# ALR13 / SET-02

Code: 13EE1001

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, Jan / Feb-2016
FUNDAMENTALS OF ELECTRICAL ENGINEERING
(Electrical and Electronics Engineering)

Time: 3 hours   **Max Marks: 70**

PART – A

Answer all questions   **[10X1=10M]**

1. a) Define KVL
   b) Define Passive element
   c) Define reactive power
   d) Define power factor
   e) Define susceptibility
   f) Define Magneto motive force (m.m.f)
   g) Define Deflecting torque
   h) Define Controlling torque
   i) Define ceiling rose
   j) Define socket

PART – B

Answer one question from each unit   **[5X12=60M]**

UNIT-I

2. a) Draw and explain the relevant characteristics of the ideal source and a practical source sources.   (6M)

   b) Find the resistance of the unknown resistor 'R' in the Fig.1 if the voltage drop across 500Ω resistor is 2.5V? All resistances are in ohms.
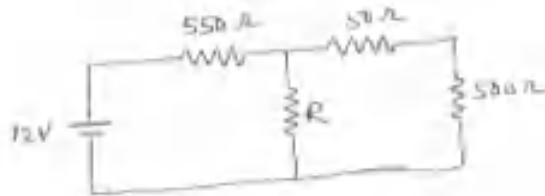
Fig. 1

OR

3. a) State and Explain the Volt-Ampere relation Ships for R, L and C Parameters.   [6M]

   b) Calculate the form factor and peak factor of a triangular wave in which the voltage rises uniformly from 0 to V volts in time T seconds and completes the cycle by falling instantly back to zero.   [6M]

UNIT-II

4. a) A sine wave of V (t) = 200 sin50t is applied to a 10 Ω resistor in series with a coil. The reading of a voltmeter across the resistor is 120 V and across the coil 75 V. Calculate the true power delivered.   [6M]

   b) A series RLC cicuit has a quality factor of 5 at 50 rad/sec. The current flowing through the circuit at resonance is 10 A and the supply voltage is 100 V. The total impedance of the circuit is 20 Ω. Find the circuit constants.   [6M]

OR

5. Explain the sinusoidal response of series RC circuit and derive necessary expressions [12M]

UNIT-III

6. a) What are the difference between electric circuits and magnetic circuits   [6M]
   b) Define i) Magnetic field intensity ii) Magnetic flux iii) Reluctance   [6M]

Fig.2

OR

7 a) Derive the expression for co-efficient of coupling for coupled circuit.   [6M]
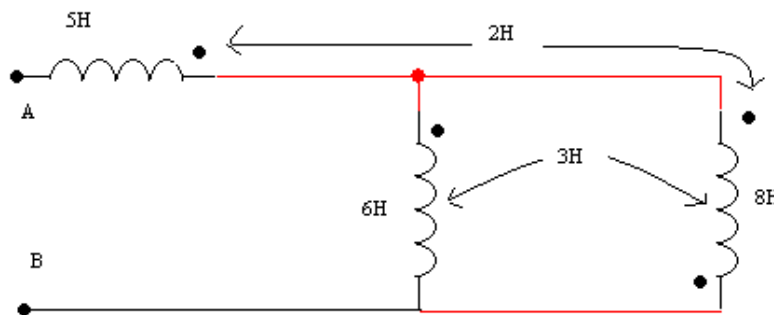   b) Calculate the effective inductance of the circuit shown inFig.3 across A and B.   [6M]

Fig.3

UNIT-IV

8. Describe the construction and working of a PMMC instrument. Derive the equation for deflection if the instrument is spring controlled?   [12M]

OR

9. With the help of neat diagram, explain the working of Moving Iron instrument? Derive the expression for deflecting torque of Moving iron instruments?   [12M]

UNIT-V

10. Explain about all Electrical Wiring accessories in detail.   [12M]

OR

11. Explain the estimation of cost selection of interior wiring system suitable to a given building.   [12M]

13ME1001

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, Jan / Feb-2016
ENGINEERING DRAWING
(Common to CE, ME, CSE & IT)

Time: 3 hours   **Max Marks: 70**

PART- A

Answer all questions   **[10 X 1=10M]**

1. (a) What is the proportion of arrow head?
    (b) For drawing of small instruments, watch parts, _____ scale is used.
    (c) Sketch symbols used to represent (i) first angle projection (ii) third angle projection.
    (d) When a point_____V.P, its top view is above XY.
    (e) When a plane is perpendicular to a reference plane, its projection on the plane is a
        _____.
    (f) Name the possible orientations of planes, with respect to the principal planes of
        projection
    (g) Define the term prism.
    (h) Define the term, polyhedron.
    (i) What is the difference between isometric projection and isometric drawing?
    (j) What are isometric and non isometric lines?

