Hall Ticket Number :										

Code: 5G121

R-15

I B.Tech. II Semester Regular & Supplementary Examinations June 2017

C Programming and Data Structures

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) How to access a variable through its pointer? Explain with proper example. 7M

   b) What is Void pointer? Write a 'C' program to demonstrate the use of Void pointer. 7M

OR

2. a) What is Dynamic Memory Allocation? Explain the functions malloc(), calloc() and free() with syntax and examples. 7M

   b) Write a 'C' program to implement pointer to pointer concept. 7M

UNIT–II

3. a) Define Union. Explain its general syntax with one example. 7M

   b) Write a 'C' program to display the Name, Rollnumber and Grade of 3 students. Create an array of structure objects. Read and display the contents of the array. 7M

OR

4. a) Write detailed notes on formatted input and output functions of files. 7M

   b) Write a 'C' program to implement Binary search technique. 7M

UNIT–III

5. a) How to represent a stack using Arrays and Linked list? Explain with proper diagrams. 7M

   b) Write a 'C' program to implement the stack operations using arrays. 7M

OR

6. a) How to convert an Infix expression into a Postfix expression, explain.
   Convert the following infix expression into postfix expression
   (X*Y)/(K*L)+M 7M

   b) Discuss in detail the various operations possible on a Queue. 7M

UNIT–IV

7. a) Write short notes on
      i) Static representation of Single Linked List.
      ii) Dynamic representation of Single Linked List. 7M

   b) How to insert a node at the beginning, middle and at the end of a single linked list? Explain with proper diagrams. 7M

OR

8. Write detailed notes on all operations on a Doubly Linked List. 14M

UNIT–V

9. a) How to represent a Binary tree using array and linked list? Explain with proper diagrams. 4M

   b) How to do searching operation on a Binary search tree? Write and explain the algorithm for it. 10M

OR

10. Write detailed notes on the following representation of a graph
    i) Set representation
    ii) Linked List representation
    iii) Matrix representation 14M

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Hall Ticket Number :										

R-15

Code: 5G321

I B.Tech. II Semester Regular & Supplementary Examinations June 2017

Electronic Devices and Circuits-II

(Common to EEE & ECE)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) What is self-bias, draw a self-bias circuit and derive its stability factor for BJT. 7M

   b) Explain the term thermal runaway. Mention measures to reduce this effect? Explain why performance of germanium BJT is more affected with thermal runaway compared to silicon BJT. 7M

OR

2. a) Explain why operating point is fixed in the center of the active region of transistor characteristics in a good voltage amplifier? Explain the factors which may alter operating point and its effects on performance of an amplifier. 7M

   b) Explain Stability Factors for Voltage Divider Bias. What are its merits? 7M

UNIT–II

3. a) Explain the construction of JFET and its transfer characteristics with neat diagram. 7M

   b) Write the necessary steps for gate bias circuit design and voltage divider bias circuit design. 7M

OR

4. a) Explain the principle and working of N-channel MOSFET with labeled diagram showing constructional features. 7M

   b) A self-biased p-channel JFET has a pinch-off voltage of v_p=5V and I_{DSS}=12mA. The supply voltage is 12v determine the values of R_D and R_S so that I_D=5mA and V_{DS}=6v. 7M

UNIT–III

5. a) Explain how transistor can be used as an amplifier with neat diagram. 7M

   b) Elaborate the importance of input impedance of an amplifier. Discuss equivalent circuit with signal source and Input impedance of an amplifier. 7M

OR

6. a) Distinguish between gate bias & voltage divider bias circuit techniques for basic J-FET 7M

   b) What is meant by Phase Reversal? In which transistor configuration amplifier in it is observed? 7M

UNIT–IV

7. a) Explain the advantages of multi-stage amplifier over single stage amplifier. 7M

   b) With neat diagram explain construction and working of transformer coupled CE amplifier. 7M

OR

8. a) Draw the circuit diagram of a 2-stage RC coupled common source amplifier. Describe its working. 7M

   b) Compare RC coupled transistor amplifier with transformer coupled amplifier. Mention its merits and demerits. 7M

UNIT–V

9. a) Explain construction and working of SCR with neat diagram. 5M

   b) Develop half wave rectifier circuit replacing diode with SCR to control average DC output by changing firing angle of SCR. 9M

OR

10. Write short notes for the following with neat symbols

    a) Varactor diode. 5M

    b) UJT. 5M

    c) PIN Diode. 4M

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Hall Ticket Number :										

