

R16

Code No: 132AE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech I Year II Semester Examinations, April - 2018

ENGINEERING GRAPHICS

(Common to EEE, ECE, EIE)

Time: 3 hours

Max. Marks: 75

Answer all five questions

All questions carry equal marks

1. The foci of an ellipse are 120 mm apart and the minor axis is 80 mm long. Determine the length of the minor axis and draw by Oblong method. Draw a curve parallel to the ellipse and 25mm away from it. [15]

OR

2. Construct a diagonal scale to read kilometers, hectometers and decameters and long enough to measure up to 6 kilometers. When a line of length 1 cm on the map represents a distance of 0.5 kilometers. Calculate the R.F and indicate a distance of 2.45 kilometers on the scale. [15]

3. A line LM 70 mm long has its end 'L' 10 mm above H.P and 15 mm in front of V.P. Its top view and front view measures 60 mm and 40 mm respectively. Draw the projections of the line and determine its inclination with H.P and V.P. [15]

OR

4. Draw the projections of a circle of 50 mm diameter resting in the H.P. on a point A on the circumference, its plane inclined at 45 degrees to the H.P and the diameter AS making 30 degrees angle with the V.P. [15]

5. A pentagonal pyramid, base 25 mm side and axis 50 mm long has one of triangular faces in the V.P. and the edge of the base contained by that face makes an angle of 30 degrees with the H.P. Draw its projections. [15]

OR

6. Draw the projections of a cylinder, base 45 mm diameter and axis 50 mm long, when it is resting on the ground on a point on its base circle with the axis making an angle of 30 degrees with H.P. and 45 degrees with the V.P. [15]

7. A cone, diameter of the base 50 mm and axis 50 mm long is resting on its base on the H.P. It is cut by a section plane perpendicular to the H.P. and passing through the apex. Draw its front view, sectional top view and true shape of the section. [15]

OR

8. A hexagonal prism of base 30 mm side is 65 mm stands on one of its rectangular faces parallel to V. P. A circular base of diameter 40 mm is drilled completely through the prism such that the axis of the hole is perpendicular to VP and bisects the axis of the prism. Draw the development of the lateral surface of the prism showing the shape of the holes formed on it. [15]

9. Draw the Isometric view of the machine parts shown below figure 1. All dimensions are in mm. [15]

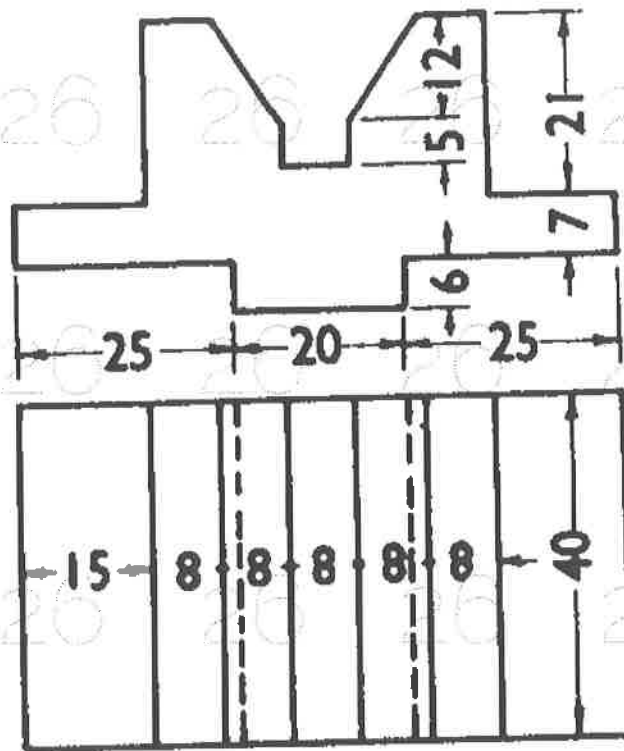


Figure: 1
OR

10. Draw the following orthographic projections of the machine part shown below figure 2.
a) Front view b) Top view c) Side view. All dimensions are in mm. [15]