PART - B

Answer one question from each unit   **[5 x 12 =60M]**

UNIT - I

2. The distance between Ludhina and Chandigarh bus stands is 100 KM. a bus covers in 2
    hours running on an average speed. Construct a plain scale to measure time up to a single
    minute. The RF of the scale is 1/400000. Indicate the distance covered by the bus in 45
    minutes.

(OR)

3. The distance between directrix and focus is 65 mm. Draw the hyperbola if the
    eccentricity is 3/2. Draw a normal and a tangent at any point on the curve.

UNIT - II

4. A point P is 20mm below HP and line in third quadrant. Its shortest distance from xy is
    40mm. draw its projections.

(OR)

5. The front view of a line, inclined at 30^0 to the VP is 65 mm long. Draw the projections of
    the line , when it is parallel to and 40 mm above the HP., its one end being 30 mm in
    front of the VP

UNIT - III

6. Draw projections of a rhombus having diagonals 96 mm and 48 mm long. The smaller
    diagonal is parallel to both the reference planes, while the other diagonal is inclined at
    30^0 to the HP and has one of its end points in HP. Keep the centre of rhombus 56 mm in
    front of VP.

(OR)

7. Draw the projections of a regular hexagonal lamina of 25 mm side, having one of its sides in the HP and inclined at 60^0 to the VP and its surface making an angle of 45^0

UNIT - IV

8. Draw the projections of a cylinder 75 mm long diameter and 100 mm long, lying on the ground with its axis inclined at 30^0 to the VP and parallel to the ground.

(OR)

9. A hexagonal pyramid, base 25 mm side and axis 50 mm long, has an edge of its base on the ground. Its axis is inclined at 30^0 to the ground and parallel to the V.P. draw its projections.

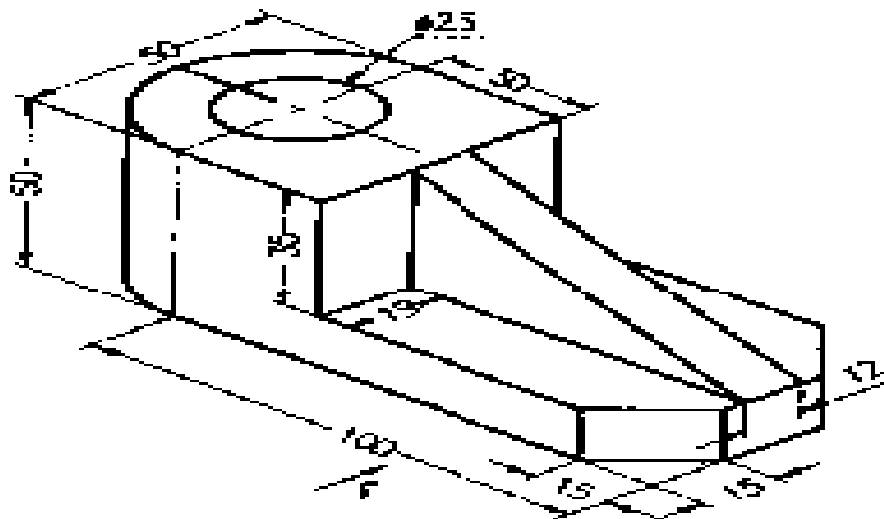## UNIT - V

10. Draw the isometric view of machine part shown in three views in figure.
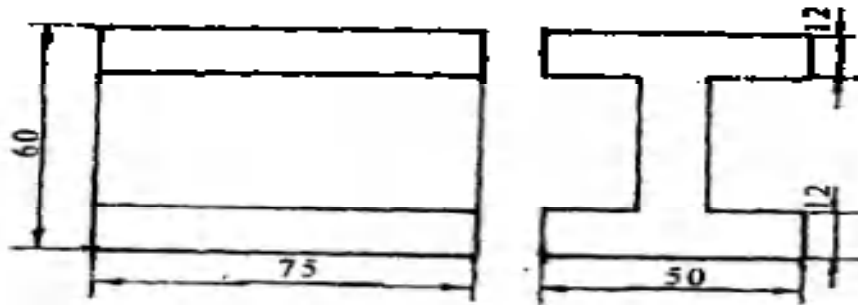
(OR)

11. An isometric view of a block is shown in figure. Draw the front view and top view according to first angle projection method.

