

29/6/26

No. of Pages: 02

Roll No:

A-01

B. Tech. (CSE/IT/CE/ME/TE/ECE/CSE-AIDS/-AIML/CYS) I Semester Examinations (June 2026)
Engineering Mathematics-I (ASH-MAT-101A)

Time- 3hrs
Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory.
Each Question carries 12 marks.

Q.1	Marks
(a) In what condition the system of linear equation having unique solution, infinite many solutions and no solution?	1.5
(b) Find the rank of matrix $A = \begin{bmatrix} 2 & 2 & 2 \\ 1 & 2 & 1 \\ 3 & 4 & 3 \end{bmatrix}$ by row echelon form.	1.5
(c) Show that the eigen values of an idempotent matrix are either zero or unity.	1.5
(d) Write the given quadratic $3x^2 + 3z^2 + 4xy + 5xz + 8yz$ into matrix form.	1.5
(e) Find the parallel asymptotes of the curve $\frac{a^2 b^2}{x^2 - a^2} = y^2 - b^2$	1.5
(f) State the Lagrange's mean value theorem.	1.5
(g) Define Gamma function.	1.5
(h) Find the value of	1.5

$$B\left(-\frac{1}{2}, 1\right)$$

UNIT-I

Q.2(a)	For what value of k the equations $x + y + z = 1$, $2x + y + 4z = k$, $4x + y + 10z = k^2$ have a solution and solve them completely in each case.	6
Q.2(b)	Find the inverse of $A = \begin{bmatrix} 8 & 4 & 3 \\ 2 & 1 & 1 \\ 1 & 2 & 1 \end{bmatrix}$ by elementary row operations.	6
Q.3(a)	Show that row vectors of the matrix $\begin{bmatrix} 1 & 1 & -1 & 1 \\ 1 & -1 & 2 & -1 \\ 3 & 1 & 0 & 1 \end{bmatrix}$ are linearly dependent and find the relation among them.	6
Q.3(b)	For the matrix $A = \begin{bmatrix} 2 & 1 & -3 & 6 \\ 3 & -3 & 1 & 2 \\ 1 & 1 & 1 & 2 \end{bmatrix}$, find non-singular matrices P and Q such that is in the normal form. Hence find the rank of A.	6

UNIT-II

- Q.4(a)** Obtain the sum of squares of $3x_1^2 + 5x_2^2 + 3x_3^2 - 2x_1x_2 - 2x_2x_3 + 2x_3x_1$ by orthogonal transformation. Also find the index, signature, rank and nature of the quadratic form. 6
- Q.4(b)** Verify Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 4 \\ 3 & 2 \end{bmatrix}$, and hence find A^{-1} and A^3 . 6
Find the eigen value and corresponding eigen vector of the matrix
- Q.5(a)** $A = \begin{bmatrix} -1 & 2 & -2 \\ 1 & 2 & 1 \\ -1 & -1 & 0 \end{bmatrix}$. 6
- Q.5(b)** Show that the transformation $y_1 = x_1 - x_2 + x_3$, $y_2 = 3x_1 - x_2 + 2x_3$, $y_3 = 2x_1 - 2x_2 + 3x_3$ is non-singular. Write down the inverse transformation. 6

UNIT-III

- Q.6(a)** Calculate the approximate value of $\sqrt{17}$ to four decimal places by taking first four terms of an appropriate Taylor's series. 6
- Q.6(b)** Show that the parabola $y^2 = 4ax$, ρ^2 varies as $(SP)^2$, where ρ is the radius of curvature at any point P of the parabola and S is the focus of the parabola. 6
- Q.7(a)** State and prove Cauchy's mean value theorem. 6
- Q.7(b)** Find all the asymptotes of the curve $(x - y)^2(x + 2y - 1) = 3x + y - 7$. 6

UNIT-IV

- Q.8(a)** State and prove Duplication formula. 6
- Q.8(b)** Change the order of integration in 6

$$\int_0^{4a} \int_{x^2/4a}^{2\sqrt{ax}} dy dx$$

and hence evaluate.

- Q.9(a)** Find the volume of the solid formed by the revolution about the x-axis, of the loop of the curve $y^2(a - x) = x^2(a + x)$. 6
- Q.9(b)** Find, by triple integration, the volume in the positive octant bounded by the coordinate's planes and the plane $x + y + z = a$. 6

22/6

No. of Pages: 01

Roll No:

A-02

B. Tech. CSE/IT/ECE I Semester Examinations (June 2026)
Semi-Conductor and Quantum Physics (ASH-PHY-103A)

Time- 3hrs
Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory. Each Question carries 12 marks.

Q.1	Marks
(a) Explain wave-particle dualism with suitable examples from light and matter	2
(b) What is the significance of the Hamiltonian operator?	2
(c) What happens to Fermi level at high temperature?	2
(d) Explain the concept of holes in semiconductors	2
(e) Explain the principle of operation of a semiconductor laser.	2
(f) Distinguish between spontaneous and stimulated emission.	2

UNIT-I

Q.2(a)	State de Broglie's hypothesis. Derive expression for de Broglie wavelength.	6
Q.2(b)	Write down the postulates of Quantum Mechanics.	6
Q.3(a)	Explain the physical meaning of Δx and Δp .	6
Q.3(b)	What is the physical significance of $ \psi ^2$?	6

UNIT-II

Q.4(a)	Explain how classical theory treats electrons in a metal.	6
Q.4(b)	What is Fermi Energy? Write down its importance.	6
Q.5(a)	What is the significance of density of solids in solid state physics?	6
Q.5(b)	State Bloch's theorem. Explain the significance of Bloch functions.	6

UNIT-III

Q.6(a)	Explain the formation of electron-hole pairs in intrinsic semiconductors.	6
Q.6(b)	How does doping concentration affect the temperature dependence?	6
Q.7(a)	Draw and explain V-I characteristics of a p-n junction diode.	6
Q.7(b)	What is the Hall effect? Derive the expression for Hall coefficient.	6

UNIT-IV

Q.8(a)	Define LASER. Explain the characteristics of lasers.	6
Q.8(b)	What is pumping? Explain different pumping methods.	6
Q.9(a)	Write applications of lasers in various fields.	6
Q.9(b)	Give examples of three level and four level laser systems. Explain the working of He-Ne laser.	6

No. of Pages: 02

Roll No.....

