

Variant: 1

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- The technical drawing consists of two views of a mechanical component:
- Front View (Top):** Shows a profile with a total height of 90. The base has a central rectangular cutout with a width of 55 and a depth of 10. Above this, there are two vertical supports, each 25 units wide at the top. The distance between the inner faces of these supports is 60. The top surface is 25 units wide. There are additional features like a 15-unit wide section and a 35-unit deep section on the right side.
 - Top View (Bottom):** Shows a rectangular plate with overall dimensions of 120 by 80. It features four circular holes, each with a diameter of 20, located at the corners. The distance from the center of each hole to the nearest corner is 50. A central diamond-shaped feature contains a circle with a diameter of 20. The thickness of the plate is indicated as 4 mm.

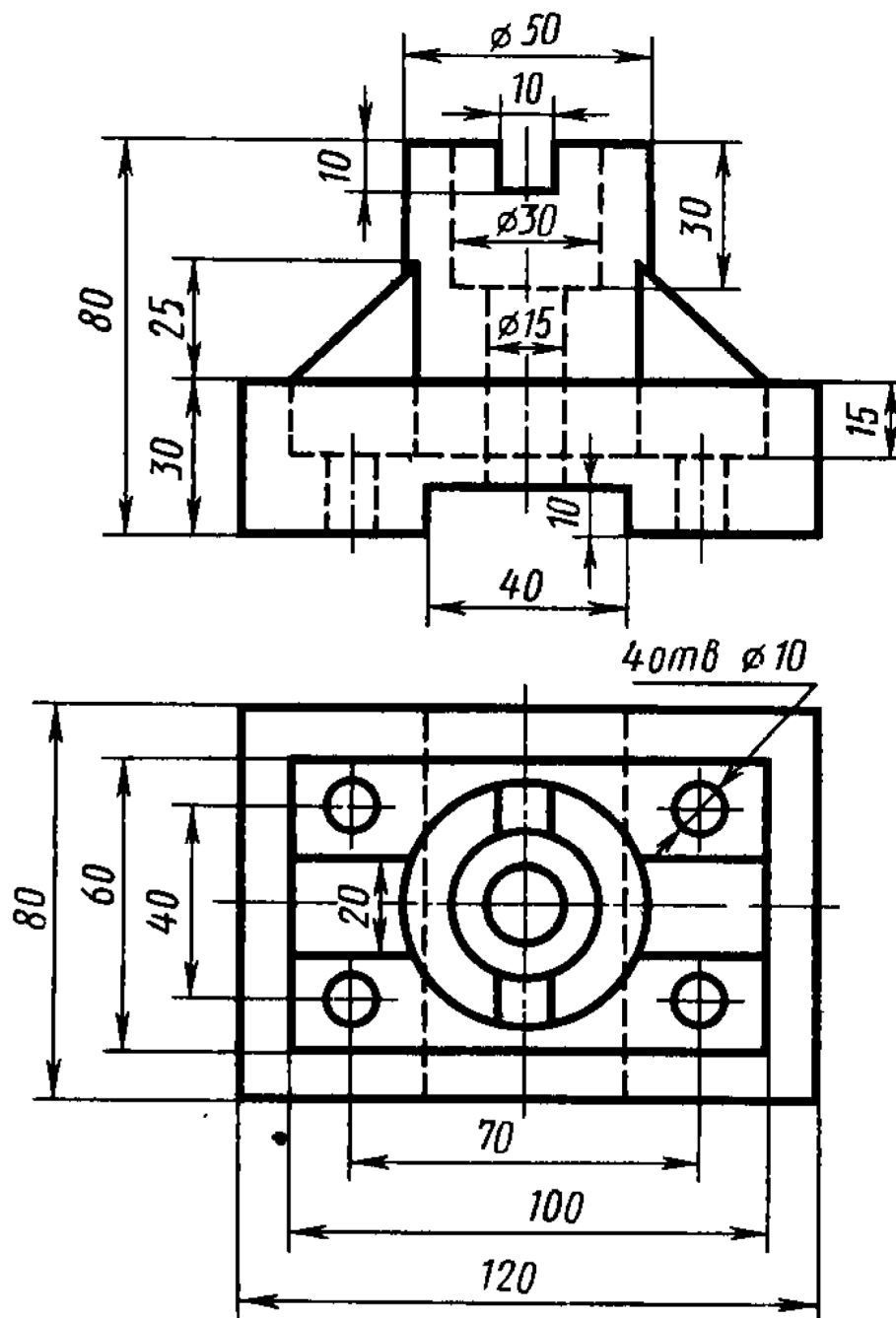
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Final Exam

CAD part

Variant: 2

1. (10 score) Make a CAD model of the blueprint, which provided below.
2. (2 extra score) Make the same blueprints (without dimensions), based on your CAD model.
3. (3 extra score) Perform the stress analysis of the detail. All forces and fix supports are on the picture. Material — Steel. You have to show the stress and strain diagrams and explain what happens to the parts after such a load.



