AR20

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech II Semester Supplementary Examinations, September, 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) What is a thermodynamic system and explain different systems. 4M
   b) A mass of 2kg of air is compressed in a quasi-static process from 0.1 MPa to 0. 7 6M
   MPa for which pv =constant.The initial density of air is 1.16 kg/m^3. Find the work
   done by tbe piston to compress the air.

(OR)

2. a) What is a PMM1? Why it is impossible? 4M
   b) In a cyclic process, heat transfers are + 14.7 kJ, - 25.2 kJ, - 3.56 kJ and + 31.5 kJ. 6M
   What is the net work for this cycle process?

UNIT-II

3. a) What is a steady flow process? What is steady state? 4M
   b) A blower handles 1 kg/s of air at 20°C and consumes a power of I5 kW. The inlet 6M
   and outlet velocities of air are 100 m/s and 150m/s respectively. Find the exit air
   temperature, assuming adiabatic conditions. Take c_p of air as 1.005 kJ/kg-K.

(OR)

4. a) Explain the control volume technique in a variable flow process. 4M
   b) A reciprocating air compressor takes in 2 m^3/min at 0.11 MPa, 20°C which it 6M
   delivers at 1.5 MPa. 111°C to an aftercooler where the air is cooled at constant
   pressure to 25°C. The power absorbed by the compressor is 4.l5 kW. Determine
   the heat transfer in (a) the compressor, and (b) the cooler.

UNIT-III

5. a) Explain a heat engine cycle performed by a closed sysiem. 4M
   b) A domestic food freezer maintains a temperature of -15°C. The ambient air 6M
   temperature is 30°C. If heat leaks into the freezer at the continuous rate of 1.75.kJ/s
   what is the least power necessary to pump this heat out continuously?

(OR)

6. a) What do you understand by the entropy principle? 4M
   b) Water is heated at a constant pressure of 0.7 MPa. The boling point is 164.97°C. 6M
   The initial temperature of water is 0°C. The latent heat of evaporation is 2066.3
   kJ/kg. Find the increase in entropy of water, if the final state is steam.

UNIT-IV

7. a) What is the available energy referred to a cycle? 4M
   b) A hot spring produces water at a tempcrature of 56°C. The water flows into a large 6M
   lake, with a mean temperature of 14°C, at a rate of 0.l m^3 of water per min. What is
   the rate of' working of an ideal heat engine which uses all the available energy?

(OR)

8. a) What is meant by availability? 5M
   b) Give expressions for availabilities of a closed system and a steady flow open 5M
   system.

9. a) What do you understand by triple point'? Give the pressure·and temperature of   5M
        water at its triple point.
    b) Find the saturation temperature, the changes in specific volume and entropy   5M
        during evaporation, and the latent heat of vaporization of steam at l MPa.

(OR)

10. a) Show that for an ideal gas $c_P - c_v = R$.   5M
    b) Show that in a diffusion process at constant temperature the entropy increases and   5M
        the Gibbs function decreases.

UNIT-VI

11. a) What is a spark ignition engine? What is the air standard cycle of such an engine?   5M
        What are its four processes?
    b) State the four processes of the Diesel cycle.   5M

(OR)

12.   Derive the expression for efficiency of an air standard Otto cycle and also write   10M
        the air standard assumptions.

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CODE: 20HST101 SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech II Semester Supplementary Examinations, September, 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 world's worst perjurer when he went to school. What does the quote mean? Why does Swami believe it? — 5M

   b) Provide at least two synonyms for each of the following words. — 5x1=5
   i. Sympathetic ii. Misconceptions iii. Dispelled iv. Manifest v. dynamic

   (OR)

2. a) Do you believe Swami's father made the correct decision? Did Swami have any insight? Explain your response. — 5M

   b) Write one-word substitutes for the following expressions. — 5x1=5
   i. The study of plants   ii. The study of Human Mind
   iii. The practice of writing dictionaries   iv. Study of science of insects
   v. The study of rocks and soil

UNIT-II

3. a) Explain Abdul Kalam's austere lifestyle and humble demeanour in light of the lesson given. — 5M

   b) Fill in the blanks with appropriate verb forms. — 5x1=5
   i. I ----a big snake last night.(Kill)
   ii. Someone is----- at the door now. (talk)
   iii. He ------- on his wife since his marriage. (Depend)
   iv. All of us think that world ------ by 2030. (end)
   v. Rakesh ------ for a morning walk daily. (go)

   (OR)

4. a) Briefly describe the impact Ahmed Jallaluddin had on Abdul Kalam. What did Kalam discover about him? — 5M

   b) Fill in the blanks with appropriate verb forms. — 5x1=5
   I. Sumadhar ------- English exam yesterday.(write)
   II. I --------the food just before your arrival. (eat)
   III. Akash -------for London yesterday.(leave)
   IV. Now a days the human beings ------- on technology.(depend)
   V. Anitha------- her husband for her entire life. (leave)

