AR13 SET 01

Code: 13ME1001

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B. Tech I Semester Supplementary Examinations, April-2014
ENGINEERING DRAWING
(Common to Civil, ME, CSE, IT)

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

PART-A

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

1. a) What is the length of scale with RF= 1/40 to measure up to 6m?
   b) Name the curve when a right circular cone is cut by a plane parallel to its generator.
   c) Second angle projection is not used because _____.
   d) Specify the quadrant in which the point is lying if its FV is 50 mm above the reference line and the top view is 20 mm below the FV.
   e) What are the possible positions of a straight line with respect to the planes of projection?
   f) What would be the side view of a circular plane if it is inclined at 30^0 with the HP and 60^0 with the VP?
   g) What would be the shape of the top view, if a cube rests on HP with a solid diagonal perpendicular to it?
   h) What are the solids of revolution?
   i) Pictorial views drawn on isometric scale are called _____
   j) How are the invisible features of an object represented in orthographic projection?

PART- B

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

Unit - I

2. The distance between Delhi and Agra is 200Km.In a railway map it is represented by a line 5 cm long. Find its RF. Draw a diagonal scale to show single Km and maximum 600 Km.Indicate on it a distance of 569.

(OR)

3. Draw an ellipse by concentric circles method by taking major axis as 100 mm and minor axis as 70 mm.

Unit - II

4. a) A Point P is 35 mm from H.P and V.P. draw the projections of the point when it is in the first, second, third, and fourth quadrants.
   b) A Point P is 15 mm above the H.P. and 20 mm in front of the V.P. Another point Q is 25 mm behind the V.P. and 40 mm below the H.P. Draw projections of P and Q keeping the distance between their projectors equal to 90 mm. draw straight lines joining (i) their top views and (ii) their front views.

(OR)

5. a) A 90 mm long line is parallel to and 25 mm in front of the V.P. Its one end is in the H.P. While the other is 50 mm above the H.P. Draw its projections and find its inclination with the H.P.
   b) The top view of a 75 mm long line measures 55 mm. the line is in the V. P., its one end being 25 mm above the H.P. Draw its projections.

Unit - III

6. Draw the projections of a pentagonal sheet of 26 mm side, having its surface inclined at 30^0 to VP. It's one side is parallel to VP and inclined at 45^0 to HP.

(OR)

7. Draw the projections of a rhombus having diagonals 65 mm and 30 mm long. The smaller diagonal is parallel to both HP and VP while the other is at an angle of 30^0 to HP.

Unit - IV

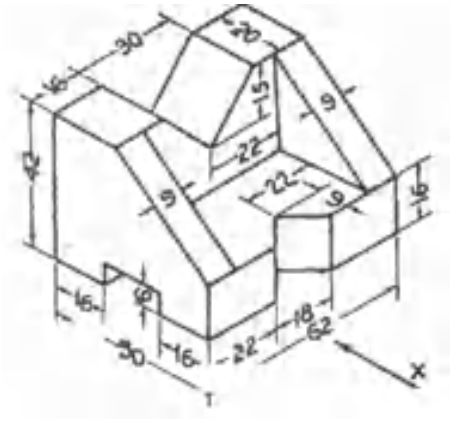
8. Draw the projections of a cube 40mm side when it rests on the ground on one of its corners and a face containing that corner is inclined at 30^0 to ground and perpendicular to VP.

(OR)

9. A pentagonal pyramid side of base 20 mm and axis 45 mm long rests with one of its corners on HP such that the base is inclined at an angle of 60^0 to HP and one side of base is perpendicular to VP. Draw its projections.

