ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, December-2017
FUNDAMENTALS OF ELECTRICAL ENGINEERING
(Electrical and Electronics Engineering)

Time: 3 Hours   Max Marks: 70

PART-A

ANSWER ALL QUESTIONS   [10 x 1 = 10 M]

1. a) What is the value of internal resistance of an ideal voltage source?
   b) If the voltage-current characteristics are a straight line through the origin, then the element is said to be
   c) Define Form factor
   d) A 2mH inductance has a 1KHz Signal applied to it. What will be the X_L?
   e) What are the units for magneto motive force (MMF)?
   f) For a series connection of two coupled coils, the two fluxes of the coils being assisting/aiding each other, then total inductance will be given by
   g) A moving iron instrument can be used for measuring
   h) Define damping torque
   i) What is the main function of fuse wire?
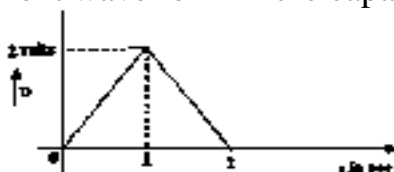   j) In ICDP switch, ICDP stands for

PART-B

Answer one question from each unit   **[5x12=60M]**

UNIT-I

2. a) Explain the independent and dependent sources   5M
   b) Write the volt-ampere relationship of R, L and C elements.   7M

(OR)

3. a) State and explain Kirchhoff's laws.   7M
   b) A capacitor of 1F is supplied with a voltage wave form shown in figure Obtain the current wave form in the capacitor.

                                                                        5M

UNIT-II

4. a) Define the RMS value and obtain an expression for the RMS value of sinusoidal current.   6M
   b) Determine the circuit current and p.f for the following network shown in figure.

                                                                        6M
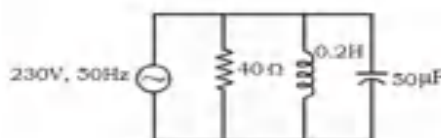
5. a) Show that power dissipated by a pure capacitor excited by a sinusoidal voltage source V =V_m Sinωt is zero.   5M

    b) A circuit consisting of three branches, Z_2 is in parallel with Z_3 the combination is in series with Z_1 having the values Z_1=10+j30 Ω, Z_2=5+j10 Ω and Z_3 = 4-j16 Ω connected across single phase, 100 V, 50 Hz supply. Find   7M
         i. Total impedance of the circuit.
         ii. Total current drawn by the circuit.
         iii. Power factor of the circuit.

UNIT-III

6. a) Compare magnetic circuit with electric circuit in any six aspects.   6M

    b) The air gap in magnetic circuits is 1.5 mm long and 2500 mm^2 in cross sectional area. Calculate   6M
    i. Reluctance of the air gap
    ii. M.M.F required to set up a flux of 800 ×10^{-6} wb in the air gap.

(OR)

7. a) Explain about Dot convention.   5M

    b) Two coils with self inductance L_1 and L_2 Henrys are connected in series aiding, and the net inductance is found to be 6 henrys and in series opposition (differential) the net inductance is found to be 2 henrys. If the coefficient of coupling between the two coils is 0.5, Calculate the self and mutual inductances.   7M

UNIT-IV

8. a) Write the Advantage and Disadvantages of Moving Iron Instruments.   6M

    b) Show the parts of Moving Iron attraction type instrument and explain its working with neat sketch.   6M

(OR)

9. a) Show the parts of Moving Iron Repulsion type instrument and explain its working with neat sketch.   6M

    b) Write the comparison between moving coil and moving iron instruments   6M

UNIT-V

10. Briefly explain about different accessories that are used in electrical wiring.   12M

(OR)

11. a) Draw wiring diagram to control Fluorescent lamp by a one-way switch.   6M

    b) Write a brief note on ICDP and ICTP switches.   6M

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ENGINEERING DRAWING
(Common to Civil, ME, CSE, IT)

Time: 3 Hours   **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS   **[1 x 10 = 10 M]**

1. a) What are the aligned system and unidirectional system of dimensioning?
   b) List out the main differences between first angle projection and third angle projection.
   c) Define eccentricity values for parabola, hyperbola and ellipse.
   d) What are the possible positions of a straight line with respect to the planes of projection?
   e) What is the importance of Engineering drawing in view of EEE and ECE
   f) How the Cylinder is formed?
   g) What are the dimensions of the solid that can be seen in the side view?
   h) What are the solids of revolution?
   i) How are the invisible features of an object represented in orthographic projection?
   j) What is an isometric scale

PART-B

Answer one question from each unit   **[5x12=60M]**

UNIT-I

2. Draw a Vernier scale of R. F. = 1/25 to read centimeters upto 4 metres and on it, show lengths representing 2.39 m and 0.91 m.   **12**

(OR)

3. A fixed point is 50 mm from a fixed straight line. Draw the locus of a point P moving such a way that its distance from the fixed straight line is a) 1.5 times its distance from the fixed point b) equal to the distance from the fixed points. Name the curves   **12**

UNIT-II

4. A line CD is inclined at 30^0 to the H.P. and it is in the first quadrant. The end C is 15 mm above the H.P. while the end D is in the V.P. The midpoint M of the line is 40mm above the H.P. The distance between the end projectors of the line is 70 mm.   **12**
   • Draw the projections of the line CD and the midpoint M.
   • Determine graphically the length of front view and top view and true length of the line.
   • Determine the inclination of the line with V.P.