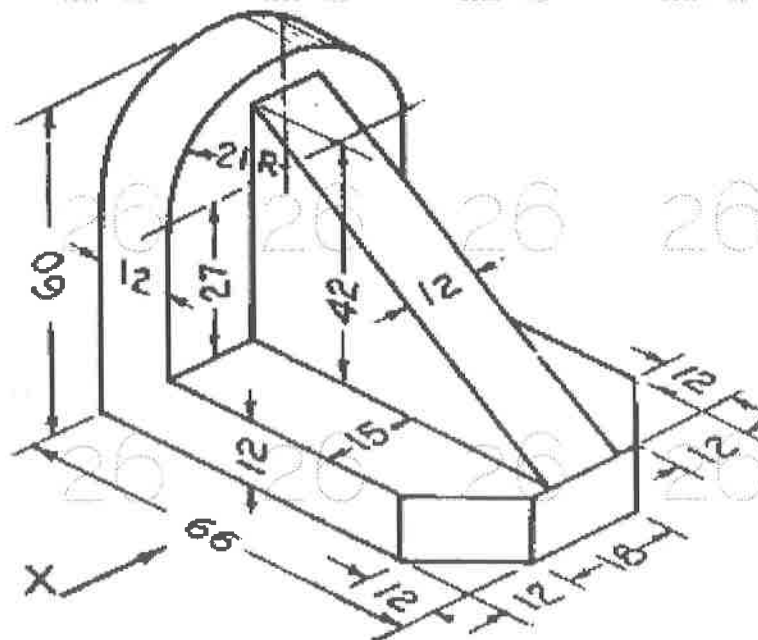


Figure: 2

R16

Code No: 132AJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech I Year II Semester Examinations, April - 2018

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to CE, ME, MCT, MMT, AE, MIE, PTM, CEE, MSNT)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

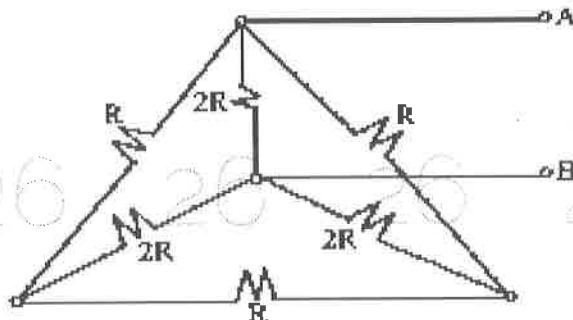
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) Distinguish between ideal and practical voltage source? [2]
- b) State Ohm's law and give an example. [3]
- c) What is resonance in electric circuits? [2]
- d) State the Maximum Power Transfer theorem. [3]
- e) Draw the equivalent circuit of an ideal diode and that of a piecewise linear model of it. [2]
- f) Show the current paths in a full wave bridge rectifier for a sinusoidal input during positive and negative half cycles. [3]
- g) Define operating point of a BJT. List the parameters against the variations of which the operating point needs to be stabilized. [2]
- h) Define h_{fe} and h_{oe} of a BJT in CE configuration. Mention their units. [3]
- i) What is pinch-off voltage for a JFET? [2]
- j) Draw the symbols of p-channel JFET, NPN-BJT, tunnel diode and varactor diode. [3]

PART-B**(50 Marks)**

- 2.a) Making use of star/delta transformation, determine the resistance between terminals A and B as shown in figure 1.

**Figure: 1**

- b) Derive the expression for the RMS, average values, peak factor and form factor of sinusoidal signal. [5+5]

OR

- 3.a) An inductance of 0.5H , a resistance of 5 ohms , and a capacitance of $8\text{ }\mu\text{F}$ are in series across a 220V , 50Hz AC supply. Find the voltage across each element and total current supplied by the supply and draw the phasor diagram for the circuit.
- b) In the following circuit shown in figure 2, the effective voltage between points A and B is 25 volts . Find the corresponding effective values of V and I_T . [5+5]

