Code: 1G513

B.Tech. I Year Supplementary Examinations March 2021
Engineering Drawing
(Common to EEE, ECE, CSE & IT)
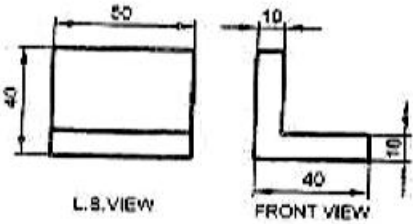
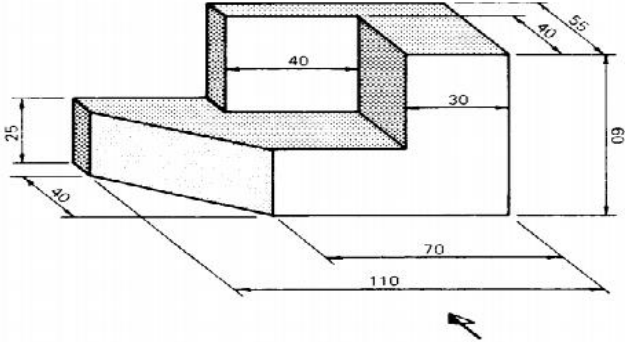Max. Marks: 70   Time: 3 Hours

Answer any **five** questions
All Questions carry equal marks (**14 Marks** each)
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1. The major axis of an ellipse is 110mm long and the foci are at a distance of 15mm from its ends. Draw the ellipse one-half of it by 'concentric circles' method and the other half by 'rectangle' method.

2. Draw a hypocycloid generated by a rolling circle of 60mm diameter for one complete revolution. The radius of the directing circle is 100mm. Draw a tangent and a normal to the hypocycloid at 50mm from the centre of the directing circle.

3. A line AB is 30mm long and inclined at 30^0 to VP and parallel to HP. The end A of the line is 15mm above HP and 20mm in front of VP. Draw its projections.

4. Draw the projections of a regular pentagon of 25mm side with its surface making angle of 45^0 to HP. One of the sides of the pentagon is parallel to HP and 15mm away from it.

5. Draw the projections of a hexagonal prism of base 25mm side and axis 60mm long, when it is resting on one of its corners of the base to HP. The axis of the solid is inclined at 45^0 to HP

6. Draw an isometric projection of
    a) A square plane of 40mm
    b) A rectangular plane of 60mmX80mm
    Both in the horizontal and vertical plane

7. Draw the Isometric View of

8. Draw the Front View, Top View and Side View of

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Hall Ticket Number :

R-13

Code: 1GC12

B.Tech. I Year Supplementary Examinations March 2021
Engineering Physics
(Common to All Branches)

Max. Marks: 70   Time: 3 Hours

Answer any **five** questions
All Questions carry equal marks (**14 Marks** each)
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1. a)   What is diffraction grating and explain
    b)   How grating forms diffraction spectrum

2. a)   Explain Bragg's law of diffraction
    b)   Illustrate Laue method of X-ray diffraction

3.   Illustrate Kronig-penney model

4. a)   Describe Hall effect in semiconductor
    b)   Brief about working of LED

5.   Explain ionic, electronic and orientation polarizations

6. a)   Illustrate joshepson effect
    b)   compare Type-I and Type-II superconductors

7.   Deduce expressions for acceptance angle and numerical aperture of optical fiber

8.   Explain the production of nano materials by ball milling method
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Code: 1GC14

B.Tech. I Year Supplementary Examinations March 2021
Mathematics-I
(Common to All Branches)

Max. Marks: 70   Time: 3 Hours

Answer any **five** questions
All Questions carry equal marks (**14 Marks** each)
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1. Solve $(x+1)\dfrac{dy}{dx} - y = e^{3x}(x+1)^2$.

2. Solve $(D-2)^2 y = 8(e^{2x} + \sin 2x + x^2)$.

3. A rectangular box open at the top is to have volume of 32 cubic ft. Find the dimensions of the box requiring least material for its construction.

4. Trace the curve $a^2 y^2 = x^2(a^2 - x^2)$

5. Evaluate $\displaystyle\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}dxdy$ by changing into polar coordinates.

6. Find the inverse Laplace transform of $\dfrac{2s^2 - 6s + 5}{s^3 - 6s^2 + 11s - 6}$.

7. Solve $\dfrac{d^2 x}{dt^2} + 9x = \cos 2t$, $if\ x(0) = 1, x(\dfrac{f}{2}) = -1$.

8. Find the directional derivative of $f(x,y,z) = xy^3 + yz^3$ at the point (2, -1, 1) in the direction of a vector $\bar{i} + 2\bar{j} + 2\bar{k}$.

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