

Code: 13ME1001**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****I B. Tech I Semester Regular Examinations, February-2015****ENGINEERING DRAWING****(Civil Branch)****Time: 3 hours****Max Marks: 70****PART-A****Answer all questions****[10X1=10M]**

1. a) What is the scale factor of a scale on which 6 represents 1 furlong?
b) Define conics.
c) Draw the projections of a cone of base 25 mm diameter and axis 50 mm long, when it is resting on H.P. on its base.
d) When a cone is cut by a plane, parallel to the axis and passing through the apex, the true shape of the section produced is a _____.
e) What is an isometric scale?
f) Differentiate between right regular and oblique solids.
g) A lamina is seen in its true shape in the side view. How it looks like in the front and top views?
h) Invisible features are represented with _____.
i) A point P is 30 mm from H.P. Its shortest distance from the ground line XY is 50 mm. Find its distance from V.P.
j) When the projections of a line lie along the same projectors?

PART- B**Answer one question from each unit****[5X12=60M]****Unit - I**

2. Construct a vernier scale to show readings of $1/10^{\text{th}}$ of a meter when 3 cm represents 10 m. Construct the scale to read up to 60 m and mark distances of 35.3 m and 47.3 m on your scale.

(OR)

3. The major axis of an ellipse is 150 mm long and the minor axis is 100 mm long. Find the foci and draw the ellipse by 'arcs of circles' method. Draw a tangent to the ellipse at a point 30 mm above the major axis.

Unit - II

4. A line PQ 40 mm long is parallel to V.P. and inclined at an angle of 30° to H.P. The end P is 15 mm above H.P and 20 mm in front of V.P. Draw the projections of the line.

(OR)

5. A line AB is 60 mm long and inclined at 30° to V.P. and parallel to H.P. The end A of the line is 15 mm above H.P. and 20 mm in front of V.P. Draw its projections.

Unit - III

6. A regular hexagonal plate of 45 mm side has a corner on H.P. and its surface is inclined at 45° to H.P. Draw the projections, when the diagonal through the corner which is on H.P. makes 30° with V.P.

(OR)

7. A square plate ABCD has a circular hole centrally punched. The sides of the square are 60 mm and the diameter of the hole is 40 mm. The lamina is resting on the H.P. on its corner A. The surface of the lamina makes an angle of 30° with H.P. and the diagonal AC is inclined to the V.P. at 45° . Draw the projections of the plate with the hole.

Unit - IV

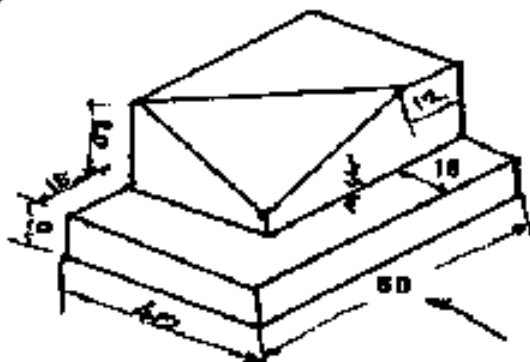
8. A tetrahedron of 40 mm side rests with one of its edges on H.P. and inclined at 45° to V.P. The triangular face containing that edge is inclined at 30° to H.P. Draw the top and front views of the solid.

(OR)

9. A hexagonal pyramid, base 25 mm side and axis 50 mm long has one of its slant edges on H.P. A plane containing that edge and the axis is perpendicular to the H.P. and inclined at 45° to V.P. Draw its projections when the apex is nearer to V.P. than the base.

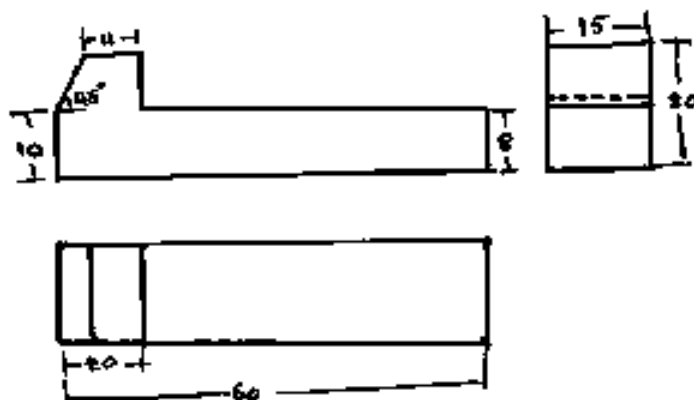
Unit - V

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



(OR)

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



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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I B.Tech. I Semester Regular Examinations, February-2015
FUNDAMENTALS OF ELECTRICAL ENGINEERING
(Electrical and Electronics Engineering)

Time: 3 hours

Max Marks: 70

PART – A

Answer all questions

[10X1=10M]

1. a) What are active and passive elements?
- b) What is the equivalent capacitance when two capacitors are connected in series?
- c) Define KCL and KVL.
- d) Draw the V-I Characteristics of a resistor.
- e) what is reluctance?
- f) Any two differences between MC and MI instruments.
- g) What is PMMC Instrument?
- h) write the formula for co-efficient of coupling?
- i) what is a peak factor and form factor?
- j) what do you understand by permeability and susceptibility?

