Hall Ticket Number :										

R-15

Code: 5G121

I B.Tech. II Semester Supplementary Examinations October 2020

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) What is a pointer? Explain in detail about pointer arithmetic.
   b) Write a program to read and display array elements using pointers

OR

2. a) What is the use of command line arguments
   b) Write a program using pointers to compute the sum of all elements in an array.

UNIT–II

3. a) Define Structures. Explain with an example how structure members are initialized and accessed
   b) Explain different modes to open a file

OR

4. a) Write a C Program to sort the given array in descending order using Bubble Sort.
   b) Write a C program to find the given element using linear searching.

UNIT–III

5. What is a stack? How it can be represented in "C" using arrays?

OR

6. a) What is Data Structure? Explain in detail about different type of data structures.
   b) Write the steps for evaluating postfix expression

UNIT–IV

7. What is a Singly Linked List.? Explain different operations of a singly linked list with suitable examples.

OR

8. What is a Circular Linked List.? Explain different operations of a Circular linked list with suitable examples.

UNIT–V

9. Define binary search tree. Explain with example insertion of an element in the binary search tree.

OR

10. a) Define the following terms of graphs. i) Undirected graph ii) In degree iii) Digraph
    b) Define and write applications of graphs.

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Hall Ticket Number :										

R-15

Code: 5G523

I B.Tech. II Semester Supplementary Examinations October 2020

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 square ABCD of 40mm side has a corner on the HP and 20mm in front of the VP. All the sides of the squares are equally inclined to the HP and parallel to the VP. Draw its projections.

OR

2. A thin rectangular plate of sides of 60mm×30mm has its shortest side in the VP and inclined at 30^0 to the HP. Project its top view if its front view is a square of 30mm long sides.

UNIT–II

3. Draw the projections of a cylinder of base 30mm diameter and axis 50mm long, when it is resting on HP on its base.

OR

4. A pentagonal prism is resting on one of the corners of its base on the HP. The longer edge containing that corner is inclined at 45^0 to the base. The axis of the prism makes an angle of 30^0 to the V.P. Draw the projections of the solid.

UNIT–III

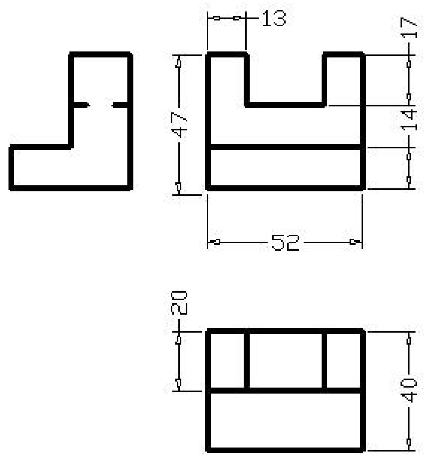
5. A hexagonal pyramid with side of base 30mm and axis 120mm long, is resting on its base on H.P. An edge of the base is parallel to VP.A horizontal section plane passing through a point on the axis, at a distance of 60mm from the base. Draw the isometric projection of the frustum of the pyramid.

OR

6. A cylinder of base diameter 50mm and axis height 65mm is resting on HP on one of its generators with its axis inclined at 50º to VP. Draw its projections.

