Hall Ticket Number :										

R-15

Code: 5G121

I B.Tech. II Semester Supplementary Examinations May 2018

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) Define pointer and explain about pointer arithmetic. 7M
   b) List the four dynamic memory allocation functions in C and give their syntax with examples. 7M

OR

2. a) What are the features and uses of pointers? 7M
   b) Write a C program to add two numbers using command line arguments. 7M

UNIT–II

3. a) Differentiate between structure and union. 6M
   b) Give the tracing of quick sort algorithm for the data [1, 2, 3, 4, 5, 6, 7, 8] to be sorted in ascending order. Discuss its time complexity. 8M

OR

4. a) Write a program in C to copy the contents of one file to another. 7M
   b) Write an iterative algorithm for binary search and discuss its time complexity. 7M

UNIT–III

5. a) Convert the following infix expressions to postfix expressions.
   i) A + B * C + D ii) (A + B) * (C + D) iii) A + B + C + D 6M
   b) Write a program in C to implement operations on queue.(Use pointers) 8M

OR

6. a) Write an algorithm to evaluate a postfix expression. 8M
   b) Give the advantages and disadvantages of recursion. 6M

UNIT–IV

7. a) Write a C program for insertion operation in a singly linked list. 7M
   b) Write C functions for insertion and deletion operations in doubly linked list. 7M

OR

8. a) Write a recursive program to reverse the given singly linked list. 8M
   b) Give the applications of circular linked list. 6M

UNIT–V

9. a) Define binary search tree. Write a C function to insert a new node in a binary search tree. 8M
   b) Give the applications of graphs. 6M

OR

10. a) Write a C function to search a given key in a given binary search tree. 8M
    b) Define the following regarding graphs.
    i) Undirected graph ii) In degree iii) Digraph 6M

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Hall Ticket Number :										

R-15

Code: 5G523

I B.Tech. II Semester Regular & Supplementary Examinations May 2018

Engineering Drawing-II

(Common to EEE, ECE, CSE & IT)

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 hexagonal plate of side 30 mm is resting on one of its sides on VP and inclined at 40° to HP. Its surface is inclined at 35° to VP. Draw its projections. 14M

OR

2. Draw the projections of a circular thin plate of diameter 50 mm resting on the ground on a point 1 on the circumference, its plane surface inclined at 45^o to HP and plan of the diameter making 30^o with VP. 14M

UNIT–II

3. Draw the projection of a cylinder with diameter 50 mm and axis length 65 mm. It is lying on H.P on one of its generators and its axis is inclined at 30° to VP and parallel to H.P. 14M

OR

4. A pentagonal prism, side of base 25 mm and axis 50 mm long rests with one of its shorter edges on H.P such that the base containing the that edge makes an angle of 30^o to H.P and its axis is parallel to V.P. Draw the projections. 14M

UNIT–III

5. Draw the projection of hexagonal prism of base side 30 mm and axis 50 mm, when it is resting on HP on one of its lateral edge with a face containing that edge making 30^o to HP. The axis is inclined at 45^o to VP and is parallel to HP. 14M

OR

6. A cone of base 40 mm diameter and axis 50 mm long touches the V.P on a point of its base circle. Its axis is inclined at 30° to V.P and 45^o to H.P. 14M

