Hall Ticket Number :

Code: 4G311

R-14

B.Tech. I Year Supplementary Examinations May/June 2016
Electronic Devices & Circuits
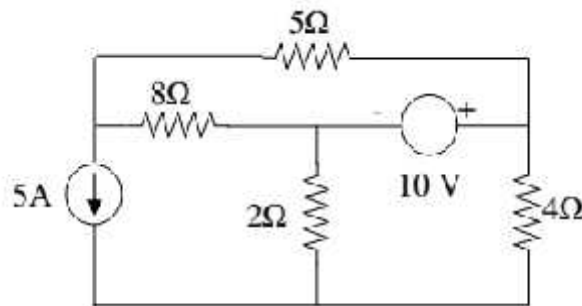(Common to EEE and ECE)

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) Explain the source transformation techniques with suitable circuits.   7M
   b) Find mesh currents and determine voltage across each element in the circuit shown in below Figure.

                                                                                  7M

OR

2. a) Explain and prove super position theorem.   7M
   b) In the circuit shown in below figure, find the current through R_L connected across A-B terminals by utilizing Thevenin's theorem.
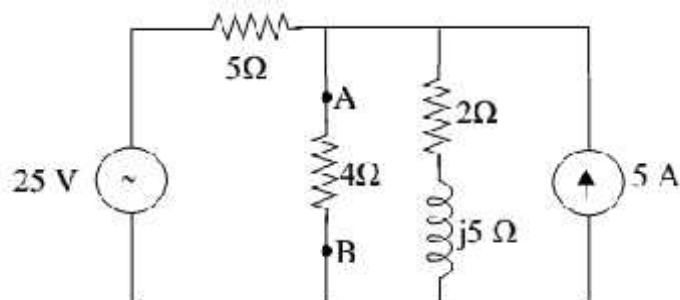
                                                                                  7M

UNIT–II

3. a) Explain the operation of Full Wave Rectifier with Induction filter with necessary diagrams.   7M
   b) A diode whose internal resistance is 20 is to supply power to a 100 load from 110V (R.M.S) source of supply. Calculate **i)** Peak Load Current **ii)** DC Load Current **iii)** AC Load Current **iv)** % Regulation from No load to given load   7M

OR

4. a) Explain break down mechanisms in semiconductor diodes.   7M
   b) Explain V-I characteristics of PN junction diode and compare with ideal diode. 7M

UNIT–III

5. a) Explain the operation of CB Configuration of BJT and its input and output Characteristics briefly.　7M

 b) A transistor with　=0.97 has a reverse saturation current of 1μA in CB configuration. Calculate the value of leakage current in the CE configuration. Also find the collector current and the emitter current if the value of base current is 20μA.　7M

OR

6. a) Explain emitter feedback bias .In a Silicon transistor circuit with a fixed bias, V_{CC}=9V, R_C=3K , R_B=8K , =50,V_{BE}=0.7V. Find the Stability factor.　7M

 b) Explain about Punch through and Base width modulation.　7M

UNIT–IV

7. a) Explain JFET transfer characteristics. What are the values of I_D and g_m for V_{GS} = -0.8V if I_{DSS} and V_P are given as 12.4mA and -6V respectively.　7M

 b) Explain Biasing in MOSFETS.　7M

OR

8. a) Explain construction and characteristics of MOSFET with neat diagram　7M

 b) Explain self-bias configuration of FET.　7M

UNIT–V

9. a) Explain the working principle of Varactor diode with its characteristics.　7M

 b) Explain the basic principle and operation of PIN diode and also its applications.　7M

OR

10 a) Explain the principle and characteristics of Schottkey Diode with neat diagrams.　7M

 b) Explain the basic principle and operation of SCR .　7M

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B.Tech. I Year Supplementary Examinations May/June 2016
Engineering Drawing
(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. The distance between two fixed points is 100mm. a point moves in a plane through these two points, such that the sum of its distances from these two fixed points is always 140mm. Trace the path of the point. Draw a tangent and a normal to the curve at a point on it at a distance of 45mm from one of the fixed points.

OR

2. Draw an epicycloid when the directing and generating circles are each 50mm dia. Draw a tangent and a normal to the curve at a point on it 60mm. from the centre of the directing circle.

UNIT–II

3. The front view of a 125mm long line PQ measures 75mm and its top view measures 110mm. The end P is at distances of 20mm each from the reference planes. Draw its projections and determine its inclinations with the reference planes.

OR

4. A line AB is inclined at 40^0 to H.P. A is 25mm above H.P. and 30mm in front of V.P. The top view of the line is 70mm long and is inclined at 30^0 to XY. Draw the projections and determine true length and also its inclination with V.P.

UNIT–III

5. Draw the projections of a regular hexagon of 30mm side, having one of its sides in the H.P. but inclined at 60^0 to V.P., and its surface making an angle of 45^0 with H.P.

OR

6. The top view of a plate, the surface of which is perpendicular to V.P. and inclined at 60^0 to H.P., is a circle of 60mm dia. Determine its true shape.

UNIT–IV

7. Draw the projections of a pentagonal prism, 30mm base edges & 65mm long axis, when it has a corner of its base in the V.P., axis inclined at 30^0 to V.P. and the front view of the longer edge passing through the corner in the V.P. making an angle of 45^0 with XY

OR

8. Draw the projections of a cube of 40mm long edges, resting on one of its corners in the H.P. and a solid diagonal perpendicular to V.P.

UNIT–V

9. Draw the isometric view of the frustum of the hexagonal pyramid, base 50mm long edges, top 25mm long edges & height 50mm.