Code: 5GC24

R-15

I B.Tech. II Semester Regular & Supplementary Examinations June 2017

Engineering Mathematics-II

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Change the order of integration in $\int_0^1 \int_0^{\sqrt{1-x^2}} y^2 dxdy$ and hence evaluate. 14M

OR

2. a) Show that the area between the parabolas $y^2 = 4ax$ and $x^2 = 4ay$ is $\frac{16}{3}a^2$ 7M

b) evaluate $\int_0^{\frac{\pi}{2}} \int_0^{a\sin\theta} \int_0^{(a^2-r^2)/a} rdzdrd\theta$ 7M

UNIT–II

3. a) Find the Lapace transforn of $te^{-t}\sin tdt$ 7M

b) Evaluate $\int_0^{\infty} te^{-3t}\sin tdt$ 7M

OR

4. a) Using Convolution theorem, find the inverse transform of $L^{-1}\left\{\frac{1}{s(s^2+4)}\right\}$ 7M

b) Find $L^{-1}\left\{\log\frac{s+1}{s-1}\right\}$ 7M

UNIT–III

5. Using transform method solve $\frac{d^2x}{dt^2} - 2\frac{dx}{dt} + x = e^t$ with x = 2 , $\frac{dx}{dt}$ = -1 at t=0 14M

OR

6. Solve $\frac{d^2y}{dt^2} + 2\frac{dy}{dt} - 3y = \sin t, y = \frac{dy}{dt} = 0$ when t=0. 14M

UNIT–IV

7. a) Show that $\nabla^2 r^n = n(n+1)r^{n-2}$ 7M

b) Find the work done in moving a partical in the force field $\overline{F} = 3x^2\vec{i} + (2xz - y)\vec{j} + z\vec{k}$ along the Straight line from (0,0,0) to (2,1,3) 7M

OR

8. Evaluate the line integral $\int_c (x^2 + xy)dx + (x^2 + y^2)dy$ when c is the square formed by the lines $y = \pm 1$ and $x = \pm 1$ 14M

UNIT–V

9. Verify Green's theorem for $\int_c \left[(xy + y^2)dx + x^2 dy\right]$ where c is bounded by y=x and $y=x^2$ 14M

OR

10. Verify Stokes Theorem for $\overline{F} = (2x - y)\vec{i} - yz^2\vec{j} - y^2z\vec{k}$ over the upper half surface of the sphere $x^2+y^2+z^2 = 1$ bounded by it's projection on the xy- plane. 14M

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Hall Ticket Number :										

Code: 5GC22

R-15

I B.Tech. II Semester Regular & Supplementary Examinations June 2017

Engineering Chemistry

(Common to EEE and ECE)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Why is sterilization of water necessary? Discuss any two methods of sterilisation. 7M

   b) Write short notes on Sedimentation and coagulation. 7M

OR

2. a) Describe the principle and procedure involved in the zeolite process used for the treatment of water. Give its advantages over other methods. 7M

   b) Calculate the temporary, permanent and total hardness in mg/litre of a sample of water containing the following salts :- Mg(HCO3)2 = 14.6mg/litre; $Ca(HCO_3)_2$ = 16.2 mg/litre $MgCl_2$ = 9.5mg/litre; $CaSO_4$ = 13.6 mg/litre (Assume the atomic mass of Ca to be 40 and that of Mg to be 24). 7M

UNIT–II

3. a) Differentiate between chemical corrosion and electrochemical corrosion. 7M

   b) Explain Plling-Bedworth rule. 7M

OR

4. a) Explain the construction and functioning of the Lithium ion battery. 7M

   b) Calculate the emf of a concentration cell at 25oc consisting of two zinc electrodes immersed in solution of zn+2 ions of 0.1M and 0.01M concentrations. 7M

UNIT–III

5. Define conducting polymers? Write the classification and applications of conducting polymers. 14M

OR

6. a) The average molecular weight of a given polypropylene sample is 25200. Calculate the average degree of polymerization of the polymer sample. 5M

   b) Write the merits and demerits of using plastics in place of metals. 9M

UNIT–IV

7. a) Define net and gross calorific values of a fuel. How are they determined experimentally for solid fuels? 7M

   b) What is the main raw material for the metallurgical coke? Describe the manufacture and uses of metallurgical coke? 7M

OR

8. a) Outline the specifications of metallurgical coke? 4M

   b) Identify the type of coal preferred in gas making? Summarize coal gas manufacturing and purification? 10M

UNIT–V

9. Give an account of classification of cement and the composition of Portland cement. 14M

OR

10. What is meant by Lubrication Process? Describe thick-film Lubrication and thin-film Lubrication. 14M

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Hall Ticket Number :										