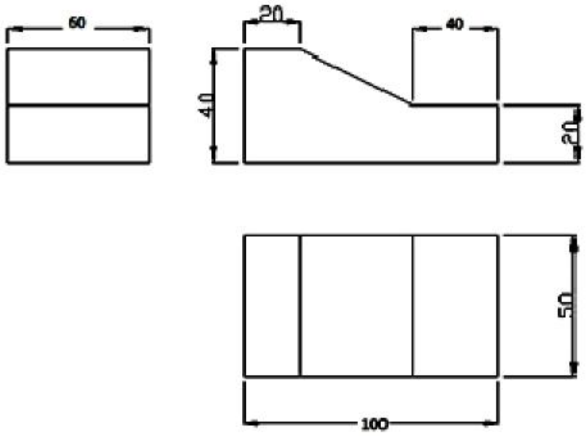
UNIT–IV

7. Draw the Isometric view of the following figure



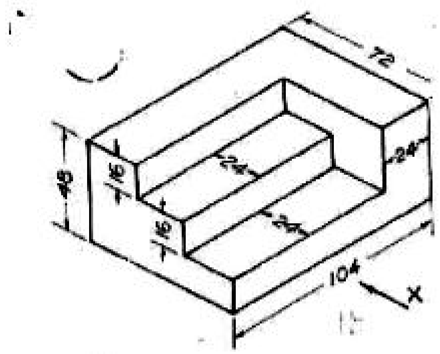
OR

8. Draw the Isometric view of the following figure



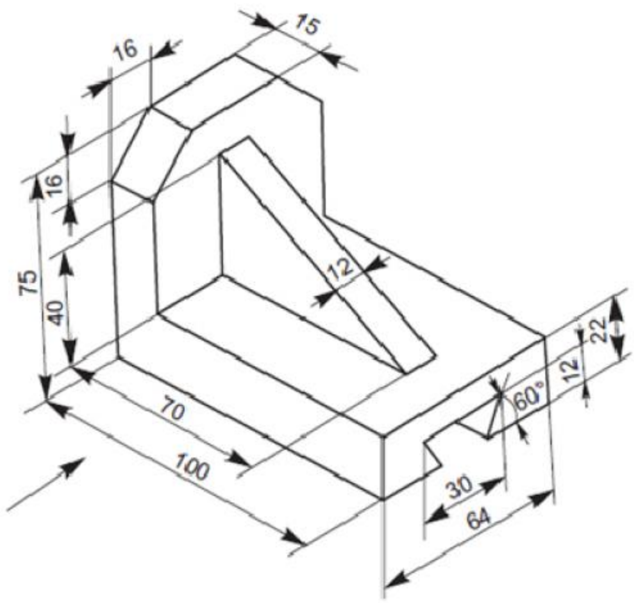
UNIT–V

9. Draw the orthographic view of the following figure



OR

10. Draw the orthographic view of the following figure



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Hall Ticket Number :										

R-15

Code: 5GC24

I B.Tech. II Semester Supplementary Examinations October 2020

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) Evaluate $\int_0^5 \int_0^{x^2} x\left(x^2+y^2\right) dy\,dx$ 7M

b) Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} x\,y\,z\,dx\,dy\,dz$ 7M

OR

2. Evaluate the integral by changing the order of integration $\int_0^a \int_{\frac{x^2}{a}}^{2a-x} x\,y^2 dy\,dx$ 14M

UNIT–II

3. Find the Laplace Transform of i) $\text{Cos}\,2t$ ii) $\sin 2t \sin 3t$ 14M

OR

4. a) Write the Laplace Transforms of some standard functions 7M

b) Find the Laplace Transform of $f(t)=\begin{cases} 2\ , 0 \le t \le 1 \\ 2t\ , t \ge 1 \end{cases}$ 7M

UNIT–III

5. Solve $y''+2y'-3y=\sin t,\ y(0)=0,\ y'(0)=0$ Using Laplace Transform 14M

OR

6. Solve $y''+2y'+5y=e^{-t}, y(0)=0,\ y'(0)=1$ Using Laplace Transform Technique 14M

UNIT–IV

7. a) Find $div\,\overline{F}$ and $curl\,\overline{F}$ where $\overline{F}=grad\left(x^3+y^3+z^3-3\,x\,y\,z\right)$ 7M

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

OR

8. a) Find the angle between the surfaces $x^2+y^2+z^2=9$ and $z=x^2+y^2-3$ at the point $(2,-1,\ 2)$ 7M

b) Prove that $\nabla r^n = n\,r^{n-2}\overline{r}$ where $\overline{r}=x\,\overline{i}+y\,\overline{j}+z\,\overline{k}$ and $r=\left|\overline{r}\right|$ 7M

UNIT–V

9. Evaluate by stoke's theorem for a vector field $\overline{F}=(2x-y)\overline{i}-y\,z^2\,\overline{j}-y^2\,z\,\overline{k}$ over the upper half surface of $x^2+y^2+z^2=1$ bounded by projection on xy-plane. 14M