UNIT–IV

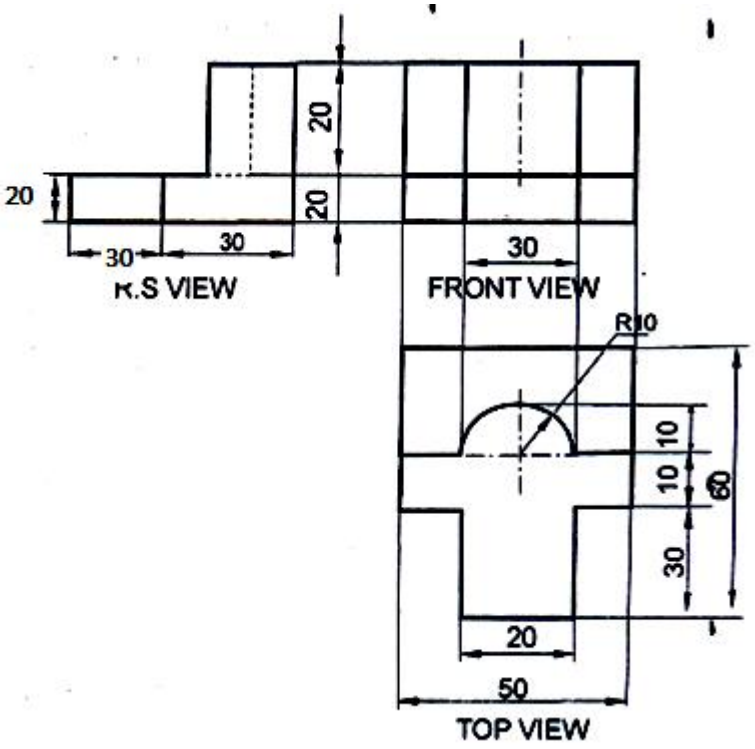
7. A waste paper basket is in the form of a frustum of a hexagonal pyramid of base side 15 mm and top 30 mm. Height is 100 mm. Draw its isometric projection. 14M

OR

8. Draw the isometric projection of a cone of diameter 30 mm and height 60 mm resting with its base on ground. 14M

UNIT–V

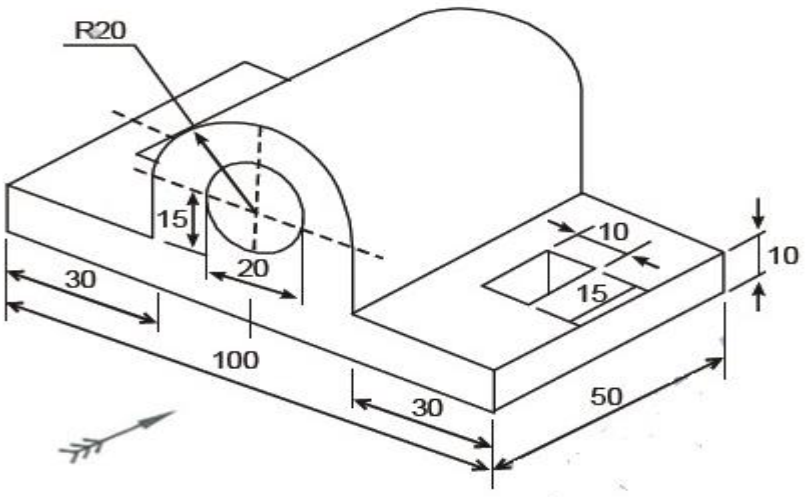
9. Draw the isometric view for the object shown in the figure.



14M

OR

10. Draw the Orthographic views of the plan,elevation and side view for the given figure. 14M



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Hall Ticket Number :										

R-15

Code: 5GC24

I B.Tech. II Semester Supplementary Examinations May 2018

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. Change the order of integration in $\int_0^1 \int_x^{\sqrt{2-x^2}} \frac{x}{\sqrt{x^2+y^2}}\, dy\, dx$ and hence evaluate it. 14M

OR

2. Evaluate $\int_1^e \int_1^{\log y} \int_1^{e^x} \log z\, dz\, dx\, dy$. 14M

UNIT–II

3. a) Find the Laplace transform of $te^{-t}\sin 3t$. 7M

   b) Find the Laplace transform $\int_0^t [(e^t \sin t)/t\, dt]$. 7M

OR

4. a) Find $L^{-1}\left\{\frac{s}{(s^2+1^2)^2}\right\}$ by convolution theorem. 7M

   b) Find $L^{-1}\left\{\frac{s}{(s^2+a^2)^2}\right\}$ by $\log\left(\frac{s+1}{s-1}\right)$. 7M