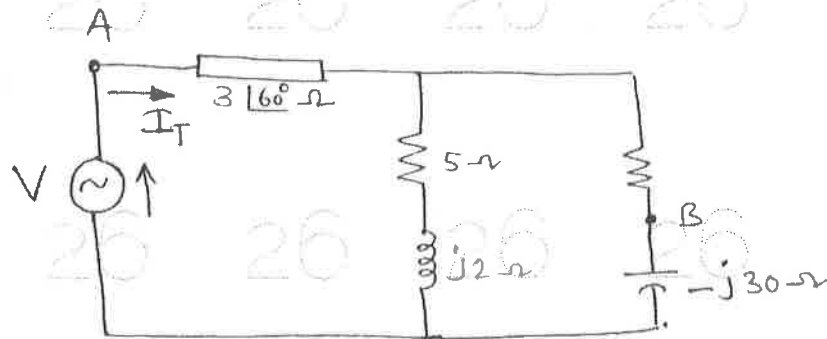


Figure: 2

- 4.a) Explain the procedure to draw the locus diagram of R-L series circuit, when L is varying.
- b) Apply super position theorem to the network shown in figure 3 and obtain current $(3+j4)\Omega$ impedance. [5+5]

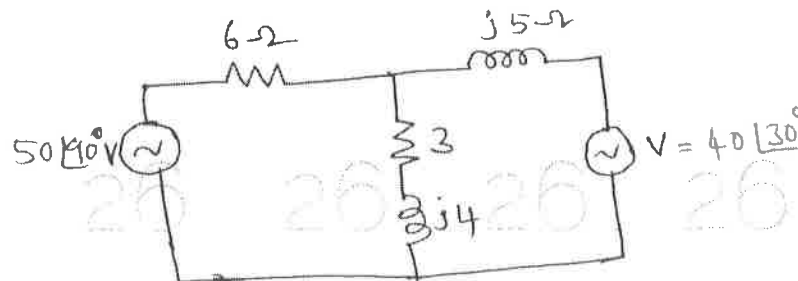


Figure: 3
OR

- 5.a) Derive the expression for resonant frequency, half power frequencies of series RLC circuit.
- b) Find the resonant frequency of the following circuit shown in figure 4. [5+5]

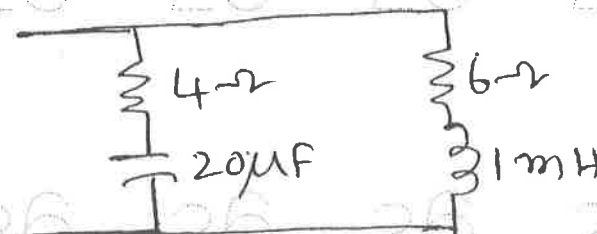


Figure: 4

- 6.a) Differentiate between:
- Static and dynamic resistances of a diode.
 - Transition and diffusion capacitances of a diode.
- b) Define Rectification efficiency of rectifier. Derive expression to show that it is 81% for a Full wave rectifier. [5+5]

OR

- 7.a) Explain how current flows in a diode under forward biased and reverse biased conditions.
 b) Compare the performance of:
 i) Centre tapped transformer type and bridge type full wave rectifiers.
 ii) Capacitor and π -section filters. [5+5]

- 8.a) Derive an expression for the stability factor S of a BJT with voltage divider bias.
 b) Draw the h-parameter equivalent circuit of a BJT in CE configuration. [5+5]

OR

- 9.a) For the voltage divider biased BJT shown below in figure 5, determine the operating point. Assume β to be 50 for the transistor.

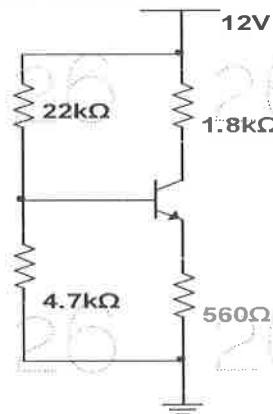


Figure: 5

- b) Compare the characteristics of CE, CB and CC configurations of a BJT. [5+5]
- 10.a) Compare BJT and JFET in all aspects.
 b) With the help of relevant energy band diagram explain tunnelling phenomenon in a Tunnel diode. [5+5]

OR

- 11.a) Draw the characteristics of an n-channel JFET in Common source configuration. Show pinch-off region on the curves.
 b) How and under what conditions Zener breakdown take place in a diode? Draw the V-I characteristics of Zener diode and show the breakdown region. [5+5]

---ooOoo---