UNIT-III

5. a) Provide a summary of The Road Not Taken by Robert Frost. Give your opinion on the result? — 5M

   b) Rewrite / Convert the following as directed. — 5x1=5
   I. "Give your book"," said Vimal to me. (into Indirect Speech)
   √II. The teacher instructed them to do homework properly. (into Direct Speech)
   III.He could not go to college because he is sick. (Into simple sentence.)
   IV.India is one of the biggest countries in the world. (into comparitive Degree)
   V. Sheela got results and at once she gave a party. (Use…..as soon as)

   (OR)

6. a) The line "I shall be recounting this with a sigh / Sometime ages and ages hence:" has to be explained. And that has been the difference-maker. What, in your opinion, makes a difference? — 5M

   b) Rewrite / Convert the following as directed. — 5x1=5
   I.   "The teacher said to Hira, "Why don't you write a novel?" (into Indirect Speech)
   II. Usha suggested to Hema that she should give a party. (into Direct Speech)
   III.   The writing is too difficult to understand. (Change it into complex sentence.)
   IV.   She is more intelligent than any other girl in the class. (into Superlative Degree)
   V. Girish Karnad is not only an artist but he is also a writer. (Use…..besides)

7. a) Describe the phrase "A man may take to drinking because he thinks himself to be a failure, and then fail all the more fully because he drinks" using English terminology. 5M

   b) Punctuate the following paragraph: 5x1=5
   hello this is lakshya kumar answered a deep voice at the other end who is speaking my trembling hands dropped the receiver and I seemed to have lost my voice I heard the phone being disconnected at the other end, what an end to my grand plans.

(OR)

8. a) According to George Orwell's view, one needs rules one can rely on when instinct fails. What advice he offers? 5M

   b) Fill in the blanks of the below passage with appropriate prepositions. 5x1=5
      I. He is good ---- maths.
      II. The book belongs ---him.
      III. She has been learning music ------her childhood.
      IV. He is fond ---- sweets.
      V. The three brothers are quarrelling -----themselves.

UNIT-V

9. a) Briefly describe what Mrs. Pearson and Mrs. Fitzgerald said to one another. What strategy did they have to deal with the issue? 5M

   b) Write a letter to the Principal of your college complaining about frequent failures of electricity in your hostel. 5M

(OR)

10. a) How did Mrs. Pearson address the matter in the lesson? Did she regain her position at home? Do you concur with the result? 5M

    b) Write an Email to the Academic Dean of Central University, Hyderabad, asking about the Dual Degree courses you wish to do at the University. 5M

UNIT-VI

11. a) Describe in detail who and why did the Chipko Movement start? 5M

    b) Read the following passage carefully and answer questions given below. 5x1=5
    I am a mother of three children. My youngest daughter is sick. She has an illness that will never go away, but it can be managed. She needs medicine to manage her illness. This medicine used to cost one thousand rupees a month. Now it costs three thousand rupees a month. Without this medicine, my daughter has trouble breathing. Sometimes her lungs do not work well. She cannot Bet enough
    air into her lungs. Then she needs the medicine to help her lungs work again. We have to buy the medicine. We do not have a choice, But it will be hard to find an extra two thousand rupees a month. Our family will have to spend less money on other things.
    l.The mother feels
    a) angry b) scared c) worried d) sad
    2. Based on it's use in the passage, it can be understood that 'manage' belongs to which word group?
    a) control, direct, treat b) Give, Suggest, Take c) be, live, survive
    3. The daughter needs the medicine to
    a) give her more air b) breathe for her when she cannot
    c) need help paying for the medicine
    4. The mother says "We do not have a choice" to explain that
    a) she will definitely buy the medicine b) someone else is making her buy the medicine
    c) her daughter will die without the medicine
    d) she does not want to buy the medicine
    5. Which word best describes the medicine?
    a) important b) helpful c) needed d) useful

(OR)

12. a) What qualifies the Chipko Movement as an Eco-Feminist Movement? Explain briefly. 5M
    b) Write an essay on "Technology?" in 500 words. 5M

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CODE: 20CST101   **SET-1**

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

Data Structures and Algorithms
(Common to CSE, CSD, AIML & IT 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. Why do we need an asymptotic notation? Explain the different asymptotic notations with definition and examples.   10M

(OR)

2. What is time complexity? With the help of an example, explain how to determine the running time of an algorithm.   10M

UNIT-II

3. Describe how to resolve collision in a hash table using separate chaining.   10 M

(OR)