UNIT–III

5. Solve $(D^2+9)x = \sin t$ using Laplace transform given that $x(0)=1$, $x\left(\frac{\pi}{2}\right)=1$ 14M

OR

6. Solve $y''-3y'+2y=4t+e^{3t}$, $y(0)=1$, $y'(0)=1$. 14M

UNIT–IV

7. a) Find the directional derivative of $f(x,y,z)=xy^3+yz^3$ at the point $(2,-1,1)$ in the direction of vector $\bar{i}+2\bar{j}+2\bar{k}$. 7M

   b) Show that $\text{div}(\text{grad}\, r^n) = n(n+1)\, r^{n-2}$. 7M

OR

8. A vector field is given by $\bar{f}=\sin y\, \bar{i} + x(1+\cos y)\bar{j}$. Evaluate the line integral over a circular path given by $x^2+y^2=a^2$, $z=0$. 14M

UNIT–V

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

OR

10. Verify Stoke's theorem for $\bar{f}=(2x-y)\,\bar{i}-yz^2\bar{j}-y^2z\,\bar{k}$ over the upper half surface of the sphere $x^2+y^2+z^2=1$ bounded by the projection of the xy plane. 14M

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Hall Ticket Number :										

Code: 5GC23

R-15

I B.Tech. II Semester Supplementary Examinations May 2018

Engineering Physics

(Common to CE, ME, CSE and IT)

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. Write a detailed note on optical fibres.

OR

2. Distinguish between single slit and double slit Fraunhofer diffraction.

UNIT–II

3. Define and explain Bravias lattice

OR

4. Prove that FCC is more closely packed than BCC and SC.

UNIT–III

5. a) Explain the classification of solids on the basis of energy band theory
   b) Describe Fermi-Dirac distribution function

OR

6. a) Find de-Broglie wave length of an electron accelerated in field of potential 1600V
   b) Derive 1-D Schrödinger wave equation

UNIT–IV

7. a) What are donor and acceptor impurities? Give examples.
   b) With the help of neat diagram explain the formation of p-n Junction. Give its I-V Characteristics.

OR

8. a) State and explain Hall effect.
   b) Derive the expression for Hall coefficient and discuss the importance of Hall effect in semiconductors.

UNIT–V

9. a) What are cooper pairs?
   b) Explain the theory of formation of cooper pairs

OR

10. a) Define nanomaterials.
    b) What is the significance of nanoscale? Explain in detail.

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Hall Ticket Number :										

R-15

Code: 5GC25

I B.Tech. II Semester Supplementary Examinations May 2018

Mathematical Methods –II

(Common to CSE & IT)

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) Fit a straight line for the following data

x	0	2	5	7
y	-1	5	12	20

7M

b) Determine the constants a and b by the method of least squares such that $y = ae^{bx}$ 7M

OR

2. Fit a parabola of the form $y = a + bx + cx^2$ to the following data

x	1	2	3	4	5	6	7
y	2.3	5.2	9.7	16.5	29.4	35.5	54.4

14M

UNIT–II

3. a) Find the value of y for x = 0.4 by Picard's method, given that $\frac{dy}{dx} = x^2 + y^2, y(0) = 0$ 7M

b) Solve $y' = x - y^2, y(0) = 1$ using Taylor's series method and compute y(0.1) 7M

OR

4. Apply R-K method of fourth order to find the approximate value of y for x=0.2 in steps of 0.1 if $\frac{dy}{dx} = x + y^2$, given that y = 1 when x = 0. 14M

UNIT–III

5. Determine the Fourier series for $f(x) = x \sin x$ in the interval $0 < x < 2®$ 14M

OR

6. Find the Fourier series to represent the function

$$f(x) = \begin{cases} 1 + \frac{2x}{®}, & -® \le x \le 0 \\ 1 - \frac{2x}{®}, & 0 \le x \le ® \end{cases}$$