A-02

B.Tech. (CSE-AIDS/-AIML/-CYS) II Semester Examinations (Jun 2026)
Semiconductor & Quantum Physics (ASH-PHY-103A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Write any two applications of uncertainty principle.	2
(b) Write any two characteristics of the matter waves.	2
(c) State Bloch theorem for electrons in a periodic potential.	2
(d) Explain in brief, direct and indirect band gap semiconductors with suitable examples.	2
(e) List the characteristics of Laser.	2
(f) Calculate de-Broglie wavelength of an e^- moving with velocity 2×10^8 cm/s.	2

UNIT-I

Q.2(a)	Explain in Brief the Heisenberg's uncertainty principle. Explain the existence of proton in the nucleus based on uncertainty Principle.	3,6
Q.2(b)	Find de-Broglie wavelength of electron with kinetic energy 15 eV.	3
Q.3	Starting from the time-dependent Schrödinger equation, derive the time-independent Schrödinger wave equation for a particle moving in a dimensional potential field. Explain the physical significance of wave function	9,3

UNIT-II

Q.4	Derive the expression for the density of states (DoS) of a free electron gas confined in a three-dimensional potential box, starting from the quantization of energy levels.	12
Q.5(a)	Discuss limitations of classical free electron theory.	5
Q.5(b)	Derive expression for effective mass of electron and what is its physical significance	5,2

UNIT-III

Q.6	Explain the formation of a PN junction diode and analyze its V-I characteristics under forward and reverse bias conditions with suitable diagram.	6,3,3
Q.7(a)	Using the band theory of solids, qualitatively distinguish between metals, insulators, and semiconductors.	6
Q.7(b)	Compare the properties of Intrinsic and Extrinsic Semiconductors with suitable diagrams and supported by examples.	6

UNIT-IV

- | | | |
|--------|---|-------|
| Q.8 | Explain construction, working and applications of He-Ne laser with the help of a well labelled diagram. | 4,5,3 |
| Q.9(a) | Derive the expression for numerical aperture and acceptance angle of an optical fiber. | 5 |
| Q.9(b) | Explain optical fiber communication system with block diagram and discuss its advantages. | 5,2 |

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No. of Pages: 02

Roll No:

A-03

B. Tech. Civil/Mechanical/Textile Engineering II Semester Examinations (June 2026)
Problem Solving Using "C" (BT-CSE-101A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all, selecting one question from each unit and Question 1 is compulsory. Each Question carries 12 marks.

Q.1	Marks
(a) Briefly write about characteristics of a good algorithm?	2
(b) Differentiate compiler and Interpreter on error detection feature.	2
(c) What happens if the condition expression in a for loop is omitted?	2
(d) What is the purpose of the null character '\0' in a string?	2
(e) Can a union store multiple values at the same time? Why or why not?	2
(f) Explain and demonstrate the difference between *ptr++ and (*ptr)++.	2

UNIT-I

Q.2(a)	Explain block diagram of a computer system with a neat and clean diagram. Describe the function of each component.	12
Q.3(a)	Convert (i) $(101101)_2$ to Decimal (ii) $(2F)_{16}$ to Decimal.	3x2=6
Q.3(b)	What are the different levels of programming languages? Explain each examples.	6

UNIT-II

Q.4(a)	Explain in detail the different storage classes in C with syntax, examples, and memory behavior.	6
Q.4(b)	Write a program to find the largest of three numbers using nested conditional operators.	6
Q.5(a)	Write a program to left-shift and right-shift an integer.	6
Q.5(b)	Write a program to print numbers from 1–20 but skip all even numbers using continue.	6

UNIT-III

Q.6(a)	Write a program to input radius and pass it to a function that returns the area of circle.	6
Q.6(b)	What are the advantages and disadvantages of call by value and call by reference? Explain with suitable C program examples and memory representation diagrams.	6
Q.7(a)	Write a program to find the maximum and minimum element of an array using functions	6
Q.7(b)	Write a program to reverse a string manually.	6

UNIT-IV

- Q.8(a)** Create a Student structure with members: Roll_No, Name, and Age Write a function that takes a Student structure as an argument and prints the student's details. Call the function in main(). 6
- Q.8(b)** Differentiate between normal variables and pointer variables. How does pointer declaration help in efficient memory usage and program execution? 6
- Q.9(a)** What is dynamic memory allocation? Discuss in detail the functions malloc(), calloc(), realloc(), and free(). Explain their syntax, working, and differences. 6
- Q.9(b)** Write a program to copy contents of one file to another using unformatted functions: fgetc() and fputc(). 6

No. of Pages: 02

Roll No.....

A-03

B.Tech. (CSE/IT/ECE/CSE-AIDS/-AIML-CYS) I Semester Examinations (June 2026)

Problem Solving using "C" (BT-CSE-101A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Define and differentiate between High level & Machine level language with examples.	2
(b) Find decimal equivalent of hexadecimal number 2B.C4.	2
(c) Predict the output and justify using precedence rules: <pre>#include<stdio.h> int main() { int x = 7 + 3 * (10 / (12 / (3 + 1) - 1)); printf("%d", x); return 0; }</pre>	2
(d) Explain the use of switch statement with menu-driven programs.	2
(e) Predict the output <pre>#include<stdio.h> int main() { int a[] = {10,20,30,40}; int *p = a + 2; printf("%d", *p); return 0; }</pre>	2
(f) Differentiate between call by value and call by reference.	2

UNIT-I

Q.2(a)	Draw a block diagram to illustrate basic organization of a computer system and explain the functions of various units.	7
Q.2(b)	What is an interpreter? How does it differ from a compiler?	5
Q.3(a)	Explain various stages involved in the execution of a program.	7
Q.3(b)	Subtract 110111_2 from 101110_2 using complementary method.	5

UNIT-II

Q.4(a)	Discuss the scope, lifetime, and default values of different storage classes.	7
Q.4(b)	Write a program to print prime numbers between 1 and 100.	5
Q.5(a)	Write a program to calculate roots of a quadratic equation.	5

- Q.5(b)** Differentiate while and do- while loop. Write a program to print below pattern. 7

```
* * * * *
*       *
*       *
*       *
*       *
* * * * *
```

UNIT-III

- Q.6(a)** Explain recursion in C. Write a program to print Fibonacci series using recursion. 6
- Q.6(b)** Discuss string manipulation techniques using library functions. 6
- Q.7(a)** Describe memory representation of arrays. Write a program to sort elements of an array using selection sort. 7
- Q.7(b)** Write a program to reverse a string without using library function. 5

UNIT-IV

- Q.8(a)** Write a program to define a union and structure both having exactly same members. Using size of operator, print the size of structure variable as well as union variable and comment on the result. 6
- Q.8(b)** Explain various functions involved in reading from and writing into a file. 6
- Q.9(a)** Write a program to copy contents of one file into another file. 5
- Q.9(b)** Explain and analyze memory representation in C using pointers, including address allocation, dereferencing, and pointer arithmetic with suitable examples and memory diagrams. 7

No. of Pages: 02

Roll No.....