AR13

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, Jan / Feb-2016
ELECTRONIC DEVICES
(Electronics and Communication Engineering)

Time: 3 hours   Max Marks: 70

PART – A

Answer all questions   **[10X1=10M]**

1   a)   Define Electric field Intensity?

    b)   Define Current density?

    c)   What is meant by extrinsic Semiconductor?

    d)   Why n-type semiconductors are mostly preferred over p:type Semiconductor

    e)   What is meant by mass action law?

    f)   What is meant by rectifier?

    g)   In a half wave rectifier, what is the relation between I_{rms} and I_{max}?

    h)   What is meant by faithful amplification?

    i)   What is meant by thermal instability?

    j)   What is meant by Channel in FET Circuit?

PART-B

Answer one question from each Unit   **[5 x 12=60 M]**

UNIT-I

2   a)   Derive the expression for electronic field intensity, acceleration and   [7M]
         displacement of changed Particle Placed in an electronic field E?

    b)   An electron starts at rest on one plate of a plane parallel capacitor, the plates are   [5M]
         5cm apart. The applied voltage is zero at the instant the electron is released and
         it increases linearly from 0 to 10V in 0.1m sec. if the opposite plate is positive,
         what is the speed that the electron obtain in *50n* sec?

(OR)

3   Define and derive the electrostatic deflection sensitivity of a CRO?   [12 M]

UNIT-II

4   a)   Clearly differentiate the insulator, semiconductor, metals by using   [8M]
         energy band diagrams?

    b)   A specimen of intrinsic germanium at 27°c having a concentration of   [4M]
         carriers of 2.5×10^{13}/cm^3 is doped with impurity atoms of **one** for every
         million germanium atoms. Assuming that all the impurity atoms are
         ionized and that the concentration of atoms **is** 4.4 x 10^{22} / cm^2, find the
         resistivity of doped material?

AR13

(OR)

5 a) Derive expressions for hole density in n –type semiconductor and electron density in p-type semiconductor?   [6M]

   b) In an n-type silicon the donor concentration is 1 atom per 2×10^8 silicon atoms. Assuming that the effective mass of the electron is equals true mass. Find the value of temperature at which, the Fermi level will coincide with the edge of the conduction band? Concentration of silicon is 5×10^{22} atoms/ cm^3 [6M]

UNIT-III

6 a) With neat sketch clearly explain the current components in a p –p junction diode? From this, derive the total current $I = I_o [e^{v/\eta Vt} -1]$ [6M]

   b) i) for what voltage will the reverse current in p-n junction diode reaches 90% of its saturation value at room Temperature?   [3M]

       ii) if the reverse saturation current is 10mA calculate the forward currents for a voltage of 0.2 and 0.3V respectively.   [3M]

(OR)

7 a) What is meant by Tunnel diode?   [3M]

   b) Explain the VI characteristics of a Tunnel Diode with neat sketch and draw the equivalent circuit model, symbol of tunnel diode?   [6M]

   c) The transition capacitance of an abrupt junction diode is 20pf at 5v. Compute the value of decrease in capacitance for a 1.0 volt increase in the bias? [3M]

UNIT-IV

8 a) What is meant by early effect   [3M]

   b) Explain input and output characteristics of PNP transistor with neat sketches for CE Configuration?   [9M]

(OR)

9   a) Write short notes on photo transistor   [6M]

       b) Explain about transistor current components   [6M]

UNIT-V

10 a) Advantages of FET over BJT circuits?   [5M]

    b) With neat sketches explain the Drain characteristics of JFET circuits [7M]

(OR)

11 Explain in detail about enhancement and depletion mode MOSFET with their characteristics   [12M]