**CODE: 18HST101**                                                                                    **SET-2**
**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI**
**(AUTONOMOUS)**
**I B.Tech II Semester Supplementary Examinations, July, 2023**

**ENGLISH**
**(Common to EEE & ECE Branches)**
**Time: 3 Hours**                                                                    **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

## UNIT-I

1. a) What does Swami feel about Samuel? Why is he guilty?                **6M**
   b) Write the antonyms for the following:                              **6x1=6M**
      i) Generous   ii) Scold   iii) Conscious   iv) Snatch   v) Dizzily
      vi) Peon

**(OR)**

2. a) Describe Swami's behaviour in the school. Why does he do so?        **6M**
   b) Write the meaning of the following idioms:                         **6x1=6M**
      i) to play truant     ii) spare the rod spoil the child          iii) to
      drag one's feet
      iv) black sheep     v) between the devil and the deep sea   vi)
      crocodile tears

## UNIT-II

3. a) Write about Abdul Kalam's first and second inspiration in early     **6M**
      childhood.
   b) Fill in the blanks with appropriate verb forms.                    **6x1=6M**
      i. She often _____ (visit) the doctor.
      ii. My friend _____ (just mail) his resignation to the boss.
      iii. The documentary proofs _____ (not, submit) by him to the
      authorities.
      iv. He_____ (take after) his Paternal grandfather.
      v. If I_____ (prepare) well, I would have passed the exam in
      flying colours.
      vi. Sangana _____ (be, not, lose) her original degree
      certificates if she had been careful.

4. a) Abdul Kalam's early life is an example of determination to achieve dreams. Explain. **6M**

   b) Rewrite / Convert the following as directed. **6x1=6M**
   i. "When was the last time you read the book?" the teacher asked the students. (into Indirect Speech)
   ii. The examiner told the students to fill in all the blanks in the first page before submitting their answer scripts. (into Direct Speech)
   iii. The climate of Hyderabad is cooler than that of Chennai. (into Positive Degree)
   iv. Mohan's cadre is less but Gautam's was higher. (into Comparative Degree)
   v. The problem was very difficult and the students could not solve it. (with 'so...that')
   vi. Rahim was not very rich but he always gave away alms to the poor. (with 'Although')

## UNIT-III

5. a) What does George Orwell mean in his stamen "The enemy of language is insincerity". Explain. **6M**

   b) Correct the following sentences in connection with subject-verb agreement / noun- pronoun agreement / misplaced modifiers / articles / redundancies. **6x1=6M**
   i. The boy has a donkey, who is in the class.
   ii. The librarian announced that all the books should be returned back before vacation.
   iii. It was me who suggested this solution to the given problem.
   iv. A crate of oranges were delivered to the old lady on her birthday.
   v. I prefer these box of apples to those.
   vi. Aman was junior to Syed in school.

**(OR)**

6. a) According to George Orwell what are questions that a scrupulous writer should ask and why? **6M**

   b) Fill in the blanks with suitable prepositions: **6x1=6M**
   The Great Wall of China is known to be over 1900 kilometres long, making it ---(i)---by far the longest wall in the world. The building ---(ii)----the wall is said to have begun in the third century BC. The reason it was built was to keep the Huns ---(iii)---of Central Asia. A lot of effort was put into construction the wall. It is made of earth, stone and brick and its highest section is close to nine meters. ----(iv)--- the centuries, the wall has ---(v)--- been added to , rebuilt and repaired. This was done to give China protection ---(vi)----invaders. Despite its size, however, the wall failed to put a stop to invading armies such as the Mongols and the Machus.

## UNIT-IV

7. a) During the days of Tagore human sacrifice was used for more as cunning means to fulfil personal desires rather than to please the Goddess Kali. Discuss. **6M**

   b) Write a letter to the Municipal commissioner about the rapid and dangerous increase in the mosquitoes in your area. Request the authority concerned to necessary action at the earliest. **6x1=6M**

**(OR)**

8. a) Analyse the character of King Govind. **6M**

   b) Write an email to your boss requesting him to grant you one week leave as you have been diagnosed with viral fever. **6x1=6M**

## UNIT-V

9. a) Discuss the underlying ambiguity in Frost's poem. **6M**

   b) Read the passage given and answer the questions below. : **6x1=6M**

   In the 16th century, an age of great marine and terrestrial exploration, Ferdinand Magellan led the first expedition to sail around the world. As a young Portuguese noble, he served the king of Portugal, but he became involved in the quagmire of political intrigue at court and lost the king's favor. After he was dismissed from service by the king of Portugal, he offered to serve the future Emperor Charles V of Spain.