OR

10. Draw the front view, side view and top view of the solid shown in figure.
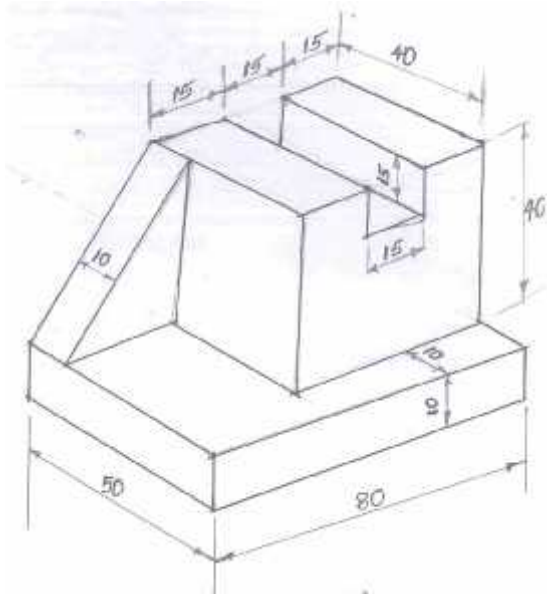

Figure (Not to scale)
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Code: 4GC14

R-14

B.Tech. I Year Supplementary Examinations May/June 2016
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) Find the orthogonal trajectories of the family of curves $r^n = a^n \cos n_{\,,}$ 7M

   b) Solve $\dfrac{d^2 y}{dx^2} + 4y = \tan 2x$ by the method of variation of parameters   7M

OR

2. a) If the temperature of a cup of coffee is 92°C when freshly poured in a room having temperature 24°C. In one minute it was cooled to 80°C. How long a period must elapse before the temperature of the cup becomes 65°C?   6M

   b) Solve $(D^3 + 1)y = e^{-x} + \cos(2x - 1)$ 8M

UNIT–II

3. a) Verify Rolle' theorem for $f(x) = e^{-x} \sin x$ in $[0, f\,]$.   8M

   b) If $u = x + y + z, uv = y + z, uvw = z$, then prove that $\dfrac{\partial(x, y, z)}{\partial(u, v, w)} = u^2 v$ 6M

OR

4. a) Verify the Meclaurin's theorem for $f(x) = (1 - x)^{\frac{5}{2}}$ with Lagrange's form of remainder up to 3 terms with x=1.   7M

   b) Discuss the maxima and minima of $f(x, y) = x^3 y^2 (1 - x - y)$.   7M

UNIT–III

5. a) Trace the curve $y^2(2a - x) = x^3$ 7M

   b) Evaluate $\iint r \sin_{\,,} \ dr d_{\,,}$ over the cardioids $r = a(1 - \cos_{\,,})$ above the initial line.   7M

OR

6. Change of order of integration and hence evaluate the double integral $\int_0^1 \int_{x^2}^{2-x} xy \ dx dy$ 14M

UNIT–IV

7. a) Evaluate $L\{te^{3t} \sin 2t\}$ 4M

   b) Find the Laplace transform of periodic function
   $f(t) = \begin{cases} 1, & 0 < t < a/2 \\ -1, & a/2 < t < a \end{cases}$ And $f(t + a) = f(t)$.   10M

OR

8. Solve $y^{11} + 2y^1 + 5y = e^{-t}$, $y(0) = 0$, $y^1(0) = 1$ using Laplace transform technique.   14M

UNIT–V

9. a) Find the directional derivative of $2xy + z^2$ at (1,-1,3) in the direction of $\bar{i} + 2\bar{j} + 3\bar{k}$.   7M

   b) Prove that $div\left(\dfrac{\bar{r}}{r}\right) = \dfrac{2}{r}$, where $\bar{r} = x\bar{i} + y\bar{j} + z\bar{k}$ and $r = |\bar{r}|$ 7M

OR

10. Verify Gauss divergence theorem for $\overline{F} = (x^3 - yz)\bar{i} - 2x^2 y\bar{j} + z\bar{k}$ taken over the surface of cube bounded by the planes x=y=z=a & x=y=z=0.   14M

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B.Tech. I Year Supplementary Examinations May/June 2016
Programming in C and Introduction to Datastructures
(Common to CE, EEE, ME 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) Differentiate high level language, assembly level language and machine level language   7M

    b) Define Flow chart. List some commonly used symbols and specify its purpose   7M

OR

2. a) Explain memory allocation for constant. How to assign range of values in 'C' Data types?   7M

    b) Define identifier. List the rules for identifier. Give valid and invalid examples   7M

UNIT–II

3. a) Define Array? Write the declaration of Multi Dimensional Array   7M

    b) Differentiate between while loop and do while loop   7M

OR

4. a) Give examples for postfix, prefix, unary and binary expressions.   7M

    b) Write a C program to check whether a given number is Armstrong number or not.   7M

UNIT–III

5. a) Write a C program to find GCD of two numbers using recursion   7M

    b) Describe the steps in writing a function in a C program?   7M

OR

6. a) Describe dynamic memory allocation functions   7M

    b) Define Function. Explain how to define User-Defined Functions.   7M

UNIT–IV

7. a) Write a program in C to copy the contents of one file to another file   7M

    b) Explain the functions supported to perform read operation on file   7M

OR

8. a) Write a program in C to merge two files into another file   7M

    b) Explain with an example how to pass structure variable as argument by value and by reference   7M

UNIT–V

9. a) Write the procedure for evaluation of postfix expression   7M

    b) Write a program in C to implement the insert and delete operation of queue using arrays/sequential representation   7M

OR

10. a) Discuss the procedure to convert infix expression to postfix expression   7M

     b) Write a program in C to implement the push and pop operation of Stack using arrays/sequential representation   7M

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