A-04

B.Tech. CSE/IT/ECE I Semester Examinations (Jun 2026)
Essentials of English Language (ASH-HUM-105A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1 **Marks**

- | | | |
|-----|---|---|
| (a) | What is Phoneme? | 2 |
| (b) | Define Monophthongs. | 2 |
| (c) | What is a Conjunction? | 2 |
| (d) | What is a Suffix? | 2 |
| (e) | Define Abbreviation. | 2 |
| (f) | Define Imperative Sentence with examples. | 2 |

UNIT-I

- | | | |
|--------|--|----|
| Q.2(a) | Describe the Organs of Speech and their functions. | 6 |
| Q.2(b) | Explain the classification of English Sounds. | 6 |
| Q.3 | Describe Place of Articulation in detail. | 12 |

UNIT-II

- | | | |
|-----|--------------------------------|----|
| Q.4 | Fill in the suitable Articles: | 12 |
|-----|--------------------------------|----|

- a) I want ____ apple from that basket.
- b) The church on ____ corner is progressive.
- c) Miss Lin speaks ____ Chinese.
- d) I borrowed ____ pencil from your pile of pencils and pens.
- e) One of ____ students said, "The professor is late today."
- f) Eli likes to play ____ volleyball.
- g) I bought ____ umbrella to go out in the rain.
- h) My daughter is learning to play ____ violin at her school.
- i) Please give me ____ cake that is on the counter.
- j) I lived on Main Street when I first came to ____ town.
- k) Albany is the capital of ____ New York State.
- l) My husband's family speaks ____ German.

- | | | |
|--------|---|---|
| Q.5(a) | Fill in the blanks with appropriate Prepositions: | 6 |
|--------|---|---|

- a) We travelled ____ car for our vacation last year.
- b) The cat is hiding ____ the couch.
- c) He stayed home ____ the rain last night.
- d) The kids played soccer ____ the park after school.
- e) I will see you ____ dinner tonight.
- f) She finished her project ____ time for submission.

- | | | |
|--------|---|---|
| Q.5(b) | Differentiate between active and passive voice with examples. | 6 |
|--------|---|---|

UNIT-III

- | | | |
|-----|-----------------------|----|
| Q.6 | Do the Abbreviations: | 12 |
|-----|-----------------------|----|

- a) ATM
- b) CEO

- c) WHO
- d) GPS
- e) IT
- f) LAN
- g) RAM
- h) IELTS
- i) UGC
- j) AIDS
- k) DNA
- l) RBC

Q.7(a) Write down Synonyms of the following: **6**

- a) Coherent
- b) Facilitate
- c) Hinder
- d) Kindle
- e) Lethargic
- f) Zenith

Q.7(b) Write down antonyms of the following: **6**

- a) Abundant
- b) Diligent
- c) Impartial
- d) Obsolete
- e) Tactful
- f) Melancholy

UNIT-IV

Q.8 Find and correct the error in the given sentences: **12**

- a) One of the students were absent today.
- b) Neither of the players have scored a goal.
- c) The furniture in this room need to be replaced.
- d) The teacher, along with her students, are going on a trip.
- e) Either my brother or my sisters is coming to the party.
- f) The scissors is in the drawer
- g) Either my parents or my uncle are attending the meeting.
- h) The quality of these products are not satisfactory.
- i) The jury were divided in their opinions.
- j) The boy, along with his friends, are playing outside.
- k) The crowd were going wild with excitement.
- l) The box of chocolates are on the table.

Q.9(a) Do the Punctuation: **6**

- a) Do you want coffee tea or juice.
- b) He loves reading novels especially mysteries thrillers and fantasies
- c) She asked me to bring apples oranges and grapes to the picnic
- d) Oh no the cake has burned in the oven
- e) Please bring the following items milk eggs bread and butter
- f) It's raining outside so you'll need an umbrella

Q.9(b) Explain the types of Sentences with examples. **6**

No. of Pages: 03

Roll No.....

A-04

B.Tech. (CE/ME/TE/ /CSE-AIDS/-AIML/CYS) II Semester Examinations (Jun 2026)

Essentials of English Language (ASH-HUM-105A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1		Marks
(a)	What is a vowel sound? Give any two examples.	2
(b)	What are consonant sounds? Give any two examples.	2
(c)	Define preposition and give one example in a sentence.	2
(d)	What is the difference between active voice and passive voice?	2
(e)	What are synonyms? Give two examples.	2
(f)	What is a phrase? Give one example.	2

UNIT-I

Q.2	Explain the speech mechanism in detail. Describe the role of the respiratory system, phonatory system and articulatory system in the production of speech sounds.	12
Q.3	Describe the Organs of Speech and explain the role of any six articulators in producing English sounds.	12

UNIT-II

Q.4(a)	Fill in the blanks with appropriate articles : (i) He is..... honest man. (ii) This is..... best book on the subject. (iii) New York..... large city. (iv) Our library has three copies of..... Mahabharata. (v) John's ambition is to be..... Engineer. (vi) I have never heard such..... absurd story.	6
Q.4(b)	Use correct prepositions: (i) The work must be finished.....the end of the week. (ii) I met him.....Monday. (iii) Miss Johnson is a typist.....the Town Hall. (iv) I prefer tea.....coffee. (v) Drinking is injurious.....health. (vi) Would you prefer to work.....a factory or.....farm.	6
Q.5(a)	Change the Voice: (i) They cleaned the room. (ii) Post the letter at once. (iii) He will look into the matter. (iv) Someone has broken the window. (v) She knows me. (vi) He teaches us English.	6

Q.5(b) Use correct Gerund/Infinitive:

6

- (i) He enjoys.....(read).
- (ii) She wants.....(learn) French.
- (iii) I am tired of..... (wait).
- (iv) He admitted.....(steal) the money.
- (v) She decided.....(go) home early.
- (vi) They made him..... (wait) outside.

UNIT-III

Q.6(a) Add a suitable prefix or suffix to form a correct word:

6

- (i)..... possible
- (ii) govern.....
- (iii)active
- (iv) friend.....
- (v)regular
- (vi) danger.....