   A papal decree of 1493 had assigned all land in the New World west of 50 degrees W longitude to Spain and all the land east of that line to Portugal. Magellan offered to prove that the East Indies fell under Spanish authority. On September 20, 1519, Magellan set sail from Spain with five ships. More than a year later, one of these ships was exploring the topography of South America in search of a water route across the continent. This ship sank, but the remaining four ships searched along the southern peninsula of South America. Finally they found the passage they sought near 50 degrees S latitude. Magellan named this passage the Strait of All Saints, but today it is known as the Strait of Magellan.

   One ship deserted while in this passage and returned to Spain, so fewer sailors were privileged to gaze at that first panorama of the Pacific Ocean. Those who remained crossed the meridian now known as the International Date Line in the early spring of 1521 after 98 days on the Pacific Ocean. During those long days at sea, many of Magellan's men died of starvation and disease.

Later, Magellan became involved in an insular conflict in the Philippines and was killed in a tribal battle. Only one ship and 17 sailors under the command of the Basque navigator Elcano survived to complete the westward journey to Spain and thus prove once and for all that the world is round, with no precipice at the edge.

i) The 16th century was an age of great _____ exploration.
a) cosmic    b) land    c) mental    d) common man    e) None of the above

ii) Magellan lost the favor of the king of Portugal when he became involved in a political _____.
a) entanglement   (b) discussion       (c) negotiation          (d) problem
(e) None of the above

iii) One of Magellan's ships explored the _____ of South America for a passage across the continent.
a) coastline       (b) mountain range (c) physical features    (d) islands
e) None of the above

iv) Four of the ships sought a passage along a southern _____.
a) coast      b) inland             c) body of land with water on three sides
d) border     e) Answer not available

v) The passage was found near 50 degrees S of _____.
a) Greenwich     b) The equator     c) Spain     d) Portugal     e) Madrid

vi)  In the spring of 1521, the ships crossed the _____ now called the International Date Line.
a) imaginary circle passing through the poles
b) imaginary line parallel to the equator           c) area            )
land mass
e) Answer not available

**(OR)**

10.  a)  Explain the lines 'But I have promises to keep and miles to go    **6M**
before I sleep Miles to go before I sleep.'

b)  Write an essay on, 'Technology should be a faithful assistant/    **6x1=6M**
slave and not the demon/ Frankenstein that harms mankind. '

CODE: 20MET101                                               SET-2
**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI**
**(AUTONOMOUS)**
**I B.Tech II Semester Regular/Supplementary Examinations, July, 2023**
**THERMODYNAMICS**
**(MECHANICAL ENGINEERING)**

Time: 3 Hours                                                Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

## UNIT-I

1.  a)  Differentiante reversible and irreversible process.                4M
    b)  What is a quasi static process? What is its characterstic features?  6M
**(OR)**
2.  a)  What do you understand by path function and point function?  What   4M
        are exact and inexect differentials?
    b)  1.5 kg of liquid having a constant specific heat of 2.5 kJ/kg K is stirred  6M
        in a well insulated chamber causing the temperature to raise by 15°C.
        Find $\Delta$E and W for the process.

## UNIT-II

3.      Derive the general equation for a steady flow process and write down  10M
        assumptions made.

**(OR)**

4.      Air flows steadily at the rate of 0.5 kg/s through an air compressor,  10M
        entering at 7m/s velocity, 100 kPa pressures, and 0.95 m³/kg volumes,
        and leaving at 5 m/s, 700 kPa, and 0.19 m³/kg. The internal energy of
        the air leaving is 90 kJ/kg greater than that of the air entering. Cooling
        water in the compressor jackets absorbs heat from the air at the rate of
        58 kW. (a) Compute the rate of shaft work input to the air in kW. (b)
        Find the ratio of the inlet pipe diameter to outlet pipe diameter.

