

**Code: 7G513**

I B.Tech. I Semester Supplementary Examinations November 2019

**Basic Engineering Drawing**  
( Computer Science and 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) Bisect a straight line AB of length 65 mm 7M  
b) Divide a line AB of length 100mm into 9 equal parts 7M

**OR**

2. Construct a regular Hexagon and Heptagon by General Method, given the length of its side 50mm 14M

**UNIT-II**

3. a) The front view of a 75mm long line measures 55mm. The line is parallel to the H.P and one of its ends is in the V.P and 25mm above the H.P. Draw the projections of the line and determines its inclination with the V.P. 7M  
b) A 100mm long line is parallel to and 40mm above the H.P. Its two ends are 25mm and 50mm in front of the V.P respectively. Draw its projections and find its inclination with the V.P. 7M

**OR**

4. A line AB, 70mm long, has its end A 30mm above the H.P and 30mm in front of the V.P. The line is inclined at 30° to the H.P and at 45° to the V.P. Draw the projections 14M

**UNIT-III**

5. a) 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 7M  
b) A rectangular plane of size 60x30mm is perpendicular to both H.P. and V.P. Draw its projections 7M

**OR**

6. a) A pentagonal plane of side 30mm is perpendicular to H.P. and parallel to V.P. The plane is 30mm in front of V.P. Draw its projections 7M  
b) A Circular plane of diameter 50mm is perpendicular to V.P. and parallel to H.P. The plane is 30mm above the H.P. Draw its projections 7M

**UNIT-IV**

7. a) Draw the projections of a cone of base 30mm diameter and axis 50mm long, when it is resting on HP on its base 7M  
b) Draw the projections of a cylinder of base 30mm diameter and axis 50mm long, when it is resting on HP on its base 7M

**OR**

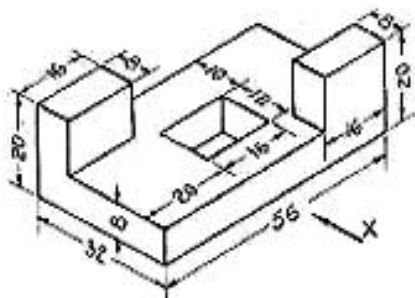
8. Draw the projections of a hexagonal prism of base 25mm side and axis 60mm long, when it is resting on one of its corners of the base on HP. The axis of the solid is inclined at 45° to the HP 14M

**UNIT-V**

9. Draw the isometric projection of a pentagonal pyramid, with side of base 25mm and axis 60mm long. The pyramid is resting on its base on HP, with an edge of the base parallel to the VP 14M

**OR**

10. Draw the front view, Top view and Side view of the following isometric view



14M

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**Code: 7GC12**

I B.Tech. I Semester Supplementary Examinations November 2019

**Engineering Chemistry**

( Common to CE, ME &amp; CSE )

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) Give the detailed procedure for the estimation of dissolved oxygen present in water with principle and chemical equations. 7M
- b) With the help of neat diagram, explain the use of Zeolite process for softening of water and its limitations. 7M

**OR**

2. a) What is the principle of EDTA method? Describe the estimation of hardness of water by EDTA method. 7M
- b) Calculate carbonate and non carbonate hardness of a sample of water contains the following salts per litre.  
Mg(HCO<sub>3</sub>)<sub>2</sub>=7.3mg, Ca(HCO<sub>3</sub>)<sub>2</sub>=16.2mg, MgCl<sub>2</sub>=9.5mg, CaSO<sub>4</sub>=13.6mg. 7M

**UNIT-II**

3. Explain the composition ,applications and advantages of the following cells  
(i)Ni-Cd cell & (ii) Lithium ion cell. 14M

**OR**

4. a) Define corrosion. Explain dry corrosion and its mechanism. 7M
- b) Explain the following methods for preventing the corrosion.  
(i)electroplating (ii) Electrolessplating 7M

