COMPREHENSIVE EXAMINATION

Course No.	: TA UC111.
Course Title	: Engineering Graphics.
Nature of Exam	: Closed Book.
Weightage	: 40 %
Duration	: 90 minutes.
Date	: 16.05.2005.

No. of Pages	= 1
No. of Questions	= 4

NOTE: Save your drawings every 5 minutes.

1. A big balloon filled with chocolates is fixed from the center of a flat ceiling of a party hall of size 10m length x 8m wide x 5m height. A rope with a sharp pin is tied from the balloon to the center of the left side of the wall at a distance of 3m above the floor. The rope is made taut so that the balloon will burst with a slightest movement of the rope for the chocolates to fall during a birthday party. Draw the projections of the party hall and find the true length of the rope. Use appropriate scale. (10 marks)

2. One hundred blue loud speakers, which are in the form of a frustum of a cone, are to be used for an important political rally by a railway minister. Just before the start of the rally, when the loud speakers are being fixed it is noticed that some of them are in orange color, which the minister hates. Since there is not enough time to replace the loud speakers, it is decided to cover them with blue chart papers. Draw the shape to which the paper is to be cut so as to fit the loud speaker of base diameter 80cm, top diameter 20cm and the height of the frustum being 40cm. Also draw the projections of the solid and show the sectional view. Use third angle projection and name all the points with proper notations. Take scale 1:10. (10 marks)

3. A hollow square prism of outside base side 50mm, thickness 10mm and axis length 70mm is resting on the HP on one of its rectangular faces with its axis inclined at 27° to the VP. Using first angle projection:
   Draw the projections of the solid.
   Name all the points with proper notations.
   Show the dimensions. (10 marks)

4. A vertical cylinder of 75mm diameter is penetrated by another cylinder of 50mm diameter the axis of which is parallel to both the HP and the VP. The two axes are 100mm long and 9mm apart. Using first angle projection:
   Draw the projections of the solids (show the TV, FV and SV).
   Locate the points of intersection.
   Name all the points with proper notations.
   Show the curves/lines of intersection.
   Show the dimensions. (10 marks)

All the BEST

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1. A LCD projector is hung vertically from the center of a flat roof of a classroom of size 6m length x 5m wide x 4m high at a distance of 0.75m below the roof. The electric switch for the LCD projector is fixed on the right corner of the wall below at a distance of 1m above the floor and 0.5m from the corner. Draw the projections of the room and find the shortest true distance between the switch and the projector. Use appropriate scale. (10 marks)

2. Complaints were going to the municipality that there are impurities in the chakki fresh atta of a popular flour company. On inspection it is found that the hoppers of the flour-mill, which are in the form of a frustum of a pentagonal pyramid, is eroding on the inside. The municipality orders the company to replace the hoppers immediately. Since the company could not afford the cost of replacement, it decides to line the inside of the hoppers with aluminum sheets. Draw the shape to which the sheet is to be cut so as to fit inside the hopper of base side 45cm, top side 30cm and height of the frustum being 45cm. Also draw the projections of the solid and show the sectional view. Use third angle projection and name all the points with proper notations. Take scale 1:10. (10 marks)

3. A hollow cylinder of external diameter 60mm, internal diameter 40mm and height 80mm rests on the HP on a point in the base with its axis inclined at 42° to the HP and parallel to the VP. Using first angle projection:
   Draw the projections of the solid.
   Name all the points with proper notations.
   Show the dimensions. (10 marks)

4. A square prism of base side 40mm stands with its base on the HP with two of its rectangular faces equally inclined to the VP. It is completely penetrated by a horizontal square prism of base 30mm so that their axes are 5mm apart. The faces of the horizontal prism are equally inclined to the HP and its axis is parallel to the VP. The axes of both the prisms are 110mm in length. Using first angle projection:
   Draw the projections of the solids (show the TV, FV and SV).
   Locate the points of intersection.
   Name all the points with proper notations.
   Show the curves/lines of intersection.
   Show the dimensions. (10 marks)

All the BEST