## UNIT-III

5.  a)  What is a thermal energy reservoir? Explain the terms 'source· and    4M
        'sink'
    b)  A cyclic heat engine operates between a sonrce temperature of 800°C   6M
        and a sink temperature of 30°C. What is the least rate of heat rejection
        per kW and  net output of the engine?
**(OR)**
6.  a)  Establish the equivalence of Kelvin-Planck and Clausius statements.    5M

    b)  Prove that entropy is a property of a system.                         5M

7.  a)  Show that there is a decrease in available energy when heat is transferred through a finite temperature difference.  4M

    b)  0.2 kg of air at 300°C is heated reversibly at constant pressure to 2066 K. Find the available and unavailable energies of the heat added. Take $T_0 = 30°C$ and $c_P = 1.0047$ kJ/kg K.  6M

**(OR)**

8.  a)  Prove that work is maximum in a reversible process.  5M

    b)  Derive an expression for availability in open system.  5M

**UNIT-V**

9.  a)  What is the critical state? Explain the terms critical pressure, critical temperarure
    and critical volume of water?  4M

    b)  A rigid closed tank of volume $3m^3$ contains 5 kg of wet steam at a pressure of 200 KPa. The tank is heated until the steam becomes dry saturated. Detemiine the final pressure and the beat transfer to the tank.  6M

**(OR)**

10.  a)  Show that for an ideal gas $c_P - c_v = R$.  4M

    b)  Derive Maxwell's equations.  6M

**UNIT-VI**

11.  a)  Define Compression ratio, Expansion ration and Cut-off ratios.  4M

    b)  Find the air standard efficitncies for Otto cycles with a compression ratio of 6 using ideal gases having specific heat ratios 1.3. 1.4 aud 1.67.  6M

**(OR)**

12.  a)  Derive expressions of efficiency of Otto-cycle.  4M

    b)  An engine working on the Otto cycle is supplied with air at 0.1 MPa, 35° C. The compression ratio is 8. Heat supplied is 2100 kJ/kg. Calculate the maximum pressure, maximum temperature, and the cycle efficiency.Take $C_p = 1.005$kJ/kg-K, $C_v = 0.718$kJ/kg-K and R = 0.287 kJkg-K.  6M

# AR20

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI**
**(AUTONOMOUS)**
**I B.Tech II Semester Regular/Supplementary Examinations, July, 2023**
**ENGLISH**
**(Common to ECE & EEE Branches)**

Time: 3 Hours                                                         Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

## UNIT-I

1. a) "Swami believed he was the worst perjurer in the world when he went to school" Describe the quote and why Swami believes it.    5M
   b) Provide at least two synonyms for each of the following words.    5x1=5
   i. Tactic ii. Tolerance iii. Benefits iv. Overjoy  v. Extremely

**(OR)**

2. a) Do you believe Swami's father acted appropriately? Did Swami gain any insight? Justify your response.    5M
   b) Write one-word substitutes for the following expressions.    5x1=5
   i. Study of birds   ii. Study of Mapping of earth and its formation
   iii. Study of Stars  iv. Study of sound and sound waves
   v. Study of Living Things

## UNIT-II

3. a) Describe Abdul Kalam's basic lifestyle and demeanour using the information from the lesson My Early Days    5M
   b) Fill in the blanks with appropriate verb forms.    5x1=5
   i. She ------ to a movie yesterday.( go)

   ii. Is she ----- about me? (Speak)

   iii. Tomorrow I ------- come by car (come)

   iv. Mr. Ramesh ------ in  that company since 2009. (work)

   v. We all ------in God. ( believe)

**(OR)**

4. a) Describe Ahmed Jallaluddin's influence on Abdul Kalam. What did Kalam learn from him?    5M
   b) Fill in the blanks with appropriate verb forms.    5x1=5
   I. Mr.Ravi ------- Cricket last evening in ground.(play)
   II. Mohini --------the story to directors clearly. (explain)
   III. My brother -------for his home town recently.( leave)
   IV. They ------- for vaccination from few days.( wait)
   V. I ------- a snake in my life. (see)

## UNIT-III

5 a) Describe The Way Not Taken, a poem by Robert Frost. The conclusion was reached; do you agree?    5M
   b) Rewrite / Convert the following as directed.    5x1=5
   "Don't' make a noise, please," said the mother to her son. (into Indirect Speech)
   II.  The magistrate ordered them to call the witness. (into Direct Speech)
   III. Owing to his poverty he could not continue his studies. (
      into complex sentence.)
   IV.Sunil is the most courageous of all men. (into Comparative  Degree)
   V.Ravi got money and at once he bought a car. ( Use…..as soon as)

**(OR)**

6 a) Justify the following line from the poem: "I shall be repeating this with a sigh / Sometime ages and ages hence:... And that has been the main difference. What do you think makes the difference?    5M
   b) Rewrite / Convert the following as directed.    5x1=5
   I. The mother said to him, "Why don't you read well?" (into Indirect Speech)
   II. Giri said  Hira that they can finish the given task.  (into Direct Speech)

III.

