B.Tech. I Year Supplementary Examinations October 2020
Engineering Drawing
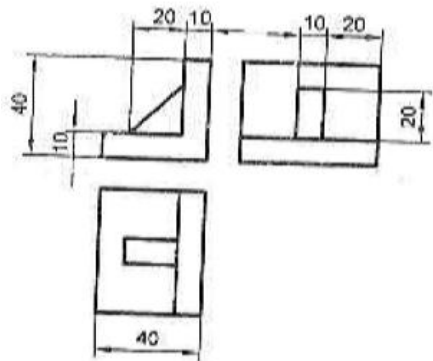(Common to EEE, ECE, CSE & IT)

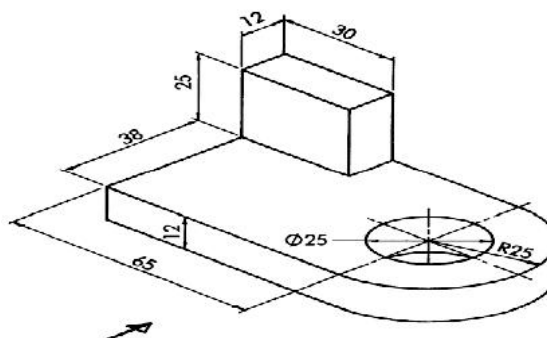Max. Marks: 70   Time: 3 Hours

Answer any **five** questions
All Questions carry equal marks (**14 Marks** each)
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1. a) To construct regular pentagon of given side 25mm by using Inscribe circle method

   b) Inscribe a regular heptagon in a circle having an 80mm diameter

2. Draw an epicycloids generated by a rolling circle of 60mm diameter for one complete revolution. The radius of circle is 100mm. Draw a tangent and normal to the epicycloids at 150mm from the centre of the directing circle.

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

   b) 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. A circular plate of 60mm diameter has a hexagonal hole of 20mm side, centrally punched. Draw the projections of the plate, resting on HP on a point with a surface inclined at 30^0 to HP. Any two parallel sides of the hexagonal hole are perpendicular to VP. Draw the projections of the plate.

5. a) Draw the projections of a cylinder of base 30mm diameter and axis 50mm long when it is resting on HP on one of its base.

   b) Draw the projections of a cone of base 30mm diameter and axis 50mm long, when it is resting on HP on its base

6. Draw the isometric view of a square prism, with side of base 40mm and length of axis70mm, when its axis is a) vertical and b) horizontal

7. Draw the Isometric View of the following.

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

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B.Tech. I Year Supplementary Examinations October 2020
Electronic Devices and Circuits
(Common to EEE & ECE)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions
All Questions carry equal marks (**14 Marks** each)
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1.	a)	Explain the effect of Temperature on conduction in conductors and semiconductors.	10M
	b)	Explain the importance of Fermi Level?	4M
2.		Describe the reverse bias characteristics of a Zener diode and explain the applications of it	14M
3.		Differentiate between full wave rectifier with bridge rectifier.	14M
4.	a)	What are the different load lines present in a transistor configuration? Explain their importance.	8M
	b)	Explain how transistor acts as an amplifier?	6M
5.	a)	List the different methods of transistor biasing used in circuit design.	8M
	b)	What is the need occurs for biasing a transistor in a practical application?	6M
6.	a)	What is pinch-off? Describe the reasons of pinch off.	7M
	b)	Compare MOSFET with JFET.	7M
7.	a)	What is a miller theorem? Explain	6M
	b)	What are h parameters? Explain how they are calculated?	8M
8.	a)	Explain the different triggering methods used in SCR and list out the limitations and advantages.	10M
	b)	What are the advantages of LCD over LED?	4M

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Code: 1GC14

B.Tech. I Year Supplementary Examinations October 2020
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. a) Solve $x \log x \dfrac{dy}{dx} + y = \log x^2$.   7M

    b) If the temperature of the air is 30^0C, and the substance cools from 100^0C to 70^0C in 15 minutes, find when the temperature will be 40^0C?   7M

2.   Solve $\dfrac{d^2 y}{dx^2} + \dfrac{dy}{dx} + y = (1 - e^x)^2$ 14M

3. a) Verify Rolle's theorem for $f(x) = (x+2)^3 (x-3)^4 \, in \, (-2,3)$.   7M

    b) Verify Lagrange's mean value theorem for $f(x) = \log_e^x \, in \, [1,e]$.   7M

4. a) Trace the curve $y^2(2a - x) = x^3$ 7M

    b) Trace the curve $x^3 + y^3 = 3axy$ 7M

5. a) Evaluate $\displaystyle\int_0^1 \int_0^x e^{\frac{x}{y}} dxdy$ 7M

    b) Evaluate $\displaystyle\int_0^1 \int_x^{\sqrt{x}} (x^2 + y^2) dxdy$ 7M

6. a) Find the Laplace transform of $e^{2t} + 4t^3 - 2\sin 3t + 3\cos 4t - 5\sinh t$ 7M

    b) Find the Laplace transform of $e^{-3t}(2\cos 5t - 3\sin 5t + 2t)$ 7M

7.   Solve $y^{11} - 3y^1 + 2y = e^{3t}$ when $y(0) = 1, y^1(0) = 0$.   14M

8.   Evaluate the line integral $\displaystyle\int_C (x^2 + xy)dx + (x^2 + y^2)dy$ where C is the square formed by the lines $x = \pm 1, y = \pm 1$.   14M

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