Variant: 3

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- Technical drawing of a mechanical part, showing front and top views with dimensions.
- Front View (Top):**
- Overall height: 100
 - Overall width: 120
 - Top flange thickness: 15
 - Top flange outer diameter: $\phi 20$
 - Top flange inner diameter: $\phi 16$
 - Top flange hole diameter: $\phi 40$
 - Top flange hole spacing: 20mm
 - Top flange hole depth: 46
 - Top flange hole radius: R3
 - Top flange hole chamfer: R10
 - Top flange hole chamfer angle: 50
 - Top flange hole chamfer radius: R3
 - Top flange hole chamfer radius: R10
- Top View (Bottom):**
- Overall width: 160
 - Overall height: 80
 - Inner width: 100
 - Inner height: 60
 - Inner hole diameter: $\phi 12$
 - Inner hole spacing: 60mm
 - Inner hole radius: R3
 - Inner hole chamfer: R10
 - Inner hole chamfer angle: 50
 - Inner hole chamfer radius: R3
 - Inner hole chamfer radius: R10

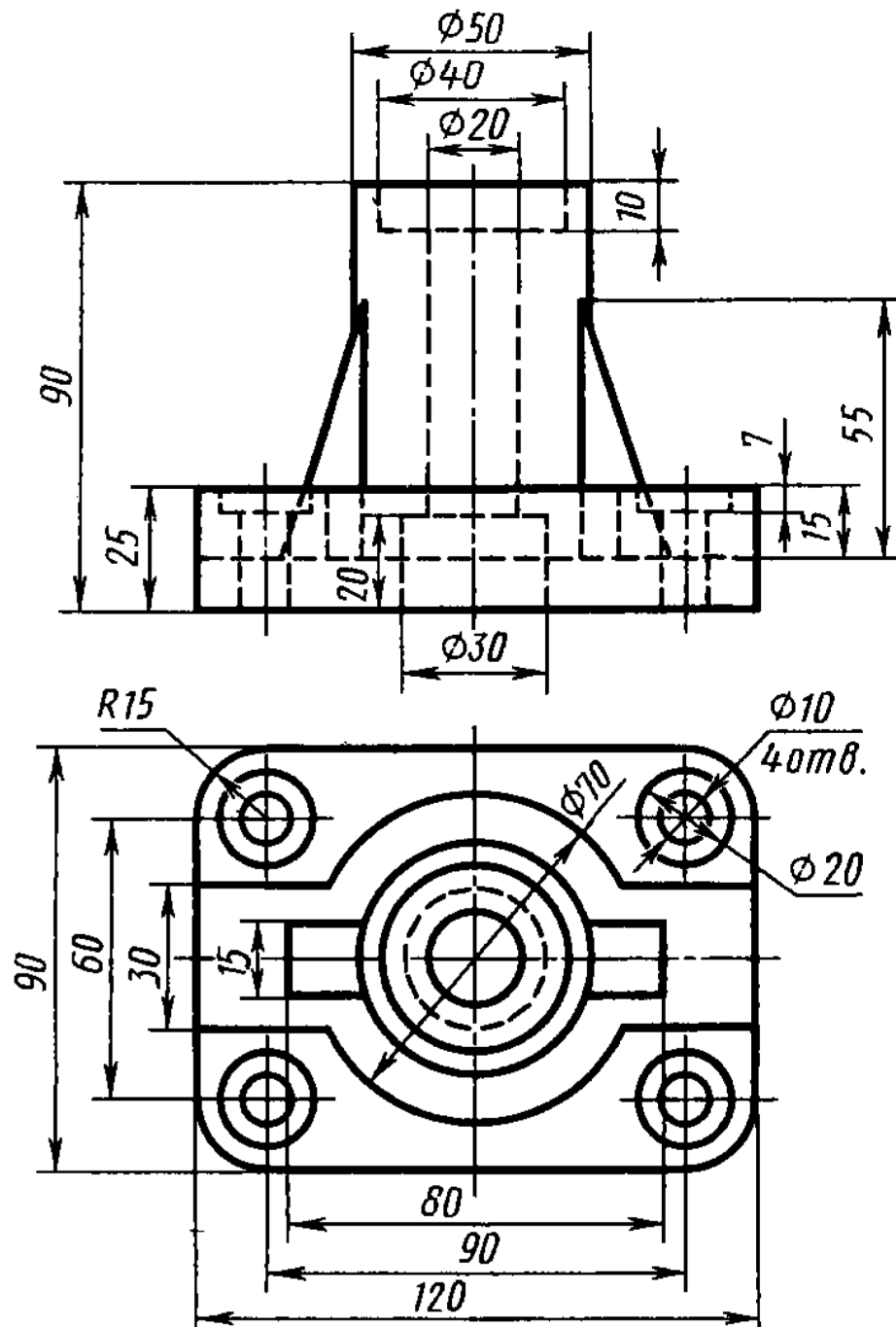
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Final Exam

