

# **BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI,**

**AX**

FIRST SEMESTER 2017– 2018

## **BITS F110 (ENGINEERING GRAPHICS) ONLINE CLOSED BOOK COMPREHENSIVE EXAM**

Duration: 75 Minutes

Max Marks: 80

Name: \_\_\_\_\_

ID No.: \_\_\_\_\_

### **NOTE:**

- Save your work frequently and follow the note given for every question and draw accordingly
- COLOR CODE: Drawing outlines to be followed compulsorily: (Linetype: **CONTINUOUS** for all)
- Center lines → **BLUE**      ♦ Construction lines → **CYAN**      ♦ Hidden lines → **RED**
- Use **1grid spacing = 25 mm** for all questions.
- Label all the figures properly.      ♦ CW → **Clock Wise**,      ♦ CCW → **Counter Clock Wise**
- **Follow the angle of projection specified for each problem.**

**Q.1.** A regular pentagonal lamina of side 125mm is resting on one of its side edge on HP which is to the left of the observer. The farthest corner of the lamina is at a distance of 75mm from the VP. The lamina makes an angle of 30 degrees CCW with HP and the side on which it rest is inclined at 55 degrees CW with VP. Draw the projections of the lamina using first angle method of projection. [25]

**Q2.** A pentagonal pyramid (base edge = 150mm and height = 250mm), is standing on its base on HP such that the base edge nearest to the observer is inclined at 15 degrees CCW with VP. It is cut by a plane which is perpendicular to V.P. and inclined at 25 degrees CCW to HP. The sectional plane bisects the axis. Draw the sectional top view of the solid. Develop the surface of the solid starting from leftmost corner and in CCW direction. [25]

**Q3.** A hexagonal pyramid (base edge = 150mm, height = 300mm) is resting on the ground with line joining any two opposite base corners parallel to VP. It is interpenetrated by a square prism with base edge 75mm and height 350mm. While interpenetrating, the square prism has one of its faces 30deg. anticlockwise with the ground and perpendicular to the VP. Axis of the prism is 75mm above the ground with 25mm offset towards right with respect to pyramid axis in front view.

(i) Draw top & front view of both solids.

(ii) Draw interpenetration profile in top view.

(iii) Hidden edges to be shown in red color. Trim edges which have lost their identity due to interpenetration.

Solve in third angle. 1 square grid = 25mm. Assume symmetrical interpenetration.

[30]

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- **Follow the angle of projection specified for each problem.**

**Q.1.** A regular pentagonal lamina of side 125mm is resting on one of its corner on VP which is to the right of the observer. The farthest corner of the lamina is at a distance of 75mm from the HP. The lamina makes an angle of 30 degrees CCW with VP and the side opposite to the resting corner is inclined at 45 degrees CW with HP. Draw the projections of the lamina using first angle method of projection. [25]

**Q2.** A pentagonal pyramid (base edge = 150mm and height = 250mm), is standing on its base on ground such that the base edge nearest to the observer is inclined at 25 degrees CCW with VP. It is cut by a plane which is perpendicular to V.P. and inclined at 15 degrees CCW to ground. The sectional plane bisects the axis. Draw the sectional top view of the solid. Develop the surface of the solid starting from leftmost corner and in CCW direction. [25]

**Q3.** A hexagonal pyramid (base edge = 150mm, height = 300mm) is resting on the ground with line joining any two opposite base corners parallel to VP. It is interpenetrated by a square prism with base edge 75mm and height 350mm. While interpenetrating, the square prism has one of its faces 30deg. clockwise with the ground and perpendicular to the VP. Axis of the prism is 75mm above the ground with 25mm offset towards left with respect to pyramid axis in front view.

(i) Draw top & front view of both solids.

(ii) Draw interpenetration profile in top view.

(iii) Hidden edges to be shown in red color. Trim edges which have lost their identity due to interpenetration.

Solve in third angle. 1 square grid = 25mm. Assume symmetrical interpenetration.

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**Q.1.** A regular hexagonal lamina of side 100mm rests on VP on one of its side edges such that one of its corners is on HP. The lamina is inclined at 45 degree CCW with VP and the side on which it rests makes an angle of 80 degree CCW with HP. Draw the projection of the lamina using first angle method of projection. [25]

**Q2.** A hexagonal pyramid (base edge = 150mm and height = 275mm) is standing on its left base edge such that the face containing the resting base edge is inclined at 80 degrees CCW to HP and is perpendicular to VP. It is cut by a sectional plane which is perpendicular to VP and inclined at 15 degrees CW to HP. The sectional plane bisects the axis. Draw the sectional top view of the solid. Develop the surface of the solid starting from the nearest corner and in CCW direction. [25]

**Q3.** A pentagonal pyramid (base edge = 150mm, height = 300mm) is standing on its base on ground with one base edge parallel to VP and farthest from the observer. It is interpenetrated by a square prism with base edge 75mm and height 350mm. While interpenetrating, the square prism has one of its faces 45deg. anticlockwise with the ground and perpendicular to the VP. Axis of the prism is 75mm above the ground with 25mm offset towards right with respect to pyramid axis in front view.

(i) Draw top & front view of both solids.

(ii) Draw interpenetration profile in top view.

(iii) Hidden edges to be shown in red color. Trim edges which have lost their identity due to interpenetration.

Solve in third angle. 1 square grid = 25mm. Assume symmetrical interpenetration.

[30]

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**Q.1.** A regular hexagonal lamina of side 100mm rests on HP on one of its side edges such that one of its corners is on VP. The lamina is inclined at 45 degree CCW with HP and the side on which it rests makes an angle of 78 degree CW with VP. Draw the projection of the lamina using first angle method of projection. [25]

**Q2.** A hexagonal pyramid (base edge = 150mm and height = 250mm) is standing on its right base edge such that the face containing the resting base edge is inclined at 81 degrees CW to ground and perpendicular to VP. It is cut by a sectional plane which is perpendicular to VP and inclined at 15 degrees CW to HP. the sectional plane bisects the axis. Draw the sectional top view of the solid. Develop the surface of the solid starting from the nearest corner and in CCW direction. [25]

**Q3.** A pentagonal pyramid (base edge = 150mm, height = 300mm) is standing on its base on ground with one base edge parallel to VP and farthest from the observer. It is interpenetrated by a square prism with base edge 75mm and height 350mm. While interpenetrating, the square prism has one of its faces 45deg. clockwise with the ground and perpendicular to the VP. Axis of the prism is 75mm above the ground with 25mm offset towards left with respect to pyramid axis in front view.

(i) Draw top & front view of both solids.

(ii) Draw interpenetration profile in top view.

(iii) Hidden edges to be shown in red color. Trim edges which have lost their identity due to interpenetration.

Solve in third angle. 1 square grid = 25mm. Assume symmetrical interpenetration.

[30]