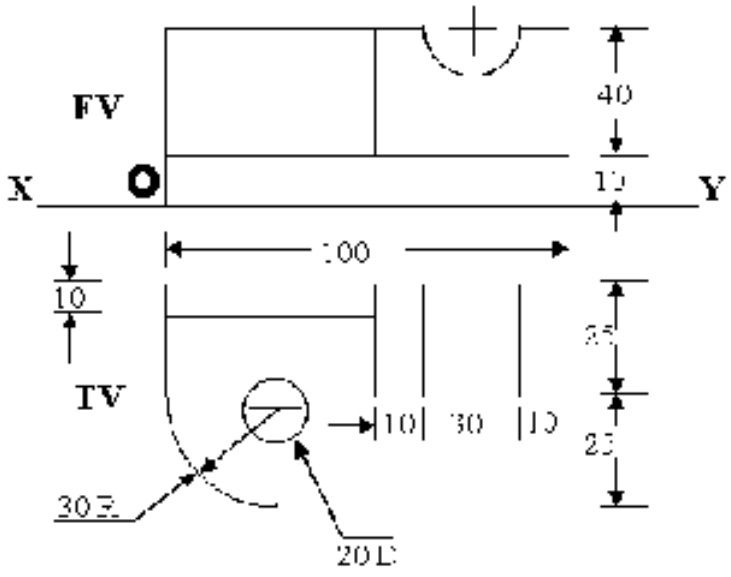
Unit - V

10. Draw the front view, top view and left hand side view of the block shown in figure shown below.



(OR)

11. Draw the isometric projection of the block whose orthographic projections are shown in figure below.



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AR13 SET-02

Code: 13EC1001

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April 2014
ELECTRONIC DEVICES
(Electronics and Communication Engineering)

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

PART – A

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

1. a) Define deflection sensitivity in CRT.
   b) Write the relation between E and V in an electric field.
   c) Define mobility and conductivity.
   d) What is Hall Effect?
   e) How the temperature affects the V-I Characteristics of junction diode.
   f) List the applications of PIN diode.
   g) Sketch the V-I characteristics of Tunnel diode.
   h) Define pinch off voltage in FET.
   i) List the applications of UJT.
   j) Compare JFET and MOSFET.

PART-B

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

Unit-I

2. a) Explain the construction details and function of CRT with a neat sketch. [6M]
   b) Describe in detail about various Focusing schemes employed in CRT. [6M]

(OR)

3. a) An electron enters into the magnetic field with an angle of 45^0 whose magnetic flux density is 200 Weber/m^2. If the velocity of charged particle is $1.5x10^6$ m/sec, then determine
      i) time taken by the electron to complete one cycle
      ii) radius of circular path
      iii) distance travelled by the electron along the direction of field [6M]
   b) Determine the final velocity (v_b) and time of flight (t_p) taken by a negative charged particle when travels through an parallel electric field with an initial velocity (v_a). [6M]

Unit-II

4. a) Derive the expression ofContinuity equation. [6M]
   b) Derive the expression of conductivity for intrinsic and extrinsic semiconductor. [6M]

(OR)

5. a) Determine the electron concentration in an intrinsic semiconductor. [6M]
   b) Discuss various applications of Hall Effect. [6M]

Unit-III

6. a) Write short Notes on the followings
      i) LED
      ii) Photo diode
      iii) PIN diode [6M]

   b) Explain the principle of Full wave rectifier with LC section filter and derive its Ripple Factor. [6M]

(OR)

7. a) Derive the expression of Diode current (I_D) equation. [8M]
   b) Discuss the distribution of Electric field strength (E) Charge density (ρ) and potential (V) in an open circuit PN junction diode. [4M]

Unit-IV

8. a) Explain how a transistor can be used as an amplifier. [6M]
   b) Compare CE, CB and CC transistor. [6M]

(OR)

9. a) With a neat sketch, Discuss various current components in a Bipolar Junction transistor. [6M]
   b) Explain the input and output characteristics of transistor in Common Emitter configuration. [6M]

Unit-V

10. a) Explain the drain and transfer characteristics of N channel JFET. [6M]
    b) Derive the relation between μ, g_m and r_d in Field effect transistor. [6M]

(OR)

11. a) Explain the V-I characteristics of UJT with a neat sketch. [6M]
    b) Write short Notes on

       i) V-grove MOSFET
       ii) Dual Gate MOSFET [6M]

