Engineering CMM stands for _____.

 - A. Capability Maturity Machine

- B. Capability Machine Model
- C. Code Maturity Machine
- D. Capability Maturity Model

vi. A task with _____ slack is considered as critical task.

- A. 0
- B. 1
- C. 2
- D. 3

vii. White Box techniques are also classified as _____.

- A. Design based testing
- B. Structural testing
- C. Error guessing technique
- D. None of the mentioned

viii. Which one of the following is not a software quality model?

- A. ISO 9000
- B. McCall model
- C. Boehm model
- D. ISO 9126

ix. How is software reliability defined?

- A. time
- B. efficiency
- C. quality
- D. speed

x. Which among the following is the responsibility of Project Manager.

- A. Assigning task to team members
- B. Resolving issues
- C. Responsible for planning and scheduling
- D. All of the above

Q2) A. Explain about component of software processes. [7]
B. List down software development process model and Explain prototype model. [8]

Q3) A. Explain Value of good Software requirements specification. [7]
B. Explain Data flow diagram with neat diagram. [8]

Q4) A. Explain step by step process of system testing. [7]
B. What is project planning? List and explain the responsibilities of project manager. [8]

- Q5) A. List and explain levels of software design. [7]
B. Explain Object Oriented Design in software. [8]
- Q6) A. Write a short note on: [8]
1. Coding
2. Coding review
- B. Explain Agile Project Management process. [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 (56546) Software Engineering Part 3 SEM 6

Seat No. ECS-64th Sem^{ic}

(18)

QP-6038

Total No. of Pages : 3

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Python Programming

Sub. Code: 56547/109679



Day and Date: MAY, 21-05-2025

Total Marks: 70

Time: 02:30 PM To 05:00 PM

- Instructions:**
1. Assume suitable data wherever necessary and mention it boldly
 2. No drawing paper, tracing paper or its cutting is to be brought from outside or taken out from examination hall
 3. Use of Scientific calculator is allowed

Special Inst.: Question Number 1 is compulsory
Attempt any 4 questions from remaining questions

Q1) Solve following MCQ.

[10]

- i. What will be the type of variable x after $x = 3.14$?
- A. int
 - B. str
 - C. float
 - D. bool

- ii. What is the output of this code?

```
python
CopyEdit
for i in range(1, 4):
    if i == 2:
        continue
    print(i)
```

- A. 1 2 3
- B. 1 3
- C. 2 3
- D. 1 2

- iii. Which function returns the current date and time?
- A. time.now()
 - B. datetime.today()
 - C. datetime.now()
 - D. current.time()

- iv. Which of the following checks for membership in a string?
- A. =
 - B. in
 - C. ==

D. like

v. Which module is used for regular expressions in Python?

- A. regex
- B. re
- C. string
- D. match

vi. Which operation is valid for **sets**?

- A. set.append(5)
- B. set.add(5)
- C. set.insert(5)
- D. set.push(5)

vii. What is the output of:

```
d = {"a": 1, "b": 2}
print(d["b"])
```

- A. a
- B. 1
- C. 2
- D. Error

viii. Which method is used to get **all keys** in a dictionary?

- A. getkeys()
- B. all_keys()
- C. keys()
- D. fetch_keys()

ix. How do you import only specific functions from a module?

- A. import math.all
- B. from math import *
- C. from math import sqrt
- D. use math.sqrt

x. Which keyword is used to import a module in Python?

- A. module
- B. import
- C. include
- D. use

Q2) A. Explain any 8 features of python. [8]

B. Differentiate between list and tuple in python programming. [7]

Q3) A. Solve following questions [8]

i. Write a Python program to accept a number from the user and check whether it is **even or odd** using if-else.

- ii. Write a program that prints the multiplication table of a number using a for loop and
- B. Explain different arithmetic and relational operators in Python with examples. [7]
- Q4) A. Explain how **regular expressions** are used in Python for pattern matching. Write a program using re.search() or re.match(). [8]
B. Explain string operators +, *, in, and slicing with examples [7]
- Q5) A. What are **sets** in Python? Explain with examples how to perform union, intersection, and difference operations. [7]
B. Explain the concept of **dictionaries** in Python. Write a program to add and delete key-value pairs. [8]
- Q6) A. What is a **module** in Python? How is it created and used in a Python program? [7]
B. Explain the use of the import, from, and as keywords while importing modules [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 (56547) Python Programming Part 3 SEM 6

Seat No. ECS-6th Sem

(14)

QP-6134

Total No. of Pages.: 4

MAR-APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Internet of Things(ECS)

Sub. Code: 56550/109682



Total Marks: 70

Day and Date: MAY ,26-05-2025

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 following MCQ.