4. Explain Merge Sort algorithm/pseudocode with the help of an example. Mention the best case and worst case time complexity of Merge sort algorithm.   10 M

UNIT-III

5. a) Elaborate on how linked list can be used to represent polynomials using a suitable example.   5M
   b) Write an algorithm to delete a node after a given node in a doubly linked list.   5M

(OR)

6. Write and explain the algorithms to insert new node at the beginning, at middle position and at the end of a Singly Linked List.   10M
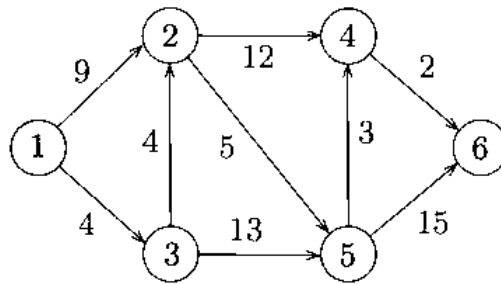
UNIT-IV

7. Write an algorithm to evaluate postfix expression using a stack. Trace the algorithm on the following input:
   623+-84/+23^+ (all numbers are single digits)   10M

(OR)

8. Write a menu driven program for stack implementation of arrive for
   a) PUSH   b) POP and   c) DISPLAY   operations.   10M

UNIT-V

9. Explain in-order, pre-order and post-order traversals of a binary tree.   10M

(OR)

10. a) Create binary search tree for the following elements (23, 12, 45, 36, 5, 15, 39, 2). Discuss about the height of the above binary search tree.   5M
    b) What is a height balanced tree? Explain its purpose.   5M
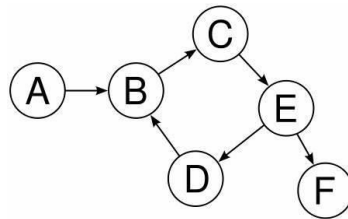
11.   Show how the Dijkstra's algorithm works on the following graph. Consider 1 as   10M
        the source vertex.

(OR)

12. a) Write the output of DFS and BFS traversals on the following graph considering A   5M
         as the starting vertex.

    b) Write and explain the steps of BFS algorithm.   5M

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CODE: 20CET101   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech II Semester Supplementary Examinations, September, 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) Explain the objectives and principles of Surveying.   (5M)
    b) Explain the functional classification of surveying   (5M)
                                   (OR)
2. a) Differentiate between plane surveying and Geodetic Surveying   (5M)
    b) Explain the functions of component parts of the Chain with a sketch.   (5M)

UNIT-II

3. a) Briefly discuss the types of compass?   (4M)
    b) A closed traverse ABCDE was run, and the observed bearings of lines were (6M)
        obtained as under. Correct the bearings for local attraction?

Line	Fore Bearing	Back Baring
AB	72°45'	252°00'
BC	349°00'	167°15'
CD	298°30'	118°30'
DE	229°00'	48°00'
EA	135°30'	135°00'

                                   (OR)
4. a) Explain the concept of local attraction   (5M)
    b) Explain the adjustment methods for closing errors in compass surveying (5M)

UNIT-III

5. a) Describe contour interval and uses of contours.   (5M)
    b) Explain the terms   (5M)
        i) Bench mark ii) Elevation iii) Back sight iv) Intermediate sight v) Fore sight
                                   (OR)
6. a) Explain the temporary adjustments made in a dumpy level   (4M)
    b) The following consecutive readings were taken with a dumpy level, the instrument (6M)
        having been moved after the 4th, 8th, 11th readings: 1.115,0.745, 1.245, 1.065,
        0.785, 1.315, 2.150, 0.845, 1.150, -2.365, 1.360, 1.575, 1.840. The first reading
        was taken with the staff held upon a benchmark of elevation 325.675. Tabulate the
        page of field book and Calculate the levels of the points using collimation and rise
        & fall method

UNIT-IV

7. a) Describe in detail about methods of tachometric surveying (5M)
   b) Explain the various types of curves and components in setting out curves (5M)

(OR)

8. a) Explain in detail about various equipment used for theodolite survey (5M)
   b) Discuss the difference in procedure of measuring vertical angle with Tacheometry and Theodolite (5M)

UNIT-V

9. a) Discuss the various applications of photogrammetric surveying? (5M)
   b) Explain terrestrial photogrammetric surveying and flight planning? (5M)

(OR)

10. a) Discuss the stereoscopy in photogrammetry? How does a stereoscope work? (5M)
    b) Explain briefly about relief and tilt displacements? (5M)

UNIT-VI

11. a) Discuss interaction of electromagnetic radiation with the atmosphere and the earth surface (5M)
    b) Explain the applications of GIS in surveying (5M)

(OR)