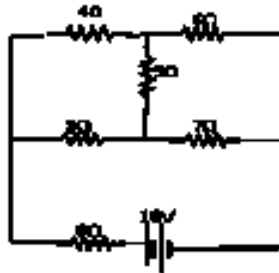
Part – B

Answer one question from each unit

[5×12=60M]

Unit - I

2. a) Calculate the current in 5 Ω resistor shown in below figure (6M+6M)

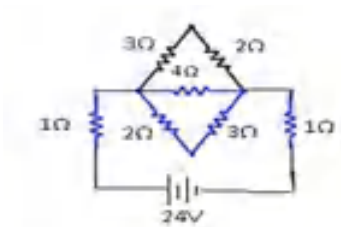


- b) Two resistors 4 Ω and 6 Ω are connected in parallel. If the total current is 30A, find the current through each resistor.

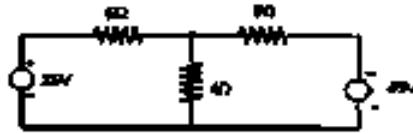
OR

3. a) Find the current I supplied by voltage source in the network shown below.

(6M+6M)



- b) Using Kirchhoff's laws, find the current in various resistors in the circuit shown in below figure



Unit – II

4. Find the average value, rms value, form factor and peak factor for the given

$$V(t) = V_0 \text{ for } 0 < t < T_1 \\ = -V_0 \text{ for } T_1 < t < 3T_1$$

12M

OR

5. An inductive coil of resistance 10Ω , inductance of 0.02H is connected in series with another coil of resistance 6Ω and inductance 15mH across 230V , 50Hz supply. Calculate Impedance, total current and voltage drop across each element. 12M

Unit – III

6. A coil of 300 turns is wound uniformly on a ring of non-magnetic material. The ring has a mean circumference of 40 cm and a uniform cross sectional area of 4 cm^2 . If the current in the coil is 5 A , calculate (a) the magnetic field strength, (b) the flux density and (c) the total magnetic flux in the ring. 12M

OR

7. a) A mild steel ring has a radius of 50 mm and a cross-sectional area of 400 mm^2 . A current of 0.5 A flows in a coil wound uniformly around the ring and the flux produced is 0.1 mWb . If the relative permeability at this value of current is 200 find the reluctance of the mild steel. 4M
b) Define i) MMF ii) magnetic flux iii) magnetic field intensity iv) flux density 8M

Unit-IV

8. a) Explain the principle of operation of Indicating Instrument. 6M
b) The coil of PMMC Instrument has 20 turns on a rectangular former of $3.5\text{cm} \times 1.5\text{cm}$ and swings in a uniform field of 0.18 wb/m^2 . If a steady current of 50 mA is flowing through coil. Calculate deflecting torque. 6M

OR

9. Illustrate the principle of operation of PMMC Instrument. 12M

Unit - V

10. Explain estimation of cost selection of interior wiring system suitable to a given building. 12M

OR

11. Explain different electrical wiring accessories used in living room wiring 12M

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**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****1 B. Tech 1 Semester Regular Examinations, February 2015****ELECTRONIC DEVICES****(ELECTRONICS AND COMMUNICATION ENGINEERING)****Time: 3 hours****Max Marks: 70****PART – A****Answer all questions****[10x1=10M]**

1. a) Give the applications of CRO.
b) What is the necessity of magnetic focusing?
c) Draw energy level diagrams of metal, semiconductor and insulator.
d) Explain diffusion and drift current in semiconductor.
e) What is the effect of non uniform doping on PN-junction?
f) Give the applications of Zener diode.
g) Give the transistor specifications.
h) Which region of the transistor is lightly doped?
i) Why FET is unipolar?
j) Define η in UJT.

PART – B**Answer one question from each unit****[5X12=60M]****Unit - I**

2. a) Derive the expressions for acceleration, velocity and displacement of an electron placed in an electric field.
b) Two plane parallel plates A and B are placed 8mm apart and plate B is 300V more positive than plate A. The electron travels from A to B with an initial velocity of 1×10^6 m/sec. Calculate the time of travel.
[7+5M]

(OR)

3. Derive the path of an electron in an electric and magnetic field. [12M]

Unit - II

4. a) Explain the variation of semiconductor parameters with temperature.
b) Explain Hall-effect in semiconductors. [6+6M]

(OR)

5. a) Write about diffusion and carrier life time. [6+6M]
b) Explain Fermi-Dirac function and Fermi level in intrinsic and extrinsic semiconductors.

Unit – III

6. a) Explain how the junction is formed and its space charge region. [5+7M]
b) Obtain the total diode current equation in PN-Diode when it is forward biased and reverse biased.

(OR)

7. a) Draw and explain half wave rectifier and obtain the values of ripple factor and efficiency.
b) An ac supply of 230v is applied to a half wave rectifier through transformer of turns- ratio 20:1. Assume the diode is ideal. The load resistance is 200 Ohms. Find dc output voltage. PIV, maximum and average values of power delivered to load. [6+6M]

Unit – IV

8. a) Explain PNP transistor current components and obtain the equation for large signal current gain .
b) Explain the procedure for trouble shoot the NPN Transistor. [8+4M]

(OR)

9. Draw and explain input and output characteristics of a PNP transistor in CE configuration. [12M]

Unit – V

10. a) Explain the operation of n-channel JFET and its drain characteristics. [8+4M]
b) Compare JFET and BJT.

(OR)

11. a) Explain the construction, equivalent circuit and its characteristics of UJT.
b) Give the applications of UJT. [10+2M]