OR

10. Verify by Gauss Divergence theorem for $\overline{F}=x^3\overline{i}+y^3\,\overline{j}+z^3\,\overline{k}$ taken over the cube bounded by $x=0\,, x=a\,; y=0\,,\ y=a\,; z=0\,, z=a$ 14M

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Hall Ticket Number :										

R-15

Code: 5GC23

I B.Tech. II Semester Supplementary Examinations October 2020

Engineering Physics

(Common to CE, ME, 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) Explain about various types of optical fibres.
   b) Discuss the principle and working of semiconducting laser.

OR

2. Answer any two of the following.
   a. Fraunhofer diffraction.
   b. Einstein's coefficients.
   c. Acceptance angle.

UNIT–II

3. Describe with suitable diagram the powder method for determination of crystal structure.

OR

4. Distinguish between schottky and Fresnel defects in ionic crystals.

UNIT–III

5. a) What is conductivity and derive expression for it
   b) Write a note on sources of electrical resistance of metal

OR

6. a) Distinguish between matter wave and electromagnetic wave
   b) Describe draw backs of classical free electron model and write postulates of quantum free electron model

UNIT–IV

7. a) Explain the constructions and working of light emitting diode (LED).
   b) Discuss advantages and applications of LED.

OR

8. a) What is Bohr magnetron?
   b) With suitable expressions explain the origin of permanent magnetic moment of magnetic materials.

UNIT–V

9. a) Distinguish the soft and hard magnetic materials.
   b) A magnetic material has a magnetization of 3300 A/m and flux density of 0.0044Wb/m^2. Compute the magnetizing force and the relative permeability of the material.

OR

10. a) Explain the construction and working of Ball mill method to prepare nanoparticles.
    b) Write the properties of nanomaterials

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Hall Ticket Number :										

R-15

Code: **5GC25**

I B.Tech. II Semester Supplementary Examinations October 2020

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	6	7	7	8	8	8	9	9	10
Y	5	5	4	5	4	3	4	3	3

7M

b) Fit a curve of the form $y = ae^{bx}$ to the following data.

X	6	7	7	8	8	8
Y	5	5	4	5	4	3

7M

OR

2. Fit a Second degree curve to the following data

X	1	2	3	4	5	6
Y	5	5	4	5	4	3

14M

UNIT–II

3. a) Solve the following using Taylor series method $y^1 = y + x$, $y(0) = 1$, find y(0.1) and y(0.2). 7M

b) Solve the following using Picard's method $y^1 = \frac{y-x}{y+x}$,y(0) = 1, find y(0.1) and y(0.2) 7M

OR

4. Use Milne's method to find y (0.8) and y(1.0) from $y^1 = 1 + y^2$, y(0)=0. Find the initial values y(0.2), y(0.4) and y(0.6) from Runge-Kutta fourth method 14M

UNIT–III

5. Find a Fourier series to represent x – x^2 from x = -π to x = π and hence deduce that $\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + ... = \frac{\text{®}^2}{12}$. 14M

OR

6. Find the half range cosine series for the function f(x) = $(x-1)^2$ in the interval 0 < x < 1. Hence show that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + ... = \frac{\text{®}^2}{8}$. 14M

UNIT–IV

7. a) Find the Fourier sine and cosine transform of $2e^{-5x}+5e^{-2x}$. 7M

b) Find the fourier transform of $e^{-|x|}$ 7M

OR

8. Find the finite Fourier sine and cosine transform of $f(x) = x$ where $0 < x < 4$ 14M

UNIT–V

9. a) Form the partial differential equation by eliminating the arbitrary functions from $z = f(x+at) + g(x-at)$ 7M

b) Using the method of separation of variables, solve $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ where $u(x,0) = 6e^{-3x}$ 7M

OR

10. a) Solve $\frac{y^2 z}{x} p + xzq = y^2$ 7M

b) Solve $p^2 + q^2 = x + y$ 7M

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