12. a) Discuss the process of remote sensing data acquisition systems? (5M)
    b) Explain briefly about visual image interpretation (5M)

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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, September, 2023
ENGLISH
(Common to EEE, ME, 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 are some things that Swami does to act out in class? **6M**
How does Samuel react to Swami's acting out?
   b) Give synonyms for the following words. **6M**
i) Punctilious ii) Momentous iii) Opulence iv) Naive v)
Retaliate vi) Enormous

(OR)

2. a) Who is the protagonist and Who is the antagonist in "Father's **6M**
Help" by R. K. Narayan? Justify.
   b) Give one-word substitutes for the following. **6M**
      i. A woman who never gets married.
      ii. Saying things in a roundabout way.
      iii. Impulsive stealing.
      iv. A screen or pen name adopted by an artist or writer.
      v. One who totally abstains from drinking?
      vi. f) A tendency to favour ones relatives

UNIT-II

3. a) Who was Sivasubramania Iyer? What sort of relationship did **6M**
Kalam share with him? Explain.
   b) Rewrite the sentences in passive voice. **6M**

      i. John collects money
      ii. Anna opened the window
      iii. The sheep ate a lot.
      iv. He can cut out the picture.
      v. William will not repair the car
      vi. We have done our homework

(OR)

4. a) How did Abdul Klam earn his 'first wages'? How did he feel at that time? **6M**

   b) Fill the gaps with the correct tenses. **6M**
      i. I ------English for seven years now. (learn)
      ii. During my last summer holidays, my parents ---- me on a language course to London. (send)
      iii. At the moment I ------ English grammar. (revise)
      iv. And I ---- to read the texts in my English textbooks again. (begin /already)
      v. Aida _____ her room for the past hour. (paint)
      vi. Be patient. The circus _____ in a few minutes' time. (start)

UNIT-III

5. a) According to Orwell in his essay "Politics and the English Language," why do people use hackneyed imagery and prefabricated phrases? **6M**

   b) Modify the following sentences tautologically (Redundancies). **6M**
      i. John's first priority is to get a good job.
      ii. I made it with my own hands for you.
      iii. I never make predictions, especially about the future.
      iv. She always over-exaggerates.
      v. The evening sunset was beautiful.
      vi. I need a new hot water heater.

(OR)

6. a) How are politicians using the tactics that Orwell outlines in his essay to manipulate voters? What are the problems with using language this way? **6M**

   b) Fill in the blanks with appropriate prepositions. **6M**
      i. I'll see you _____ Tuesday afternoon.
      ii. Shakespeare died_____ 1616.
      iii. Mobile phones became popular _____ the nineties.
      iv. She plays tennis _____ Fridays.
      v. In my home town the shops open early _____ the morning.
      vi. We are confident --------- winning the match.

7. a) Write a critical summary of the play 'Sacrifice' by Tagore. **6M**
    b) Punctuate the following paragraph: **6M**
        with winter approaching you intend to purchase electric heaters for your office at safdarjang road new delhi assuming yourself to be the maintenance officer of ubiquitor technologies pvt. ltd, new delhi, write a letter of enquiry to west world appliances and equipment, mumbai, seeking information about the availability and price of the product.

(OR)

8. a) Discuss in detail the conflicting perceptions and personalities in Tagore's Sacrifice'. **6M**
    b) Assume that you are associating with an NGO that engages itself in the animal protection activities. As a secretary of the NGO, draft an email to be sent across. **6M**
        Urging people to come forward and join hands in the noble cause, your email should have the required elements of emotional appeal and persuasion.

UNIT-V

9. a) What is the theme in 'Stopping by Woods on a Snowy Evening' by Robert Frost? Elucidate. **6M**
    b) Write a précis for the following passage and also suggest a suitable title. **6M**
        Among the manifold misfortunes that may befall humanity, the loss of health is one of the severest. All the joys which life can give cannot outweigh the sufferings of the sick. Give the sick man everything and leave him sufferings a d he will feel that half the world is lost to him. Lay him on a soft silken couch; he will nevertheless be under the pressure of his suffering while the miserable beggar, blessed with health, sleeps sweetly on the hard ground. Spend his table with dainty meals and choice drinks, and he will thrust back the hand that proffers them and every the poor man that thoroughly enjoys his dry crush Surround him with the pomp of kings, let his chair be a throne and his crutch a world saving scepter, he will look with contemptuous eye on marble, on gold and on purple and would deem himself happy, could he enjoy, even was it under a thatched roof, health of the meanest of his servants.

(OR)

10. a) What is the main conflict in Stopping by Woods on a Snowy Evening by Robert Frost? **6M**
     b) Write an essay on "Social networking sites a bane or boon for the youth" **6M**