IV. The novel is too lengthy to finish in one hour. (Change it into complex sentence.)

V.   This house is more beautiful than any other house in this village. (into Superlative Degree)

VI.  I am not only a teacher but I am also a painter.(Use…..besides)

## UNIT-IV

7. a) An explanation of the phrase "A man may resort to drinking because he thinks himself to be a failure, and then fail even more totally because he drinks" in English.    5M

   b) on a spring evening some years ago while living in mumbai i decided to take in a musical where i heard lakshya kumar sing for the first time i was enthralled i believed i had discovered the next kishore kumar yet disappointed by the sparse audience i decided to write an article to help promote him struggling to contain my excitement the next day i phoned the theatre where he was performing and unabashedly acted like a professional writer may I speak with lakshya kumar please just one moment replied the person at the other end    5x1=5

**(OR)**

8. a) What are the recommendations made by George Orwell when one requires laws on which one can rely when instinct fails.  What advice he offers exactly?    5M

   b) Fill in the blanks of the below passage with appropriate prepositions.    5x1=5
      I.    He broke the door-------a wrench.
      II.   The factory belongs ---his father.
      III.  He has been waiting------7 O'clock.
      IV.   He is fond -------- sweets.
      V.    The committee voted ---favour of the resolution.

## UNIT-V

9. a) Describe briefly the exchange between Mrs. Pearson and Mrs. Fitzgerald. What was their strategy for dealing with the issue?    5M

   b) Write a letter to the Dean Planning and Development of your Organization complaining about the shortage of tables in your library.    5M

**(OR)**

10. a) How did Mrs. Pearson handle the situation throughout the lesson? Has her status at home been restored? The conclusion was reached; do you agree?    5M

    b) Compile an Email to the HOD of your department, requesting about the endorsing of your internal funding project you want to do.    5M

## UNIT-VI

11. a) Who was the Chipko Movement's founder and why? Briefly explain.    5M

    b) Read the following passage carefully and answer questions given below.    5x1=5
       Next week I am on vacation. While I am on vacation, I will work on two projects. First the author will fix the washing machine. The washing machine has been broken for two weeks. To fix it, author will need three tools: a screwdriver, a wrench, and a cramp. The author will take one day to fix the washing machine. Next, the author will fix our back porch. This is a bigger project. author will probably take about two days to fix the back porch, and will require a screwdriver, a hammer, nails, and a saw. My vacation starts on Monday, and has a lot of work to do, but hopefully the author can relax after I finish my work.
       1. Which of these tools will the author use more than once?
       a) a screwdriver b) a hammer c) a clamp d) a saw
       2. The first author will fix -----
        a) the washing machine  b) a door c) a window d) a glass
       3. Which of the following tools does the author need to fix the back porch?
        a) a screwdriver b) a wrench c) nails d) a saw .
       4. What is the earliest day that the author can finish both projects?
       a) Monday b) Wednesday c) Thursday d) Friday
       5. On which project will the author need to use the most tools?
       a) fixing the washing machine b) fixing the back porch c) both projects need the same number of tools d) neither project needs any tools.

**(OR)**

12. a) What qualifies the Chipko Movement as an Eco-Feminist Movement? Explain briefly.    5M

    b) Write an essay on "Social Media?" in 500 words.    5M

# AR20

CODE: 20CST101                        SET-2

## ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
### (AUTONOMOUS)
### I B.Tech II Semester Regular/Supplementary Examinations, July, 2023
### Data Structures and Algorithms
### (COMPUTER SCIENCE AND ENGINEERING)

Time: 3 Hours                                        Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

### UNIT-I

1. How do you assess the performance of an algorithm? Discuss the role of time and space complexities in analyzing the performance of algorithms.    10M

**(OR)**

2. Define data structure. Explain the types of data structures with examples.    10M

### UNIT-II

3. Why Binary Search algorithm is more efficient that linear search? Depict your answer with suitable example. Mention the time complexities of two algorithms.    10M

**(OR)**

4. Trace the working of quick sort algorithm on the following input: 38, 8, 0, 28, 45, 13, 89, -66, 42    10M

### UNIT-III

5. Compare singly and circular linked lists while performing insertion and deletion operations.    10M

**(OR)**

6. a) Write an algorithm to delete any element from a doubly linked list.    5M
   b) Explain how to insert a node anywhere in the circular linked list.    5M