[10]

- i. Which of the following is NOT typically part of the IoT framework?
- A. Sensors and actuators
 - B. Communication protocols
 - C. Web hosting services
 - D. Data analytics
- ii. Which technology is commonly used for object identification in IoT systems?
- A. Bluetooth
 - B. Wi-Fi
 - C. RFID
 - D. Ethernet
- iii. Which term refers to the ability of an IoT system to handle growth in the number of connected devices?
- A. Flexibility

- B. Interoperability
- C. Scalability
- D. Compatibility
- iv. What does interoperability in IoT mean?
- A. Devices must be made by the same manufacturer
- B. Devices can communicate and work together regardless of brand or type
- C. Devices work without needing communication
- D. Devices only work on specific Wi-Fi networks
- v. In an RFID system, the **tag** is used to:
- A. Control internet traffic
- B. Send and receive data to/from the reader
- C. Power up the reader
- D. Generate middleware commands
- vi. The device that sends radio waves to communicate with an RFID tag is called:
- A. RFID Middleware
- B. RFID Reader
- C. Networking Node
- D. Sensor Node
- vii. The GPIO pins on a Raspberry Pi are mainly used for:
- A. Charging the battery
- B. Connecting sensors and devices
- C. Improving internet speed
- D. Playing audio

viii. Zigbee technology is mainly based on which IEEE standard?

- A. 802.11
- B. 802.15.6
- C. 802.15.4
- D. 802.16

ix. Which technology forms the backbone of advanced metering infrastructure (AMI)?

- A. Blockchain
- B. Wireless communication and data analytics
- C. Satellite navigation
- D. Virtual Reality

x. A Body Area Network (BAN) in IoT is mostly associated with:

- A. Smart cities
- B. Health monitoring devices
- C. Smart farming
- D. Environmental pollution control

- Q2) A. With neat diagram explain IoT frame works [8]
B. Write a short note on following [7]
i) Sensing and actuating technology ii) Internet in IoT
- Q3) A. With neat diagram explain working principle of RFID [8]
B. Explain different Traffic Characteristics of IoT or M2M application [7]
- Q4) A. Write a short note on Raspberry Pi [8]
B. Write a simple program with C language for an application using IoT [7]
- Q5) A. How IoT is useful for development of Smart City. [8]
B. Write the different types of standards the IEEE 802.15 family, explain any three [7]
briefly

Seat No.	ELB-37d.50m
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Total No. of Pages : 03

S.Y.B.Tech. (Part - II) (Semester - III)
Examination, MAY 2025
(Electronics and Computer Sciences)
Database Management System
Sub. Code : 91973



Day and Date : Friday, 09.05.2025

Total Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

- Instructions :**
- 1) Question No. One is compulsory.
 - 2) Solve any 4 questions from remaining questions.
 - 3) Use of non-programmable calculator is permissible.
 - 4) Figures to right indicates full marks.
 - 5) Assume suitable data, if required.

Q.1) Solve MCQ's **(10)**

- 1) The ability to query data, as well as insert, delete, and alter tuples, is offered by.....
 - A) TCL (Transaction Control Language)
 - B) DCL (Data Control Language)
 - C) DDL (Data Definition Language)
 - D) DML (Data Manipulation Language)
- 2) Which command is used to remove a Table from an SQL?
 - A) Drop table
 - B) Delete
 - C) Purge
 - D) Remove
- 3) The key in which the primary of one relation is referenced to another relation is called
 - A) Primary key
 - B) Foreign key
 - C) Candidate key
 - D) Concatenate key

- 4) Which of the following is NOT a property of transactions?
- A) Atomicity B) Concurrency
C) Durability D) Isolation
- 5) What is data integrity?
- A) It is the data contained in database that is non redundant
B) It is the data contained in database that is accurate and consistent.
C) It is the data contained in database that is secured.
D) It is the data contained in database that is shared.
- 6) In the architecture of a database system, external level is the
- A) Physical level B) logical level
C) conceptual level D) view level
- 7) The view of total database content is called
- A) Conceptual view B) Internal view
C) External view D) Physical view
- 8) The clause in SQL that specifies that the query result should be sorted in ascending or descending order based on the values of one or more columns is.....
- A) View B) Order by
C) Having D) Group by
- 9) It is an abstraction through which relationships are treated as higher level entities.
- A) Generalization B) Specialization
C) Aggregation D) Inheritance
- 10) A relation is in if an attribute of a composite key is dependent on an attribute of another composite key.
- A) 2NF B) 3NF
C) BCNF D) 1NF

- Q.2) A) Define DBMS. Explain different characteristics of DBMS. (7)
B) Explain the following terms. (8)
 i) Cardinality
 ii) Participation
- Q.3) A) Explain with proper syntax and example of DDL command in SQL. (7)
B) Define Normalization. Explain 1NF, 2NF, 3NF with example. (8)
- Q.4) A) Define Transaction. Explain the Transaction properties. (7)
B) What is Relational algebra? Explain relational operators in details. (8)
- Q.5) A) What is ER Model? Explain with example of any organization. (7)
B) Consider the following employee table (Emp_id, Emp_name, Emp_age) : (8)
 i) Display details of employees whose age is less than 30.
 ii) Display details of employees whose age is in between the range 30 to 60.
 iii) Display total number of employees whose age is 60.
 iv) Display name of employees whose Name starts with 'S'.
 v) Display details of employees whose Name ends with 'd'.
- Q.6) A) Explain Two Phase Locking Protocol for Concurrency Control. (7)
B) What is Trigger? Explain different types of triggers in SQL. (8)
-