Hall Ticket Number :										

R-17

Code: 7G513

I B.Tech. I Semester Supplementary Examinations May 2018

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. Construct a regular pentagon and hexagon by general method 14M

OR

2. A fixed point 70mm from fixed straight line. When the distance between point from F and the distance between point from directrix is 3/4. Name the curve and draw the curve at least 9 plots and also draw tangent and normal at a point 60mm from F. 14M

UNIT–II

3. A point A is 15mm above H.P and 20 mm in front of V.P. Another point B is 25 mm behind V.P and 40 mm below H.P. Draw the projection of A and B, keeping the distance between the projectors equal to 90mm. Draw straight lines, joining (i) the top views and (ii) the front views. 14M

OR

4. The top view of a 75mm long line AB measures 65mm, while the length of its front view is 50mm. It's one end A is in H.P. and 12mm in front of the V.P. Draw the projections of AB and determine its inclinations with the H.P. and the V.P. 14M

UNIT–III

5. A semi circular plate of 80 mm diameter has its straight edge in the VP & inclined at 45^0 to the HP. The surface of the plate makes an angle of 30^0 with the VP. Draw its projections. 14M

OR

6. Draw the projections of a circle of 50mm diameter, having its plane vertical and inclined at 30^0 to the VP. Its centre is 30mm above the HP and 20mm in front of the VP. 14M

UNIT–IV

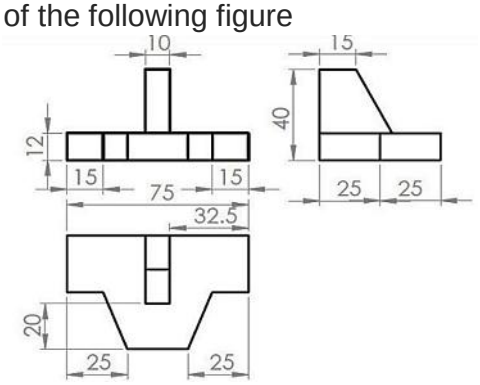
7. Draw the projections of a cone, base 45 mm diameter and axis 50 mm long, when it is resting on the ground on a point on its base circle with (a) the axis making an angle of 30° with the H.P. and 45° with the V.P 14M

OR

8. Draw the projections of a cube of 25 mm long edges resting on the H.P on one of its corners with a solid diagonal perpendicular to the V.P. 14M

UNIT–V

9. Draw the isometric view of the following figure



14M

OR

10. Draw the elevation, top view and side view of the component shown in figure 1. (All dimensions are in mm.) 14M

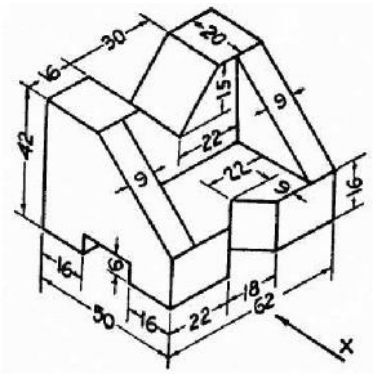


Fig 1: Isometric view of a component

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Hall Ticket Number :										

R-17

Code: 7GC12

I B.Tech. I Semester Supplementary Examinations May 2018

Engineering Chemistry

(Common to CE, ME and 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) Explain the ion-exchange method of softening hard water with a neat diagram. What are the advantages and disadvantages of this method? 8M

   b) Solve the total ,temporary and permanent hardness of water containing the following salts: $CaSO_4$ = 28 mg/L, $Mg(HCO_3)_2$ = 22 mg/L, $MgCl_2$ = 30 mg/L, $CaCl_2$ = 85mg/L. 6M

OR

2. a) Describe the zeolite process of softening hard water. List the merits and demerits of zeolite process 7M

   b) Write a short notes on

   i) Sludges and Scales

   ii) Desalination of brackish water by Reverse Osmaosis 7M

UNIT–II

3. a) Formulate Nernest equation for the determination of potential of single electrode. 6M

   b) Describe the construction of Ni-Cd battery with the reaction occurring during discharge and charging. 8M