**UNIT-III**

5. a) Explain with examples the terms: addition polymerization, condensation polymerization and co-polymerization. 7M
- b) How the following are produced?  
(i) Buna-s (ii) polyurethane. Mention their properties and uses. 7M

**OR**

6. Give an account of preparation, properties and engineering uses of the following  
(i) PVC (ii) Nitrile rubber (iii) poly phosphazines 14M

**UNIT-IV**

7. What are the characteristics of metallurgical coke? Describe the manufacture for metallurgical coke by Otto-Hoffmann's method. 14M

**OR**

8. a) With a neat diagram describe the orsat's gas analysis method. 10M
- b) Define calorific value of a fuel. Distinguish gross and net calorific value of fuel. 4M

**UNIT-V**

9. What are rocket propellants? How are they classified? What are the requirements for the selection of a good propellant? 14M
- OR**
10. What is setting and hardening of cement? Write the chemical reactions that take place during the setting and hardening of cement and explain? 14M

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<b>R-17</b>
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**Code: 7GC14**

I B.Tech. I Semester Supplementary Examinations November 2019

**Engineering Mathematics-I**

( 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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<b>UNIT-I</b>
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1. a) Define the rank of the matrix and find the rank of the following matrix

$$\begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$$

7M

- b) Test for consistency and solve  $5x+3y+7z=4$ ,  $3x+26y+2z=9$ ,  $7x+2y+10z=5$

7M

**OR**

2. Find the eigen values and the corresponding eigen vectors of  $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$

14M

<b>UNIT-II</b>
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3. a) Reduce the quadratic form  $10x^2 + 2y^2 + 5z^2 - 4yz - 10zx + 5xy$  to the canonical form by linear transformation.

7M

- b) Prove that the matrix  $\frac{1}{\sqrt{3}} \begin{bmatrix} 1 & 1+i \\ 1-i & -1 \end{bmatrix}$  is Unitary matrix.

7M

**OR**

4. Reduce the quadratic form  $2x_1x_2 + 2x_1x_3 - 2x_3x_2$  to canonical form by an orthogonal reduction and discuss its Nature. Also find the model matrix.

14M

<b>UNIT-III</b>
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5. a) The number N of bacteria in a culture grew at a rate proportional to N. the value of N was initially 100 and increased to 332 in one hour. What was the value of N after  $1\frac{1}{2}$  hours?

7M

- b) Prove that the system of parabolas  $y^2 = 4a(x + a)$  is self orthogonal.

7M

**OR**

6. a) A body is kept in air with temperature  $25^{\circ}\text{C}$  cools from  $140^{\circ}\text{C}$  to  $80^{\circ}\text{C}$  in 20 minutes. Find the when the body cools down to  $35^{\circ}\text{C}$

7M

- b) A bacterial culture, growing exponentially, increases from 200 to 500 grams in 1 hour. How many grams will be present after 90 minutes?

7M

<b>UNIT-IV</b>
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7. a) Solve  $(D^2 - 4D + 3)y = \sin 3x \cos 2x$  7M

b) Solve  $\frac{d^3y}{dx^3} - y = e^x + \sin 3x + 2$  7M

**OR**

8. Solve  $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = xe^{3x} + \sin 2x$  14M

<b>UNIT-V</b>
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9. a) If  $x + y + z = u, y + z = uv, z = uvw$ , then evaluate  $\frac{\partial(x, y, z)}{\partial(u, v, w)}$  7M

b) Find the first and second order partial derivatives of  $f(x, y) = ax^2 + 2hxy + by^2$  and

verify  $\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial^2 f}{\partial y \partial x}$  7M

**OR**

10. Find the three positive numbers whose sum is 100 and whose product is maximum. 14M

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**Code: 7G111**

I B.Tech. I Semester Supplementary Examinations November 2019

**Problem Solving Techniques and C Programming**

( 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) Give a comparison between system and application softwares with examples. 7M  
 b) Write an algorithm to find the greatest number among the three given numbers. 7M