Q.6(b) Write One-Word Substitution of the following:

6

- (i) One who believes in God
- (ii) The life history of a man written by someone else
- (iii) One who travels for knowledge
- (iv) A person who eats too much
- (v) A person who studies plants
- (vi) A tank where fish or water plants are kept

Q.7(a) Write the correct synonym or antonym as asked:

6

- (i) Synonym of the word- **Abandon**
- (ii) Synonym of the word- **Jolly**
- (iii) Synonym of the word - **Generous**
- (iv) Antonym of the word - **Victory**
- (v) Antonym of the word - **Ancient**
- (vi) Antonym of the word - **Zeal**

Q.7(b) Supply the correct homophone or homonym:

6

- (i) Choose the correct homophone: I will.....(write/right) the letter.
- (ii) Choose the correct homophone: She bought..... (flower/flour).
- (iii) Give a homophone for the word- **Pair**
- (iv) Give a homonym of the word- **Light**
- (v) Give a homonym of the word - **Bat**
- (vi) Give a homonym of the word- **Ban**

UNIT-IV

Q.8(a) Do as directed:

6

- (i) God helps those..... (complete by adding a suitable clause)
- (ii) No one can tell..... (complete by adding a suitable clause)
- (iii) Nobody knows what..... (complete by adding a suitable clause)
- (iv) He worked hard. (change into a compound sentence)
- (v) The boy was tired. (change into a complex sentence)
- (vi) She opened the window. (change into a compound sentence)

Q.8(b) Fill in the blanks with correct form of verbs given in brackets:

6

- (i) Mr. Johnson.....(go) to the office in his car each morning.
- (ii) A honest person always.....(tell) the truth.
- (iii) It.....(rain) continuously since six o'clock this morning.
- (iv) My father.....(arrive) from London yesterday.
- (v) I understand exactly what he.....(mean).
- (vi) By next Monday, they.....(complete) the project.

Q.9(a) Construct meaningful sentences by using the following verb patterns:

6

- (i) S + Vi
- (ii) S + Vt + Gerund
- (iii) S + Vt + that clause
- (iv) S + Vt + Infinitive (to + verb)
- (v) S + V + O + Infinitive
- (vi) S + V + O + Gerund

Q.9(b) Correct the following sentences:

6

- (i) These furnitures are for sale.
- (ii) She is my cousin sister.
- (iii) He not only spoke loudly but clearly also.
- (iv) What are the news?
- (v) Each of the students should do their best.
- (vi) If I were a millionaire, I will help the poor.

No. of Pages: 02

Roll No.....

A-05

B.Tech CSE/CSE-AIML/CSE-AIDS/CS/ECE/CE/TE/ME/IT
BCA/BCA-DS/BCA-CTIS/BCA-AIML I/II Semester Examinations (June 2026)
Universal Human Values (ASH-HUM-107A)

Time- 3hrs
Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Explain in brief the importance of self-exploration in daily life	2
(b) Mention any two activities of the body	2
(c) What is harmony meant in nature?	2
(d) Define professional ethics.	2
(e) Differentiate between Gratitude and Reverence.	2
(f) What do you mean by value-based life?	

UNIT-I

Q.2(a)	Explain how value education differs from traditional education in terms of purpose and approach?	8
Q.2(b)	Describe how self-exploration can help a student manage conflicts in daily Life?	4
Q.3	Explain a step-by-step model showing how self-exploration helps in understanding human values with proper flowchart	12

UNIT-II

Q.4	Explain the statement "Human being is more than just the body." Also, discuss the co-existence of the self and the body.	12
Q.5(a)	Why is the harmony between the self (I') and the body highly required?	6
Q.5(b)	Describe the need of the "self" and the needs of the "body".	6

UNIT-III

Q.6	A family is experiencing misunderstandings and lack of harmony because family members spend very little time together and do not communicate properly. Due to busy schedules and overuse of electronic devices, relationships among parents, children, and grandparents are becoming weak.	3,5,4
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Based on the above case study, answer the following:

- (a) Identify the reasons for lack of harmony in the family.
- (b) Explain the role of affection, respect, gratitude, and proper communication in maintaining healthy family relationships.
- (c) Suggest ways to improve mutual understanding and harmony among family members.

- | | | |
|--------|--|---|
| Q.7(a) | Explain in brief the Comprehensive Human Goals (CHG). | 6 |
| Q.7(b) | Discuss how it's (CHG) different dimensions help in achieving a balanced and happy life? | 6 |

UNIT-IV

- | | | |
|-----|---|-------|
| Q.8 | A newly appointed project manager in a company is technically skilled and completes tasks efficiently. However, he often ignores the opinions of team members, takes credit for others' work, and focuses only on achieving targets without considering the well-being of employees. Due to this behavior, conflicts have increased within the team, and workplace harmony is disturbed. After attending a Value Education workshop, he realizes that professional success requires not only competence but also right intention and ethical conduct. | 4,4,4 |
|-----|---|-------|

Based on the above case study, answer the following:

- | | | |
|--------|--|---|
| | (a) Differentiate between competence and intention in professional ethics. | |
| | (b) Explain why both competence and right intention are essential for ethical professional conduct. | |
| | (c) Suggest measures through which professionals can develop competence along with ethical values and positive intentions. | |
| Q.9(a) | Discuss the importance of honesty, responsibility, and accountability in engineering profession. | 6 |
| Q.9(b) | Explain the defects in unethical behavior with examples. | 6 |

No. of Pages: 2

Roll No:

A-06

B. Tech. CSE-AIDS/AIIML/CS Ist Semester Examinations (June 2026)
Basics of Electronics Engineering (BT-ECE-101A)

Time: 3hrs

Max. Marks: 60

Attempt 5 questions in all by selecting one question from each. Question 1 is compulsory.
Each Question carries 12 marks.

Q.1		Marks
(a)	Define Barrier Potential and Depletion layer. In which context these terms are used?	2
(b)	List two main differences between Schottky diode & avalanche diode.	2
(c)	What are the charge carriers in a BJT? Identify any majority and minority charge carriers in PNP and in NPN transistors.	2
(d)	Comment upon the doping levels of different layers in an NPN transistor. Are these doping levels same? If different, as to why?	2
(e)	Define a BCD number. Convert a decimal number '16' into a BCD number and into a binary number.	2
(f)	List at least four advantages of LED.	2

UNIT-I

Q.2(a)	Describe the breakdown phenomenon of Zener diode. Does it remain useful after breakdown(s)?	5
Q.2(b)	Draw a full wave rectifier using 4 diodes; connect a load and source of supply. Describe its working & draw the input and output waveshapes too.	7
Q.3(a)	Explain the construction and working of Solar Cell. What is its typical efficiency?	8
Q.3(b)	Describe an application of Schottky diode.	4

UNIT-II

Q.4(a)	Draw the input and output characteristics of CB configuration of an NPN transistor.	6
Q.4(b)	Can a transistor work at any operating point? How is the operating point selected?	6
Q.5(a)	Explain the working of a PNP transistor as an amplifier? (take any one configuration).	8
Q.5(b)	Which feature / property of the signal does an amplifier amplify? Does it draw the entire power (required for amplification) from the signal being amplified? If not, where from does it draw the additional power required for amplification?	4

UNIT-III

- Q.6(a)** Perform the following binary arithmetic operations: 9
1101 + 1011; 1001 + 111; 1111 – 101; 1011 – 0110.
- Q.6(b)** Write the procedure to convert Gray codes to binary numbers. 3
- Q.7(a)** Convert the binary numbers 1010 and 1101 into corresponding Gray codes. 6
- Q.7(b)** What, if any, are the essential differences between BCD numbers and the 6
binary numbers? What are the range of decimal numbers that can be
represented by a 4-bit BCD number and a 4-bit binary number?