### UNIT-IV

7. a) Write an algorithm to convert an infix expression to postfix.    5M
   b) Assume that a stack is represented using linked list. Write algorithms for the following operations:    5M
   (i) Push
   (ii) Pop

**(OR)**

8. What is a circular queue? How is this advantageous over a simple linear queue? Describe its operations.    10M

### UNIT-V

9. Define binary search tree. Show how to insert and delete an element from binary search tree.    10M

**(OR)**

10. Show the structure of the AVL tree after adding each of the following values in that order: 10, 1, 3, 5, 15, 12, 16, 9, 14. What is the height of the created tree.    10M

### UNIT-VI

11. Consider an example and explain the working of Dijkstra's algorithm for finding shortest paths.    10M

**(OR)**

12. Explain the various ways in which a graph can be represented bringing out the advantages and disadvantages of each representation.    10M

# AR20

**CODE:** 20CET101                                      **SET-1**

## ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
### (AUTONOMOUS)
### I B.Tech II Semester Regular/Supplementary Examinations, July, 2023

## Surveying and Geomatics
### (CIVIL ENGINEERING)

**Time: 3 Hours**                                                **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

## UNIT-I

1. (a) Discuss in Detail the divisions of Surveying (5M)
   (b) List the differences in surveying based on equipment (5M)

**(OR)**

2. (a) Discuss in detail about methods of ranging with neat sketches (5M)
   (b) Explain chain corrections in chain surveying (5M)

## UNIT-II

3. (a) Explain how you would determine the bearings from included angles with the help of sketches (4M)
   (b) Below are the bearings observed in a traverse survey conducted with a prismatic compass at a place where the local attraction was suspected (6M)

   | Line | For Bearing | Back Baring |
   |------|-------------|-------------|
   | PQ | 124°30$^1$ | 304°30$^1$ |
   | QR | 68°15$^1$ | 246°00$^1$ |
   | RS | 310°30$^1$ | 138°15$^1$ |
   | SP | 200°15$^1$ | 17°45$^1$ |

   Calculate the included angles of the closed traverse and find the corrected angles

**(OR)**

4. (a) Explain the designation of bearings (4M)
   (b) Below are the bearings observed in a traverse survey conducted with a prismatic compass at a place where the local attraction was suspected? (6M)

   | Line | Fore Bearing | Back Baring |
   |------|--------------|-------------|
   | AB | 139°25$^1$ | 319°45$^1$ |
   | BC | 154°45$^1$ | 334°45$^1$ |
   | CD | 295°40$^1$ | 115°20$^1$ |
   | DA | 353°30$^1$ | 175°0$^1$ |

   At what stations do you suspect local attraction? Find the corrected bearings of the lines.

## UNIT-III

5. (a) Describe in detail the difficulties in levelling (5M)
   (b) Describe the procedure for the preparation of contour maps (5M)

**(OR)**

6. (a) Write about Characteristics of contours (5M)
   (b) The following consecutive readings were taken with a dumpy level, the instrument having been moved after the 3rd, 6th, 8th readings: 1.005, 1.315, 1.865, 0.965, 1.405, 1.555, 0.865, 1.345, 1.110, 0.965, 1.175. The first reading was taken with the staff held upon a benchmark of elevation 100. Tabulate the page of the field book and calculate the levels of the points using collimation and the rise & fall method. (5M)

## UNIT-IV

7 (a) Explain the methods of setting out a curve     (5M)
   (b) Describe the adjustments made in tachometric surveying     (5M)

**(OR)**

8 (a) Discuss the principle of theodolite survey and the principle of tacheometry     (5M)
   (b) Describe briefly the equipment's used in total station surveying and various components (5M)
      of total station

## UNIT-V

9 (a) Describe briefly about perspective geometry of aerial photograph?     (5M)
   (b) Explain about flight planning with neat sketches?     (5M)

10 (a) Explain terrestrial photogrammetric surveying?     (5M)
    (b) A fundamental principle of Photogrammetry and how is it used in the field of mapping (5M)
       surveying?

## UNIT-VI

11 (a) Write about platforms of remote sensing system     (5M)
    (b) Describe briefly electromagnetic waves in order?     (5M)

**(OR)**

12 (a) Discuss the features used to identify satellite images through visual image interpretation? (5M)
    (b) Explain about 5 components of GIS?     (5M)