14M

UNIT–IV

7. Find the Fourier Transform of $\begin{cases} 1 & for\ |x| < 1 \\ 0 & for\ |x > 1| \end{cases}$. Hence Evaluate $\int_0^\infty \frac{Sinx}{x} dx$. 14M

OR

8. Find the finite Fourier sine and cosine transform of $f(x) = x^2, 0 < x < l$ 14M

UNIT–V

9. Solve $(x^2 - yz)p + (y^2 - zx)q = z^2 - xy$ 14M

OR

10. a) Solve the Partial differential equation $p\sqrt{x} + q\sqrt{y} = \sqrt{z}$ 7M

b) Solve by the method of separation of variables

$\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ *where* $u(x,0) = 6e^{-3x}$ 7M

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Hall Ticket Number :										

R-15

Code: 5GC21

I B.Tech. II Semester Supplementary Examinations May 2018

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) Why does the writer say that the modern technology acts like a foreign body and it has become inhuman? 7M

   b) Complete the table with the noun form or the verb form of the word.

Verb	Noun
alleviate	
	suffocation
exhaust	
	insignificance
product	
	sophistication
violent	

7M

OR

2. a) Write your view on "Technology with A Human Face". 7M

   b) Write the correct past tense and past participle form of each verb.

S.no	Present tense	Past tense	Past participle
1	Abridge		
2	Back		
3	Campaign		
4	Leap		
5	Shine		
6	Sink		
7	alleviate		

7M

UNIT–II

3. a) How has human development affected climate patterns on the Earth? 7M

   b) Write a letter to BHEL requesting the General Manager to permit you to do practical training on the topic "Electrical Drives" for one Month in August 2018. 7M

OR

4. a) What is the inter relation between human strategies and climate change? 7M

   b) Fill up the blanks with the correct form of the verbs, given in the brackets.

      i. Human beings_____(transform) the environment.
      ii. We_____(live) on the planet now
      iii. The Sun_____(rise) in the East.
      iv. She _____(visit)Taj Mahal last year.
      v. He _____(just complete) his home work
      vi. Sita _____(be)taller than Geeta.
      vii. Venkat _____(speak) English well 7M

UNIT–III

5. a) What is the function of Heliostats? 7M

   b) Rewrite the following sentences into interrogative sentences.

      i. She is a healthy woman
      ii. Priya watches TV every evening
      iii. He can climb trees easily
      iv. Cherry cooks his own breakfast
      v. They will arrive tomorrow
      vi. The boy has returned the books
      vii. They are responsible 7M

OR

6. a) What are the various steps involved in power generation? 7M

   b) Write an e mail to your friend congratulating him on getting a job. 7M

UNIT–IV

7. a) "Water is the basic of all life", Explain. 7M

   b) Choose the correct form of the verb that agrees with the subject.

      i. There _____ no reason for this (is/are)
      ii. The average workers earnings _____goes up dramatically(has/have)
      iii. Here _____ two apples(is/are)
      iv. My pants _____ torn (was/were)
      v. Two and two _____(make/makes) four
      vi. Some of the voters _____ still angry(is/are)
      vii. Our thanks _____to the workers who supported the Union(go/goes) 7M

OR

8. a) Write the main causes of soil erosion? 7M

   b) Write a report on an accident you witnessed. 7M

UNIT–V

9. a) "Ignorance is the mother of evil", Explain. 7M

   b) Change the voice from the followings.

      i. they play cricket
      ii. She is taking coffee
      iii. Post the letter
      iv. Don't consult him
      v. Who played foot ball yesterday
      vi. Had you taken coffee
      vii. Are you playing Chess 7M

OR

10. a) How is the word unattached explained in the Lesson The Secret of Work. 7M

    b) Write at least seven positive connotations. 7M

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