UNIT-IV

- Q.8(a)** Draw a logic circuit to implement the Boolean expression $E = (A+B)(C+D)$ 8
using basic logic gates and explain the working of the circuit.
- Q.8(b)** What is a standard form of expression? Give an example. What are max 4
terms?
- Q.9(a)** State & explain De Morgan's Theorems with Boolean expressions. 6
- Q.9(b)** Prove the following Boolean identity using Boolean algebra laws: 6
 $(A+B)(A+C) = A+BC$.

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No. of Pages: 02

Roll No:

A-07

B. Tech. ECE/CSE-AIDS/CSE-AIIML/CSE-CYBER SECURITY/CE/ME/TE

I Semester Examinations (June 2026)

Engineering Chemistry (ASH-CHE-108A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory. Each Question carries 12 marks.

Q.1

- | | | |
|-----|--|---|
| (a) | Discuss about polymeric composites. | 2 |
| (b) | What is desalination? | 2 |
| (c) | Write characteristics of a good fuel. | 2 |
| (d) | Discuss the difference between singlet and doublet in NMR. | 2 |
| (e) | Define biodegradable polymers. | 2 |
| (f) | What are solid fuels? | 2 |

UNIT-I

- | | | |
|--------|--|---|
| Q.2(a) | Describe the complete procedure for estimation of hardness of water by EDTA titration method. | 6 |
| Q.2(b) | What is the difference between scale and sludge? Explain in detail? | 6 |
| Q.3(a) | Describe the ion-exchange method of water softening with neat diagram. | 8 |
| Q.3(b) | A 50 mL hard water sample requires 20 mL of N/50 EDTA. Calculate hardness in ppm as CaCO_3 . Show all steps and formulae. | 4 |

UNIT-II

- | | | |
|--------|---|---|
| Q.4(a) | Define calorific value. Differentiate between gross calorific value and net calorific value. | 6 |
| Q.4(b) | What are Flash Point and Fire Point of liquid fuels? Explain their determination and industrial importance. | 6 |
| Q.5(a) | Define corrosion. Discuss the difference between dry corrosion and wet corrosion with examples. | 6 |
| Q.5(b) | Explain stress corrosion and pitting corrosion. Why are these types considered dangerous? | 6 |

UNIT-III

- | | | |
|--------|--|---|
| Q.6(a) | What are selection rules in spectroscopy? Explain their importance with reference to electronic transitions. | 6 |
| Q.6(b) | Explain electronic spectroscopy. Discuss various types of electronic transitions. | 6 |
| Q.7(a) | Write a short note on fluorescence spectroscopy. Explain its principle. | 6 |
| Q.7(b) | What are the major applications of NMR spectroscopy in chemistry and medicine? Explain the use of NMR in MRI scanning. | 6 |

UNIT-IV

- Q.8(a) What are thermosetting plastics? Explain the properties and uses of UF resin and phenol-formaldehyde resin. 6
- Q.8(b) Write a note on inorganic polymers. Discuss the preparation, structure, and applications of silicone polymers. 6
- Q.9(a) What is Green Chemistry? Write and explain the twelve basic principles of green chemistry. 6
- Q.9(b) Explain how green chemistry helps in reducing pollution and improving industrial sustainability. 6

No. of Pages: 02

Roll No.....

A-07

B.Tech. (CSE/IT/ECE) II Semester Examinations (Jun 2026)
Engineering Chemistry (ASH-CHE-108A)

Time- 3hrs
Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Define temporary and permanent hardness of water with one example each.	2
(b) State Beer–Lambert law.	2
(c) What are biodegradable polymers? Give one example.	2
(d) Define galvanic corrosion.	2
(e) Differentiate between dry corrosion and wet corrosion.	2
(f) Define biodiesel. Mention any two raw materials used for biodiesel production.	

UNIT-I

Q.2(a)	Explain electrodialysis method for desalination of water.	6
Q.2(b)	Explain the principle and working of reverse osmosis.	6
Q.3	Discuss boiler troubles caused by scale and sludge formation. Explain disadvantages and preventive measures.	12

UNIT-II

Q.4	Discuss the principle and working of Bomb Calorimeter. Differentiate between Gross and Net Calorific Value and explain the importance of calorific value in fuel selection.	12
Q.5(a)	Differentiate between proximate analysis and ultimate analysis of coal. Discuss the industrial significance of each parameter determined.	6
Q.5(b)	Explain ultimate analysis of coal and discuss its importance in determination of calorific value and fuel quality.	6

UNIT-III

Q.6	Explain how NMR spectroscopy distinguishes between chemically different proton environments in a molecule. Discuss the role of shielding/de-shielding effects and chemical shift in predicting molecular architecture and stereochemical features.	12
Q.7(a)	Integrate the application of MRI to comment on its importance and necessity in medical field	6
Q.7(b)	Explain the basic principle of fluorescence why molecular fluorescence occur at longer wavelength than exciting radiation.	6

UNIT-IV

- Q.8** Discuss the twelve principles of Green Chemistry and explain how these principles help in reducing hazardous waste generation, energy consumption, and environmental impact in chemical industries. **12**
- Q.9(a)** Explain how intermolecular forces and degree of crosslinking influence the properties of Teflon, Polyethylene, UF resin, and Phenol Formaldehyde resin **4**
- Q.9(b)** Analyze the significance of alternative solvents in Green Chemistry. Why are ionic liquids and supercritical CO₂ considered environmentally safer alternatives to conventional organic solvents? **8**

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No. of Pages: 01

Roll No.....

A-08

B.Tech. CSE-AIDS/-AIML/CYS/CE/ME/TE I Semester Examinations (June 2026)
Basics of Communication Skills (ASH-HUM-106A)

Time- 3hrs
Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) List any two barriers to effective listening.	2
(b) Define summarizing.	2
(c) Define brevity in communication.	2
(d) Mention any two essentials of effective body language while speaking.	2
(e) Identify the genre of The Proposal by Anton Chekhov.	2
(f) What is meant by redundancy in writing?	2

UNIT-I

Q.2(a)	Discuss the role of asking questions in clarifying the main idea during listening.	7
Q.2(b)	Explain the importance of paraphrasing in active listening with examples.	5
Q.3(a)	How does sequencing help in understanding a speech or lecture?	6
Q.3(b)	Explain the different types of listening.	6

UNIT-II

Q.4(a)	Explain the essentials of effective speaking skills.	6
Q.4(b)	Discuss the role of confidence and clarity in communication.	6
Q.5(a)	Discuss the importance of participating in debates and discussions.	7
Q.5(b)	Explain storytelling as a communication skill.	5

UNIT-III

Q.6(a)	Differentiate between skimming and scanning with examples.	7
Q.6(b)	Comment on the style of Bacon in Of Studies.	5
Q.7(a)	Discuss the theme of intelligence and humanity in Flowers for Algernon.	7
Q.7(b)	Discuss strategies for effective reading.	5

UNIT-IV

Q.8(a)	A company wants to promote eco-friendly products through social media. Discuss how persuasive writing can help attract customers.	6
Q.8(b)	Explain redundancy and cliché in writing with suitable examples.	6
Q.9	Imagine you are covering a natural disaster for a newspaper. Explain how descriptive, narrative, and expository writing can be combined effectively in the report.	12

No. of Pages:01

Roll No.....