(OR)

5. a) A point P is in the first quadrant. Its shortest distance from the intersecting point of H.P, V.P and Auxiliary vertical plane, perpendicular to H.P. and V.P. is 80 mm and it is equidistant from the principal planes. Draw the projections of the point and determine its distance from H.P. and V.P.   **6**

   b) The projectors of the ends of a line AB are 50 mm apart. The end A is 20 mm above the H.P. and 30 mm infront of V.P. The end B is 10 mm below the H.P. and 40 mm behind the V.P. Determine the true length and traces of AB.   **6**

6.   A rectangular plane surface of size L x W is positioned in the first quadrant and is inclined at an angle of 60° with the H.P. and 30° with the V.P. Draw its projections   **12**

(OR)

7.   A regular hexagonal plane of 45 mm side has a corner on H.P. and its surface is inclined at 45^0 to H.P. Draw the projections, when the diagonal through the corner which is on H.P. makes 30^0 with V.P.   **12**

UNIT-IV

8.   A regular pentagonal pyramid with the sides of its base 30 mm and height 80 mm rests on an edge of the base. The base is tilted until its apex is 50 mm above the level of the edge of the base on which it rests. Draw the projection of the pyramid when the edge on which it rests, is parallel to the V.P. and the apex of the pyramid points towards the V.P.   **12**

(OR)

9.   A hexagonal prism having the side of base of 26 mm and height of 60 mm is resting on one of the corner of the base and its axis is inclined to 30° to the H.P. Draw its projections and also prepare the isometric view in the above stated condition   **12**
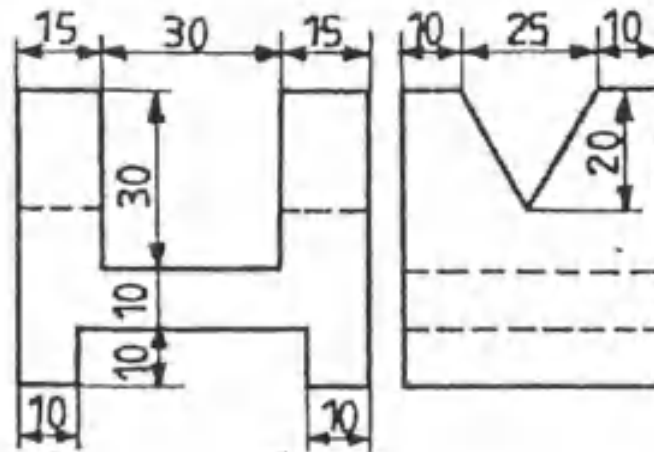
UNIT-V

10.   Draw the front view, top view and left hand side view of the block shown in figure shown below. (All dimensions are in mm)

          12
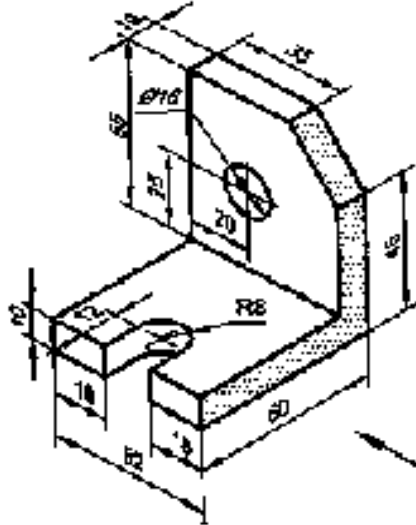
(OR)

11.   Draw the isometric projection of the block whose orthographic projections are shown in figure below. (All dimensions are in mm)

          12

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CODE: 13EC1001   **SET-1**

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(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, December-2017
ELECTRONIC DEVICES
(Electronics and Communication Engineering)

Time: 3 Hours   Max Marks: 70

PART-A

ANSWER ALL QUESTIONS   [1 x 10 = 10 M]

1. a) Give the relationship between field intensity and potential
    b) Mention the applications of electrostatic deflection.

    c) Define drift current.
    d) Define law of junction.
    e) Distinguish between avalanche break down and zener break down.

    f) What is meant by Step Graded Junction?
    g) Define punch through/Reach through.
    h) Why transistor is named as current controlled device?
    i) Define pinch-off voltage.
    j) Give the drain current equation of JFET.

PART-B

Answer one question from each unit   [5x12=60M]

UNIT-I

2.	a	Derive the expression for magnetic deflection sensitivity of CRT.
	b	Explain the working principle of CRT.

(OR)

3.	a	Discuss in detail about magnetic focusing.
	b	Explain the motion of electron in perpendicular electric and magnetic fields.

UNIT-II

4.	a	State and explain continuity equation
	b	Discuss in detail about generation and recombination of charges

(OR)

5.	a	Explain in detail about formation of N-type material.
	b	Derive the equation for Fermi level of an N-type material.

UNIT-III

6.	a	Explain the effect of temperature on the diode VI characteristics.
	b	With neat diagram, explain full wave rectifier. Draw the input and output waveforms

(OR)

7.	a	Explain the construction and working of LED
	b	Explain the operation of varactor diode with neat diagram

UNIT-IV

8.	a	Draw the input & output characteristics of a NPN transistors in CE configuration & explain
	b	For a silicon, $\alpha=0.995$ emitter current is 10mA & leakage current $I_{C0}=0.5\mu A$. Find I_C ,I_B ,β, and I_{CEO}

(OR)

9.	a	Explain how a transistor works as an amplifier.
	b	Draw and explain the current components of the transistor.

UNIT-V

10.	a	Explain the P- channel depletion MOSFET with its characteristics.
	b	Discuss in detail about the JFET parameters.

(OR)

11.	a	Draw the equivalent circuit and V-I Characteristics of UJT and explain it
	b	Discuss in detail about Dual Gate MOSFET.

The marks for all Part-B questions are 6M each.