R-15

Code: 5G523-A

I B.Tech. II Semester Regular & Supplementary Examinations June 2017

Engineering Drawing-II

(Electronics and Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. A regular pentagon of 30 mm side is resting on one of its edges on HP which is inclined at 45° to VP. Its surface is inclined at 30° to HP. Draw its projections. 14M

OR

2. A hexagonal lamina of side 30mm rests on one of its edges on HP. This edge is parallel to VP. The surface of the lamina is inclined 60° to HP. Draw its projections. 14M

UNIT–II

3. A hexagonal pyramid of base side 30mm and axis length 60mm is resting on HP o one of its base corners with the base sides containing the corner equally inclined to HP and its axis is parallel to both HP and VP. Draw its projections. 14M

OR

4. A square pyramid of base side 30mm and axis length 60mm is suspended by means of a string from one of its base corners with its axis parallel to VP. Draw its projections. 14M

UNIT–III

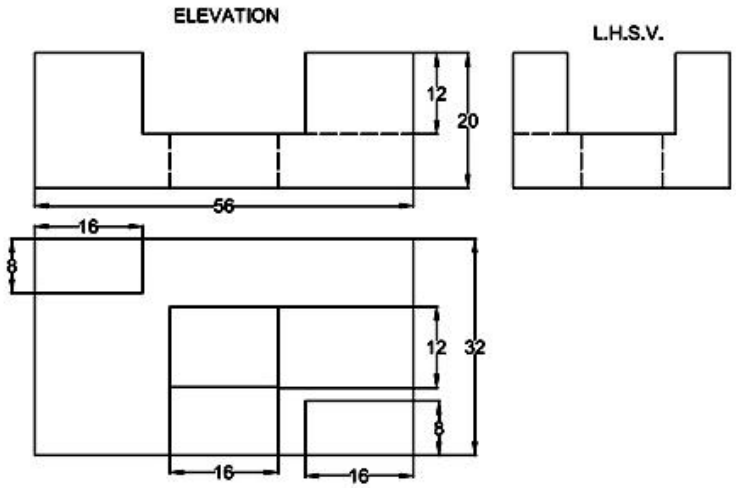
5. Draw the isometric projection of a cylinder of diameter 46 mm and height 60 mm when it is resting on one of its ends on the HP. It is cut by a plane perpendicular to the VP and inclined at 450 to the HP. The plane passes through a point on the axis located at 15 mm from the top. 14M

OR

6. A pentagonal pyramid, base 30mm and axis 65mm long, rests with its base on HP. An edge of the base is parallel to VP and nearer to it. A horizontal section plane cuts the pyramid and passes through a point on the axis at a distance of 25mm from and apex. Draw the isometric projection of the frustum of the pyramid. 14M

UNIT–IV

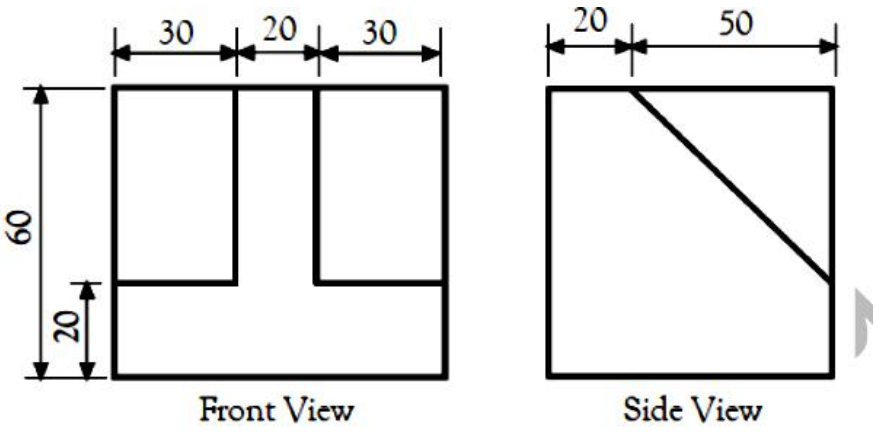
7. Draw the isometric view of the following figure.



14M

OR

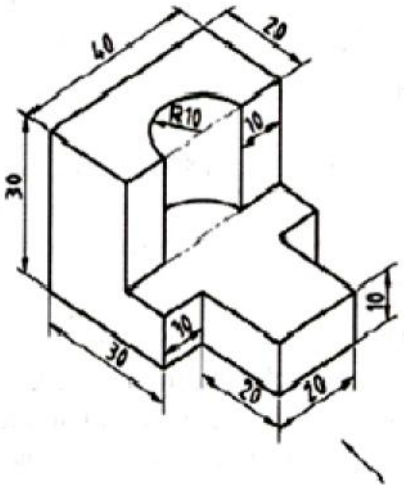
8. The following figure shows the side view and front view of a machine Block. Draw the isometric view of the block.