A-08

B.Tech. (CSE/IT/ ECE) II Semester Examinations (Jun 2026)

Basics of Communication Skills (ASH-HUM-106A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1		Marks
(a)	How many levels does Bloom's taxonomy have, name them.	1.5
(b)	Define Remembering.	1.5
(c)	What are some strategies for building confidence before speaking?	1.5
(d)	What is external-operational Communication?	1.5
(e)	Define how facial expressions play an important part in speaking.	1.5
(f)	What is Skimming?	1.5
(g)	Differentiate between blog and editorial.	1.5
(h)	What are the barriers to effective speaking?	1.5

UNIT-I

Q.2(a)	Differentiate between extra and intra personal communication.	3
Q.2(b)	What are the main steps in the effective listening process? explain with examples.	9
Q.3(a)	Is sequencing important in effective listening?	4
Q.3(b)	What is Note-making in listening skills? How is it helpful in communication	8

UNIT-II

Q.4(a)	Define non-verbal communication.	3
Q.4(b)	Write essentials of speaking skills. Explain any two with examples	9
Q.5(a)	What are the different types of oral and written communications.	4
Q.5(b)	What strategies can be used to develop strong and effective speaking skills?	8

UNIT-III

Q.6(a)	What are the three types of studies according to Francis Bacon?	4
Q.6(b)	Explain how <i>The Proposal</i> is a Farical play.	8
Q.7(a)	Describe in your own words the fight between Natalya and Lomov.	6
Q.7(b)	<i>Flowers for Algernon</i> by Daniel Keyes is full of emotions. Do you agree with this statement?	6

UNIT-IV

Q.8(a)	Sanitary conditions in your locality are not hygienic. In this regard, write an email complaining to the Manager of the Municipal Corporation of your city.	6
Q.8(b)	What is Descriptive Writing? Explain its techniques.	6
Q.9(a)	What specific skills are involved in narrative writing?	5
Q.9(b)	What is Redundancy and cliché in Writing? How can we avoid these for effective writing?	7

No. of Pages- 02

Roll No.....

A-09

B. Tech. CSE/ECE/IT/CE/ME/TE I/II Semester Examinations (June 2026)
Basics of Electrical & Electronics Engineering (BT-ECE-102A)

Time - 03hrs

Max. Marks - 60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

- Q1.(a) Draw a well labeled electrical circuit diagram with R, L, and C and voltage source. 02
Q1.(b) Define Star Delta conversion. 02
Q1.(c) Compare the active, & apparent powers. 02
Q1.(d) Discuss the principle of Emf equation, 02
Q1.(e) Explain the barrier potential. 02
Q1.(f) What do you mean by Avalanche diode? 02

Unit 1

- Q2.(a) Draw and explain the working of Superposition Theorem. 06
Q2.(b) Explain the reciprocity theorem and maximum power transfer theorem. 06
Q3.(a) Explain the rule of Kirchhoff's Current and Voltage laws, 06
Q3.(b) Draw and explain the working of Delta to Star conversion 06

Unit 2

- Q4.(a) Explain the polar forms of representation of phasor quantities in AC circuits. 06
Q4.(b) Draw and explain the Steady-state AC response of RC parallel circuit 06
Q5.(a) Discuss the Addition of two sinusoidal quantities using the component resolution method/ phasors. 06
Q5.(b) Draw and explain the Steady-state AC response of RLC series circuit 06

Unit 3

- Q6.(a) Mention the various types and causes of transformer losses. Explain the difference between Iron and copper losses. 06
Q6.(b) How to reduce the hysteresis and eddy current in the transformer? Explain 06
Q7.(a) Explain the speed Control of DC shunt Motor. 06

Q7.(b) Describe the four-quadrant operation of DC motor with applications. **06**

Unit 4

Q8.(a) In a transistor circuit, collector load is $4K\Omega$ whereas quiescent collector current is $1mA$. Given $V_{CC} = 10V$; determine the operating point and calculate the base current and α assuming $\beta = 100$ **06**

Q8.(b) With the help of a circuit diagram show that a transistor can act like a switch. **06**

Q9.(a) In a transistor circuit, the collector load resistor is $R_C = 3.3K\Omega$, and $V_{CC} = 12V$. The transistor has a $\alpha = 0.99$, and the base current $I_B = 20\mu A$. Find the collector current, collector-emitter voltage and emitter current **06**

Q9.(b) Explain the principle and working of full wave rectifier **06**

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24/6

No. of Pages: 02

Roll No:

A-10

B. Tech. CE/ME/TE I Semester Examinations (June 2026)

Engineering Graphics & Design (BT-ME-104A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory. Each Question carries 12 marks. Assume any missing data.

Q.1	Marks
(a) Write any two differences between first angle and third angle projection.	(2x6)
(b) Show by means of traces, a plane perpendicular to HP and inclined to VP.	
(c) Define Scale. What do you understand by representative fraction?	
(d) Why are solids sectioned? How can you get true shape of a section?	
(e) Describe the (a) parallel lines method and (b) radial lines method used in development of a solid.	
(f) Explain the difference between isometric projection and isometric drawing.	

UNIT-I

Q.2 (a) A point "C" is 30 mm behind of VP and 55 mm below HP. Draw its projection and find its shortest distance from the reference plane.	6
Q.2(b) Mark the projections of the following points on a common reference line: a) P, 35 mm behind the V.P. and 20 mm below the H.P. b) Q, 40 mm in front of the V.P. and 30 mm above the H.P.	6
Q.3 A line AB has its end A 20 mm above HP and 30 mm in front of VP. The other end B is 60 mm above HP and 45 mm in front of VP. The distance between end projectors is 70 mm. Draw its projections. Determine the true length and apparent inclinations.	12

UNIT-II

Q.4(a) A circular plate of diameter 50 mm is resting on HP on a point on the circumference with its surface inclined at 45° to HP and perpendicular to VP. Draw its projections.	6
Q.4(b) A pentagonal plate of side 30 mm is placed with one side on HP and the surface inclined at 50° to HP perpendicular to VP. Draw its projections.	6
Q.5 Draw the projections of a cylinder of diameter 50 mm and axis length 80 mm when it is lying on the ground with its axis inclined at 45° to the VP and parallel to the ground.	12

UNIT-III

Q.6 A cone with a base diameter of 50 mm and an altitude of 75 mm rests on its base on the HP. It is cut by a plane inclined at 45° to HP and perpendicular to VP and bisecting the axis. Draw the front view, sectional top view and true shape of the section.