AR13 SET-01

Code: 13EE1001

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech. I Semester Supplementary Examinations, April-2014
FUNDAMENTALS OF ELECTRICAL ENGINEERING
(Electrical and Electronics Engineering)

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

PART – A

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

1. a) State ohm's law
   b) Write the expressions for energy stored in Inductor and capacitor
   c) What is the power factor of a circuit, if its active power is twice its reactive power?
   d) Draw the phasor diagram for an series RL circuit
   e) Define coefficient of coupling (k)
   f) Write any two differences between electrical and magnetic circuit
   g) What is the main difference between the moving iron (M.I) and moving coil(M.C) instruments
   h) Define Controlling torque
   i) What is the use of ceiling roses
   j) Define fuse

PART – B

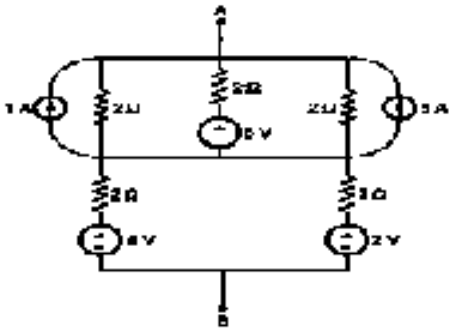
Answer one question from each unit **[5X12=60M]**

UNIT-I

2. a) State and explain kirchoff's laws [6M]
   b) Explain the source transformation used in electrical network [6M]

OR

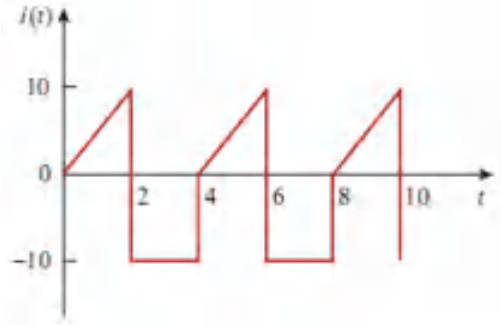
3. a) Explain the Voltage-Current characteristics of ideal, practical voltage source and current source [6M]
   b) Reduce the network into an equivalent network across terminals A and B with one equivalent voltage source [6M]



UNIT-II

4.a) Define the following terms related to an alternating quantity [6M]
i) Instantaneous value
ii) Time period
iii) RMS value

b) Determine the average value and rms value of the current waveform.If the current is passed through a 2Ω resistor, Find the average power absorbed by the resistor [6M]



OR

5. a) Explain the sinusoidal response of series RC circuit [6M]

b) A sine wave of V(t) =200 sin 50t is applied to a 10Ω resistor in series with a coil. The reading of a voltmeter across the resistor is 120V and across the coil ,75V.Calculate the power and reactive volt-amperes in the coil and the power factor of the circuit [6M]

UNIT-III

6 a) What is the purpose of dot convention and how do you establish dots? [6M]

b) Two magnetically coupled coils are connected in series and their total effective inductance is found to be 3.5mH. When one coil is reversed in convention ,the effective combined inductance drops to 1.5 mH. Find self inductances, mutual inductance between the coils if the coefficient of coupling is 0.55 [6M]

OR

7 a) Find the relation between self inductance, mutual inductance and coefficient of coupling. [6M]

b) Define the following terms
i) Flux density ii) Reluctance iii) magnetic permeability [6M]

UNIT-IV

8. a) With a neat sketch explain the working of PMMC instrument [6M]

b) A PMMC instrument has a coil of dimensions 10mm × 8 mm .The flux density in the air gap is 0.15 Wb/m^2.If the coil is wound for 100 turns, carrying a current of 5mA then calculate the deflecting torque and the deflection if the spring constant is 0.2×10^{-6} Nm/degree. [6M]

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.a) Explain about different components used in electrical wiring system [6M]

b) What are the factors affecting the wiring system [6M]

OR

11. Explain the procedure to estimate the cost selection of interior wiring system [12M]