14M

UNIT–V

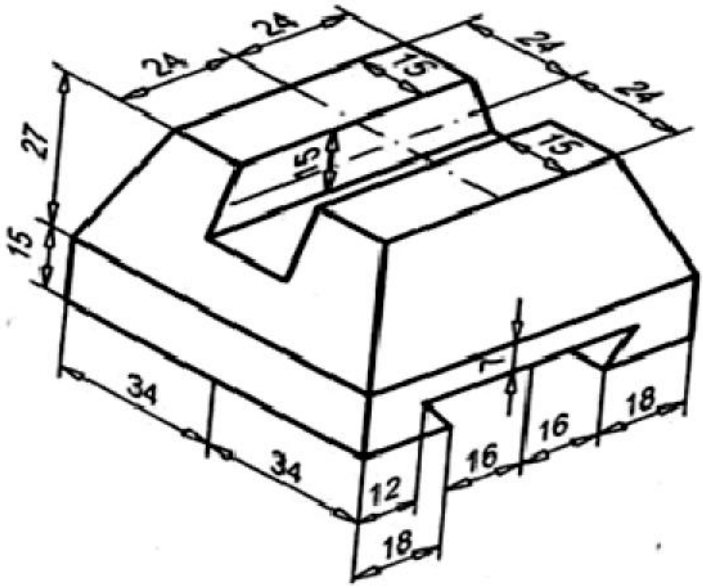
9. Draw the three orthographic views for the following figure



14M

OR

10 Draw the three orthographic views for the following figure.



14M

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Hall Ticket Number :										

R-15

Code: 5GC21

I B.Tech. II Semester Regular & Supplementary Examinations June 2017

Technical English

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) What are the problems unsolved by technology as identified by E. F. Schumacher in his essay? 7M

   b) Define 'social time' as used by E. F. Schumacher. State its significance. 7M

OR

2 a) Mention and describe factors that cause climatic change over long periods of time. 7M

   b) Do as directed.

   i. The plan was approved by our clients. [Change the voice]

   ii. Expand the following compound nouns. 1) Driving licence 2) Car battery

   iii. But for his quickness I (be) killed. [Fill in the blank with appropriate tense form of the verb given in the bracket].

   iv. In ____problem solving message, start with the problem you share. [Use articles]

   v. Correct the following spellings. 1) mnemoncs 2) evaluvate

   vi. Choose the word that is the antonym of the underlined word.
   The man **collapsed** under the sun.
   a. stood up b. sat up c. got up d. revived e. survived

   vii. Fill in the blank using the appropriate form of the verb (gerund or infinitive) in the following sentence.
   Your English seems ---------- (improve) a lot. 7M

UNIT–II

3. a) What are the long term strategies proposed by the author to deal with climate change? 7M

   b) What is the relationship between human development and climate change? 7M

OR

4. a) Analyze the climate change with respect to temperature. 7M

   b) Read the following advertisement and draft a job application/cover letter.

WANTED MARKETING EXECUTIVE

A well-established company invites applications from competent marketing executive. Our requirements (a) University degree [B.E./B.Tech] (b) Industry experience (c) Good command over English. Please apply with full career details to the Human Resources Manager, P.O. Box 12456 7M

UNIT–III

5. a) What are the advanced and emerging solar technologies available in Spain? 7M

   b) Define photovoltaic effect. Briefly explain its operation. 7M

OR

6. a) Explain the principles of tower technology. 7M

   b) As the Personnel Manager of a Multinational firm draft an **e-mail** to be sent to those candidates who were not selected in the interview conducted few days before. 7M

UNIT–IV

7. a) State the importance and uses of water. 7M

   b) Why does Sir C.V. Raman call water as “elixir”? Explain the reasons. 7M

OR

8. a) Explain how soil erosion affects agriculture and irrigation. 7M

   b) Write a technical report on computer animation. 7M

UNIT–V

9. a) Why does Swami Vivekananda consider ignorance as mother of all evils? 7M

   b) What are the central ideas of Gita? Explain. 7M

OR

10. a) Describe the salience of the meeting between Kalam and Wernher Von Braun. 10M

    b) Vocabulary Test: Match the words in column A with their meaning in column B.

A	B
(a) carcass	(1) spreading by contact
(b) contagion	(2) dead body of an animal
(c) banish	(3) in a friendly manner
(d) amicable	(4) send away forcefully

4M

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