12

Q.7 A square prism of base side 30 mm and axis length 60 mm is resting on HP on one of its bases, with a base side inclined at 30° to VP. It is cut by a plane inclined at 40° to HP, perpendicular to VP and is bisecting the axis of the prism. Draw the development of the remaining portion of the prism.

12

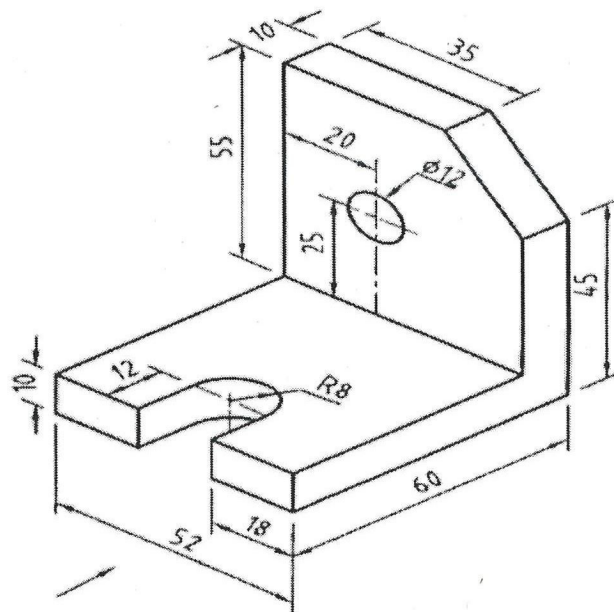
UNIT-IV

Q.8 A rectangular pyramid of base- 60mm x 45mm and height 50 mm is placed centrally on a rectangular slab side- 100 mm x 60 mm and thickness-20 mm. Draw the isometric projection of the combination.

12

Q.9 Draw the three orthographic views for the following figure.

12



No. of Pages: 2

Roll No.....

B 01

B.Tech. (CSE/IT/CSE-AIDS/-AIML/CYS/CE/ME/TE/ECE) II Semester Examinations (Jun 2026)
Engineering Mathematics II (ASH-MAT-102A)

Time- 3hrs

Max. Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Solve $(x^2y - 2y^2x)dx - (x^3 - 3x^2y)dy = 0$	1.5
(b) Solve the differential equation $xdy - ydx = xy^2dx$	1.5
(c) If $u = x^2 + y^2 + z^2$, prove that $xu_x + yu_y + zu_z = 2u$	1.5
(d) If $f(x, y) = \tan^{-1}xy$, verify $f_{xy} = f_{yx}$	1.5
(e) Show that the correlation Coefficient is the geometric mean of regression coefficients.	1.5
(f) What is the chance that leap year selected a random contain 53 Sunday?	1.5
(g) The mean of the Binomial distribution is 3 and variance is 4. What is your conclusion about the statement?	1.5
(h) Define Normal Distribution.	1.5

UNIT-I

Q.2(a)	Solve the differential equation	6
	$\frac{dy}{dx} + \frac{1}{x}y = x^2y^6$	
Q.2(b)	Solve the following differential equation	6
	$y \sin 2x dx - (y^2 + \cos^2 x)dy = 0$	
Q.3(a)	Solve by the method of variation of parameters	6
	$\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = \frac{e^{3x}}{x^2}$	
Q.3(b)	Solve the differential equation	6
	$(x)^2 \frac{d^2y}{dx^2} - x \frac{dy}{dx} + y = \log x$	

UNIT-II

Q.4(a)	State and prove Euler's Theorem on homogenous function.	6
Q.4(b)	Given $z = x^n f_1\left(\frac{y}{x}\right) + y^{-n} f_2\left(\frac{x}{y}\right)$, prove that	6
	$x^2 \frac{\partial^2 z}{\partial x^2} + 2xy \frac{\partial^2 z}{\partial x \partial y} + y^2 \frac{\partial^2 z}{\partial y^2} + x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} = n^2 z$	
Q.5(a)	A rectangular box, open at the top, is to have volume 32 c.c. find the dimension of the box requiring least material for its construction.	6

Q.5(b) Prove that

6

$$\int_0^{\frac{\pi}{2}} \frac{\log(1 + a \sin^2 x)}{\sin^2 x} dx = \pi[\sqrt{1+a} - 1]$$

UNIT-III

Q.6(a) First and third quartiles of the following data are given to be 25 marks and 50 marks respectively out of the given data below:

6

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	4	8	?	19	?	10	5	?

Find the missing frequencies when N=72.

Q.6(b) For the following data, determine mode:

6

X	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
F	4	10	25	15	23	22	12	3

Q.7(a) In a partially destroyed laboratory, record of an analysis of correlation data, the following results only legible:

6

Variance of X: 9, Regression equations: $8X - 10Y + 66 = 0$, $40X - 18Y = 214$

What are: (i) the mean values of X and Y, (ii) the correlation coefficient between X and Y, and (iii) standard deviation of Y.

Q.7(b) On the basis of the given data discuss the nature of the distribution (curve):

6

Variable (X)	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency (f)	2	5	7	13	21	16	8	3

UNIT-IV

Q.8(a) Find the mean and variance of the Binomial Distribution.

6

Q.8(b) There are three machines A, B and C in a factory. Their daily outputs are in the ratio of 2:3:1. Past experience shows that 2%, 4% and 5% of the item produced by A, B and C respectively are defective. If an item selected at random is found to be defective, find the probability that it was produced by machine A or B.

6

Q.9(a) A continuous random variable X has a probability density function as:

6

$$f(x) = \begin{cases} ax & \text{if } 0 \leq x \leq 1 \\ a & \text{if } 1 \leq x \leq 2 \\ -ax + 3a & \text{if } 2 \leq x \leq 3 \end{cases}$$

(i) Determine a, (ii) compute $P(X \leq 1.5)$ (iii) find expected value of X.

Q.9(b) In a normal distribution, 31% of the items are under 45 and 8% are over 64. Find $\bar{x}$ and σ .

6

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No. of Pages:02

Roll No.....