**OR**

2. a) Discuss about different computer languages with examples. 7M  
 b) Describe the process of program development. 7M

**UNIT-II**

3. a) Describe the structure of a C program with example 7M  
 b) What is the purpose of the comma operator? Within which control statement does the comma operator usually appear? 7M

**OR**

4. Explain with examples the different types of operators used in C. 14M

**UNIT-III**

5. a) Differentiate between if statement and if-else statement with suitable examples and proper syntax. 7M  
 b) Give the control flow diagram of the *for loop*. How is the execution of 'for' loop proceeds? 7M

**OR**

6. a) Discuss selection statements with suitable examples for each. 7M  
 b) Write a C program to check whether a given number is Palindrome or not 7M

**UNIT-IV**

7. a) Define an array. Write a program to find the largest and smallest element in a given array 7M  
 b) Write a 'C' program to read a string from keyboard and print the numbers of uppercase letters, lower case letters, digits, spaces and special characters. 7M

**OR**

8. a) What is meant by arrays of strings? When it will be used? Explain with a 'C' program. 7M  
 b) Write a C program that reads characters from the keyboard and writes them to a disk file until the user types a dollar sign. 7M

**UNIT-V**

9. a) What is the scope of variables of type extern, auto, register and static? Explain with example. 10M  
 b) What is meant by user defined function? Explain with an example C program 4M

**OR**

10. a) Explain about calling function, called function and actual and formal arguments. 7M  
 b) Compare call by value and call by reference and explain using suitable example 7M

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Code: 7GC11

I B.Tech. I Semester Supplementary Examinations November 2019

**Technical English and Professional Communication**

( 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) Explain the alternative technology suggested by E.F.Schumacher to make things better, in “ Technology with a Human Face”
- b) Fill in the blanks in the following sentences using the hints given in brackets
  - i) Be bold. Don't act weak and \_\_\_\_\_. ( a word with the suffix –less)
  - ii) They own an acre of *fertile* land in the village. (Replace the italicized word with its Antonym)
  - iii) The man stared \_\_\_\_\_ the paper in his hand (towards/at)
  - iv) The music is too loud. Could you \_\_\_\_\_ the volume please? ( turn down/ turn up)
  - v) Can I have a \_\_\_\_\_, please? ( pear/pare)

**OR**

2. What are the key elements of communication? Explain.

**UNIT-II**

3. a) What are the main ways in which human development has affected climate patterns on the earth?
- b) Write a letter of application in response to an advertisement for the post of Software developer in Google solutions, Hyderabad.

**OR**

4. Discuss flow of Communication? Illustrate it with examples.

**UNIT-III**

5. a) Discuss two kinds of technologies currently used to generate solar power on a large scale.
- b) Complete the following sentences with appropriate words chosen from those in brackets.
  - i) I just read a story about a man without a \_\_\_\_\_. ( Shade/Shadow)
  - ii) There is a \_\_\_\_\_ shop on the campus. (Stationery/Stationary)
  - iii) It was not a \_\_\_\_\_ thing to do. (Sensible/Sensitive)
  - iv) Everyone said that the Court's verdict was \_\_\_\_\_. (Fare/Fair)
  - v) To prove his points, he \_\_\_\_\_ an example. (Cited/Sited)

**OR**

6. Explain the significance of Proxemics and Kinesics in effective communication?

**UNIT-IV**

7. a) How according to Sir C.V. Raman, can rainwater as well as the water of rivers be prevented from going waste?
- b) You have been asked to write a report on the infrastructure (furniture, equipment, classroom, workshops, labs, computer centers, hostels and libraries) available in your college.

**OR**

8. Define Noise? Classify different barriers of communication?

**UNIT-V**

9. According to Swami Vivekananda, what are the two ways in which one can work without expecting anything in return?

**OR**

10. Explain briefly four communication models and its importance?

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