OR

4. a) Explain the mechanism of H_2 evolution and O_2 absorption in electrochemical corrosion. 7M

   b) What are secondary cells? Describe the construction, working principle, charging and discharging process of lithium ion battery. 7M

UNIT–III

5. a) What are polymers? How are they classified? Discuss addition and condensation polymerization with suitable examples. 10M

   b) How do you prepare Buna-S and Buna-N. 4M

OR

6 a) Explain the manufacturing process of natural rubber from latex. 7M

   b) Describe the preparation, properties and uses of Bakelite. 7M

UNIT–IV

7. a) What is fuel? Write the important characteristics of a good fuel. 7M

   b) Describe the fractional distillation of petroleum. 7M

OR

8. a) What is meant by calorific value of a fuel? Describe how calorific value of a solid fuel is determined using a Bomb calorimeter.. 8M

   b) Describe the manufacture of the metallurgical coke by Otto Hoffman's by product oven method. 6M

UNIT–V

9. a) Write the percentage chemical composition of Portland cement. Desribe the manufacture of Portland cement with necessary equations. 8M

   b) Write brief note on flash, fire, cloud and pour point. 6M

OR

10. a) Write failures of refractory material 6M

    b) Describe the following

       i) Thick film lubrication ii) Extreme pressure lubrication. 8M

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Hall Ticket Number :										

R-17

Code: 7GC14

I B.Tech. I Semester Supplementary Examinations May 2017

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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UNIT–I

1. a) Define rank of a matrix. Find the rank of the matrix $A=\begin{bmatrix}0 & 1 & 2 & -2\\ 4 & 0 & 2 & 6\\ 2 & 1 & 3 & 1\end{bmatrix}$.

   b) Find the values of *k* for which the following system of equations has a non-trivial solution

   $(3k-8)x+3y+3z=0;\ 3x+(3k-8)y+3z=0;\ 3x+3y+(3k-8)z=0.$

OR

2. a) Find the eigen values and eigenvectors for the matrix $A=\begin{bmatrix}4 & 6 & 6\\ 1 & 3 & 2\\ -1 & -4 & -3\end{bmatrix}$

   b) Apply cayley –Hamilton theorem to find the inverse of the matrix $A=\begin{bmatrix}2 & -1 & 1\\ -1 & 2 & -1\\ 1 & -1 & 2\end{bmatrix}$.

UNIT–II

3. Reduce the quadratic form $8x^2+7y^2+3z^2-12xy-8yz+4zx$ to canonical form and specify the matrix of transformation. Also find the rank, index, signature and nature of the quadratic form.

OR

4. a) Show that $A=\begin{bmatrix}\frac{1}{2}(1+i) & \frac{1}{2}(-1+i)\\ \frac{1}{2}(1+i) & \frac{1}{2}(1-i)\end{bmatrix}$ is unitary and find A^{-1}.

   b) Prove that the eigen values of a Hermitian matrix are real.

UNIT–III

5. a) Solve: $(1+e^{x/y})dx+e^{x/y}(1-x/y)dy=0.$

   b) If 30% of a radioactive substance disappears in 10 days then how long will it take for 90% of it to disappear?

OR

6. a) Solve: $\sec^2 y\frac{dy}{dx}+x\tan y=x^3.$

   b) Find the orthogonal trajectories of the family of Coaxial circles $x^2+y^2+2gx+c=2$; *g* being the parameter.

UNIT–IV

7. a) Solve: $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = xe^x \sin x.$

   b) Using the method of variation of parameters , solve: $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x \log x.$

OR

8. a) Solve: $\frac{d^2y}{dx^2} + a^2 y = \tan ax.$

   b) The differential equation for a circuit in which self-inductance neutralize each other is $L\frac{d^2i}{dt^2} + \frac{i}{c} = 0.$ Find the current i is a function of t, given that I is the maximum current and $i = 0$ when $t = 0.$

UNIT–V

9. a) If $u = 3x + 2y - z,$ $\mathrm{v} = x - 2y + z,$ and $\mathrm{w}=x(x+2\mathrm{y}-\mathrm{z})$ then show that they are functionally related, and find the relation.