B 02

B.Tech. (CE/ME/TE) II Semester Examinations (Jun 2026)
Mechanics & Mechanical Properties of Materials (ASH-PHY-104A)

Time- 3hr
Max.Marks-6

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Mark
(a) What do you understand by resonance in oscillatory systems?	2
(b) State the important characteristics of conservative forces.	2
(c) Write down the mathematical expression of angular momentum of a particle.	2
(d) Differentiate between tensile stress and compressive stress.	2
(e) Define restoring force in Simple Harmonic Motion (SHM). State its direction and write mathematical expression for it.	2
(f) State Hook's Law.	2

UNIT-I

Q.2(a) How is force related to the rate of change of momentum?	6
Q.2(b) A net force of 48 N acts on a body of mass 6 kg initially at rest. Calculate the acceleration produced in the body and determine its velocity after 5 seconds	6
Q.3(a) Differentiate between gravitational field and gravitational potential based on their nature, units, and physical significance.	6
Q.3(b) Two masses 2kg and 3 kg are placed at positions 2m and 6 m respectively. Find the position of the center of mass.	6

UNIT-II

Q.4(a) Derive the expression for the moment of inertia of a circular disc about its diameter.	6
Q.4(b) State and derive the Perpendicular Axis Theorem for the moment of inertia of a rigid body.	6
Q.5(a) Establish the relation between angular momentum and angular velocity for a rotating rigid body.	6
Q.5(b) What is radius of gyration? Explain its relationship with moment of inertia.	2,4

UNIT-III

Q.6(a) Derive the expression for the time- period of a mass-spring system executing	6
Q.6(b) damped harmonic motion and describe the effect of damping on the amplitude and energy of oscillations.	6
Q.7(a) Discuss the important properties of shock waves and their effects on pressure, temperature, and density.	6
Q.7(b) A steel wire of length 2 m and cross-sectional area $2 \times 10^{-6} m^2$ is stretched by 1 mm when a force of 200 N is applied. Calculate the longitudinal strain produced in the wire	6

UNIT-IV

- | | | |
|---------------|--|------------|
| Q.8(a) | Explain the stress–strain curve for a ductile material and discuss elastic limit, yield point, ultimate stress, and breaking point. | 6 |
| Q.8(b) | Describe volumetric strain in elastic materials and derive the formula for bulk modulus under uniform pressure. | 6 |
| Q.9(a) | Differentiate between longitudinal strain and shear strain. Calculate the bulk modulus of a material having Young’s modulus 120G Pa and Poisson’s ratio 0.25. | 3,3 |
| Q.9(b) | Distinguish between heat capacity and specific heat capacity. A quantity of 1000 J of heat raises the temperature of 2kg of water by 5 K. Calculate the heat capacity of the water sample. | 3,3 |

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No. of Pages: 02

Roll No:

B-03

B. Tech. CSE/IT/CSE-AIDS/CSE-AIML/CSE-CS/ECE II Semester Examinations (June 2026)

Programming with Python (BT-CSE-102A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all, selecting one question from each unit and Question 1 is compulsory. Each Question carries 12 marks.

Q.1	Marks
(a) Explain dictionary and demonstrate its creation using an example.	2
(b) Describe split() method with example?	2
(c) Differentiate between pass and continue statement with the help of suitable examples.	2
(d) Create a numpy array using arange() function.	2
(e) Explain docstring with example.	2
(f) Describe how the zip() function works in Python and show an example.	2

UNIT-I

Q.2(a) Given a string, write a python program to find the largest substring of uppercase characters and print the length of that substring.	6
Q.2(b) Write a Python program that asks the user for a positive integer and then prints its multiplication table.	6
Q.3(a) Explain, with an example, how slicing and indexing work on Python strings.	6
Q.3(b) Develop a python program to print all prime numbers within a range.	6

UNIT-II

Q.4(a) Using examples, describe how iteration works on nested tuples.	6
Q.4(b) Create a dictionary containing the first ten even natural numbers as keys and their squares as values.	6
Q.5(a) Explain key-value pairs in a dictionary and describe different operations that can be performed on a dictionary	6
Q.5(b) Using list comprehension, develop a program to reverse each word in a list.	6

UNIT-III

Q.6(a) Describe the use of variable-length arguments and keyword arguments in python function calls with examples.	6
Q.6(b) Determine how lambda and map() functions can be applied to reverse all strings in a list. Write a simple program.	6

- Q.7(a)** Develop a user-defined function to find the sum of all elements in a list. 6
- Q.7(b)** Explain any four built-in exceptions in Python and describe when each of them occurs. 6

UNIT-IV

- Q.8(a)** Explain the right merge and outer merge operations in Pandas. Provide suitable examples to demonstrate the difference between the two. 6
- Q.8(b)** Define a DataFrame. How is the groupby() function used for data analysis? Give a suitable example. 6
- Q.9(a)** Describe different mathematical operations that can be performed on a NumPy array, with examples. 6
- Q.9(b)** The marks scored by 10 students in a class test are given below: 6
[25, 28, 29, 29, 30, 34, 35, 35, 37, 38]
Using the given dataset, perform the following tasks:
- a) Determine the first quartile (Q1), third quartile (Q3), the Interquartile Range (IQR), and identify the minimum and maximum values of this dataset.
 - b) Using Matplotlib, construct a box plot to represent the distribution of these scores.

26/06/26

No. of Pages: 01

Roll No.....

B-04

B.Tech. CSE/-AIDS/-CYS/IT/ECE/CE/ME/ TE II/III/IV Semester Examinations (June 2026)
Environmental Studies (BT-CE-102A)

Time- 3hrs
Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1		Marks
(a)	What is scope and importance of environmental studies?	2
(b)	Enlist the renewable and non – renewable resources of energy sources?	2
(c)	Distinguish food chain and food web?	2
(d)	Mention the causes of Soil pollution?	2
(e)	What do you mean by Climate change?	2
(f)	Define water conservation?	2
UNIT-I		
Q.2(a)	State the need for public awareness to preserve natural resources?	6
Q.2(b)	Write about Growing needs of energy resources with examples?	6
Q.3 (a)	Discuss in brief that man induced desertification and soil erosion?	6
Q.3(b)	Explain the Equitable use of resources for sustainable lifestyle?	6
UNIT-II		
Q.4(a)	Describe the genetic, species and ecosystem diversity in an ecosystem?	6
Q.4(b)	Discuss the energy flow in the ecosystem?	6
Q.5(a)	Mention Habitat loss and poaching of wild life?	6
Q.5(b)	Enlist and explain the causes any three Endemic species of India?	6
UNIT-III		
Q.6 (a)	Write detailed note about the Pollution site visited?	6
Q. 6(b)	Describes the Definition, Causes and effects of Water Pollution?	6
Q.7(a)	Explain the Ex- Situ conservation of biodiversity?	6
Q.7(b)	Write short note on Cyclone as natural disaster?	6
UNIT-IV		
Q.8	Discuss – (i) Watershed management (ii) Acid Rain	6,6
Q.9(a)	What are the problems related to resettlement and rehabilitation of people?	6
Q.9(b)	Describe the role of IT in human health?	6
