R16

I B.TECH II SEM

SUPPLEMENTARY EXAMINATIONS

MARCH 2025

Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

NEC

Subject Code: R16CC1203

I B.Tech II Semester Supple Examinations, March-2025
ENGINEERING PHYSICS
(Common to CE, EEE & ME)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

· Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Differentiate diffraction and interference.
   (b) Describe any tow important characteristics of laser radiation.
   (c) What are the types of non-primitive cells?
   (d) Explain the principle of magnetostriction effect.
   (e) Mention the drawbacks of classical free electron theory of metals.
   (f) Differentiate intrinsic and extrinsic semiconductors.

   [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Differentiate Fraunhofer and Fresnel diffraction.
   (b) Discuss the construction and working of Newton's ring experiment and determine the radius of curvature using this experiment.

3. (a) What is an acceptance of angle? Derive an expression for numerical aperture of an optical fiber.
   (b) Discuss the construction and working of ruby laser and mention the drawbacks.

4. (a) Define atomic packing fraction in crystal systems. Derive the atomic packing fraction for SC, BCC and FCC systems and prove that FCC system is densely packed than BCC system.
   (b) Derive the Bragg's condition of X-ray diffraction. Mention its importance.

5. (a) Discuss the properties of ultrasonic waves. Explain the construction and working of piezoelectric oscillator. Mention its advantages and drawbacks.
   (b) What is reverberation time? Discuss the importance of Sabine's formula.

6. (a) Derive the expression for electrical conductivity of metals.
   (b) Derive the expression for Schrodinger time independent wave equation for a free particle.

7. (a) Discuss the movement of electrons in one-dimensional lattice using Kronig-Penny model. How it helps to classify the solids based on band theory.
   (b) State ad explain Hall effect. Derive the relation between Hall coefficient and Hall vaoltage.

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Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC1207

I B.Tech II Semester Supple Examinations, March-2025

ENGINEERING DRAWING

(Common to CE & ME)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is lettering?

(b) Name the principal planes of projections

(c) A line EF is inclined to HP and parallel to VP. What can be said about its projections?

(d) A regular pentagonal plane of 25mm side has one side on the ground and perpendicular to the VP draws its simple projections.

(e) What is a sectional view? Why sectional views are used in drawing?

(f) What is an orthographic projection?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. Construct a hyperbola, with the distance between the focus and directrix as 50 mm and eccentricity as 3/2. Draw a normal and tangent to the curve at a point 40 mm from the directrix.

3. Draw the projections of the following.
   i)   Point D 20 mm above HP and 10 mm in front of VP.
   ii) Point K 15 mm below HP and 12 mm behind VP.
   iii) Point S 25 mm above HP and 25 mm behind VP.
   iv) Point L 10 mm in front of VP and 20 mm below HP.

4. A line AB is in the first quadrant. Its end A and B are 20 mm and 60 mm in front of the V.P respectively. The distance between the end projectors is 75 mm. The line is inclined at 30^0 to H.P and its HT is 10 mm above *xy*. Draw the projections of the line AB and determine its true length and the V.T.

5. ABCDE is a regular pentagonal plate of 40 mm side and has its corner A on H.P. The plate is inclined to H.P such that, the top view lengths of edges AB and AE are each 35 mm. The side CD is parallel to both the reference planes. Draw the projections of the plate and find its inclination with H.P.

6. A frustum of a square pyramid (base 50 mm square, top surface 30 mm square and axis 40 mm) is resting on its base on H.P. A hemi-sphere of 70 mm diameter is centrally placed over the top surface of the pyramid and the hemi-sphere rests on a point on the surface of the pyramid. Draw the isometric projections of the arrangement.

7. Draw an isometric view of given figure below. (all dimensions are in mm).

FV

TV

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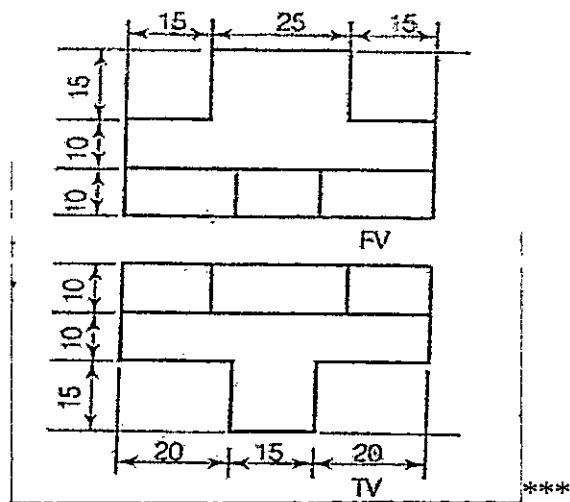
Subject Code: R16EE1208

I B.Tech II Semester Supple Examinations, March-2025
ENGINEERING GRAPHICS
(EEE)

Time: 3 hours   **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) A point A is 3.5cm above the HP and 4cm infront of the VP. Draw its projections.(2M)

   (b) Define the term "true length" in relation to an inclined line in orthographic projection.   (1M)

   (c) Draw an ellipse having the major axis of 70 mm and the minor axis of 40 mm.   (3M)

   (d) Draw the projections of a 70mm long straight line, perpendicular to the HP, 25mm infront of the VP and its one end 20mm above the HP.   (3M)

   (e) Draw a cylinder, base 40mm diameter and axis 65mm long resting on the HP on their respective bases.   (3M)

PART-B

4 X 12 = 48

2. (a) Construct an ellipse with its major axis is 90 mm and minor axis is 55 mm using arc and circles method.

   (b) Construct a plain scale of R.F 1:50000 to show kilometers and hectometers and long enough to measure up to 10 kilometers. Measure a distance of 74 hectometers on your scale.

3. (a) A point at 35 mm above the reference line XY is the front view of two points P and Q. The top view of P is 35 mm behind VP and the top view of Q is 40 mm in front of VP. Draw the projections of the points and state their positions relative to the planes of projection and the quadrants in which they lie.

   (b) A line of 80 mm long is parallel to and 40 mm above HP. Its two ends are 35 mm and 50 mm in front of VP respectively. Find its inclination with VP.

4. (a) A line AB, 90 mm long, is inclined at 45^0 to the HP and its top view makes an angle of 60^0 with the VP. The end A is in the HP and 15 mm in front of the VP. Draw its front view and find its true inclination with the VP.

5. A circular plane of 60 mm diameter rests on V.P. on a point A on its circumference. Its plane is inclined at 45^0 to V.P. Draw the projections of the plane when

   (a) The front view of the diameter AB makes 45^0 with H.P. and

   (b) The diameter AB itself makes 60^0 with H.P.

6. (a) A cylinder of 50 mm base diameter and 60 mm axis rests on HP with a point of its base such that the axis is inclined at 30^0 to HP. Draw its projections.

7. Draw (i) Front View   (ii) Top View   (iii) Side View   for the below figure.

(All dimensions are in mm).

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