   b) Using mean value theorems, prove that (if0<a<b<1), $\frac{b-a}{1+b^2} < \tan^{-1} b - \tan^{-1} a < \frac{b-a}{1+a^2}.$

OR

10. a) The sum of three numbers is constant. Prove that their product is maximum when they are equal.

    b) Discuss the maxima and minima of $f(x, \mathrm{y}) = x^3\, \mathrm{y}^2(1 - x - y).$

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Hall Ticket Number :										

R-17

Code: 7G111

I B.Tech. I Semester Supplementary Examinations May 2018

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) Explain briefly about different computer languages. 7M

   b) Explain the software development method in detail. 7M

OR

2. a) What is algorithm? What are the main steps followed in the development of an algorithm? 8M

   b) Draw flowchart and write algorithm to find sum of the digits in a given number. 6M

UNIT–II

3. a) Explain about the basic data types in C language with examples 8M

   b) Write a C program to swap (exchange) the values of two variables without using temporary variable. 6M

OR

4. a) What is meant by type conversion? Why is it necessary? Explain about implicit and explicit type conversion with examples. 9M

   b) Write a program to enter two numbers and find the largest of them. Use conditional operator. 5M

UNIT–III

5. a) Explain various selection statements available in C language with examples. 8M

   b) Write a program to print whether a given number is prime or not. 6M

OR

6. a) Explain various iterative statements available in C language with examples. 8M

   b) Write a program to find out whether the given number is Armstrong or not? 6M

UNIT–IV

7. a) What is Array? Discuss about the initialization and accessing of array elements in one dimensional and two dimensional arrays. 8M

   b) Write a program to find the maximum element of an array. 6M

OR

8. a) Explain the following string handling functions with examples:
   (i) strcpy( ) (ii) strcat( ) (iii) strrev( ) (iv) strlen( ) 8M

   b) Write C program to concatenate two strings without using strcat( ) function 6M

UNIT–V

9. a) Explain about call by value and call by reference mechanisms with examples 8M

   b) What are the standard header files used in 'C'? Explain their functions. 6M

OR

10. Explain about different storage classes with examples 14M

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Hall Ticket Number :										

R-17

Code: 7GC11

I B.Tech. I Semester Supplementary Examinations May 2018

Technical English & 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) How does E.F.Schumacher substantiate his view that technology causes more problems than it offers solutions?

   b) Fill in the blanks in the following sentences using the hints given in brackets.

   i. Though my handwriting is not beautiful, it is not ___. (a word with the prefix il-)

   ii. Just because I forgot to write one sub-heading, the teacher asked me to _____ the whole assignment. (a word with the prefix re-)

   iii. It was really a _____ that the child was not killed in a ghastly accident. (surprise / miracle)

   iv. _____ a minute. I am almost ready. (phrasal verb with hang)

   v. You will _____ a lot of fun in New York. (have / make)

OR

2. Explain in brief the major elements of human communication.

UNIT–II

3. a) What do human beings often tend to forget when engaging in large- scale developmental activities?

   b) Write a letter of application for your dream job in your dream company. Enclose your resume.

OR

4. What are the five Communication Flows in an organization? Explain them in brief.

UNIT–III

5. a) Which is the country that figure among the top countries in the world as well as Europe in using solar power and why?

   b) i. The conditions in Andhra Pradesh are _____ to establish new industries. (congenial / congenital)

   ii. He is a specialist in _____ Mathematics. (discreet/ discrete)

   iii. She lost the case in the court because her _____ misled her. (council/ counsel)

   iv. He was liked by all his friends for his _____ innocence. (childish / childlike)

   v. Of the few books you gave me, I liked the _____. (later/ latter)

OR

6. How does Body Language help during Presentation Skills?

UNIT–IV

7. a) How does water help in the formation of fertile land?

   b) Assuming that you are the Regional Representative of the Central Institute of Environmental Studies, New Delhi, write a formal report to the Director of the Institute on the problem of air pollution in an urban area of your region. Make specific recommendations to minimize air pollution.

OR

8. What are the different methods used to remove Barriers of Communication?

UNIT–V

9. Discuss the two ways in which one can work without expecting anything in return.

OR

10. Write in brief the different kinds of models of communication.

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