CAD part

Variant: 4

1. (10 score) Make a CAD model of the blueprint, which provided below.
2. (2 extra score) Make the same blueprints (without dimensions), based on your CAD model.
3. (3 extra score) Perform the stress analysis of the detail. All forces and fix supports are on the picture. Material — Steel. You have to show the stress and strain diagrams and explain what happens to the parts after such a load.



Variant: 5

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- Technical drawing of a mechanical part, showing front and top views with dimensions.
- Front View (Top):**
- Overall width: 90
 - Inner diameter: $\phi 65$
 - Outer diameter: $\phi 50$
 - Height of the upper section: 75
 - Height of the lower section: 35
 - Radius of the lower section: 20
 - Width of the lower section: 8
 - Inner diameter of the lower section: $\phi 70$
- Top View (Bottom):**
- Overall width: 130
 - Inner diameter: 90
 - Outer diameter: $\phi 6$
 - Height of the upper section: 75
 - Height of the lower section: 30
 - Radius of the lower section: 20
 - Width of the lower section: 100
 - Inner diameter of the lower section: $\phi 12$

Variant: 6

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- Technical drawing of a mechanical part, showing front and top views with dimensions.
- Front View (Top):**
- Overall width: $\phi 60$
 - Inner hole diameter: $\phi 50$
 - Inner hole depth: 15
 - Overall height: 90
 - Top flange thickness: 15
 - Distance from top flange to center of hole: 35
 - Distance from top flange to bottom flange: 40
 - Distance from bottom flange to center of hole: 25
 - Bottom flange thickness: 10
 - Distance from center of hole to bottom flange edge: 70
 - Inner hole diameter: $\phi 30$
- Top View (Bottom):**
- Overall width: 120
 - Overall height: 80
 - Distance from center of hole to top edge: 15
 - Distance from center of hole to bottom edge: 15
 - Distance from center of hole to left edge: 15
 - Distance from center of hole to right edge: 15
 - Distance from center of hole to bottom flange edge: 30
 - Distance from center of hole to top flange edge: 10
 - Distance from center of hole to bottom flange edge: 54
 - Distance from center of hole to top flange edge: 64
 - Inner hole diameter: $\phi 20$
 - Inner hole depth: 15
 - Inner hole diameter: $\phi 8$
 - Inner hole depth: 40
 - Inner hole diameter: $\phi 8$
 - Inner hole depth: 40

Variant: 7

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- Technical drawing of a mechanical part, showing front and top views with dimensions.
- Front View (Top):**
- Overall height: 80
 - Base thickness: 10
 - Base width: 18
 - Base taper: 30
 - Upper section height: 25
 - Upper section width: 30
 - Upper section thickness: 15
 - Central hole diameter: $\phi 30$
 - Internal hole diameter: $\phi 10$
- Top View (Bottom):**
- Overall width: 120
 - Overall height: 80
 - Central hole diameter: $\phi 50$
 - Central hole depth: 5
 - Central hole width: 10
 - Four corner holes: $\phi 10$
 - Four corner holes: 4 $\phi 10$
 - Distance from center to corner holes: 60
 - Distance from center to corner holes: 90
 - Distance from center to corner holes: 120

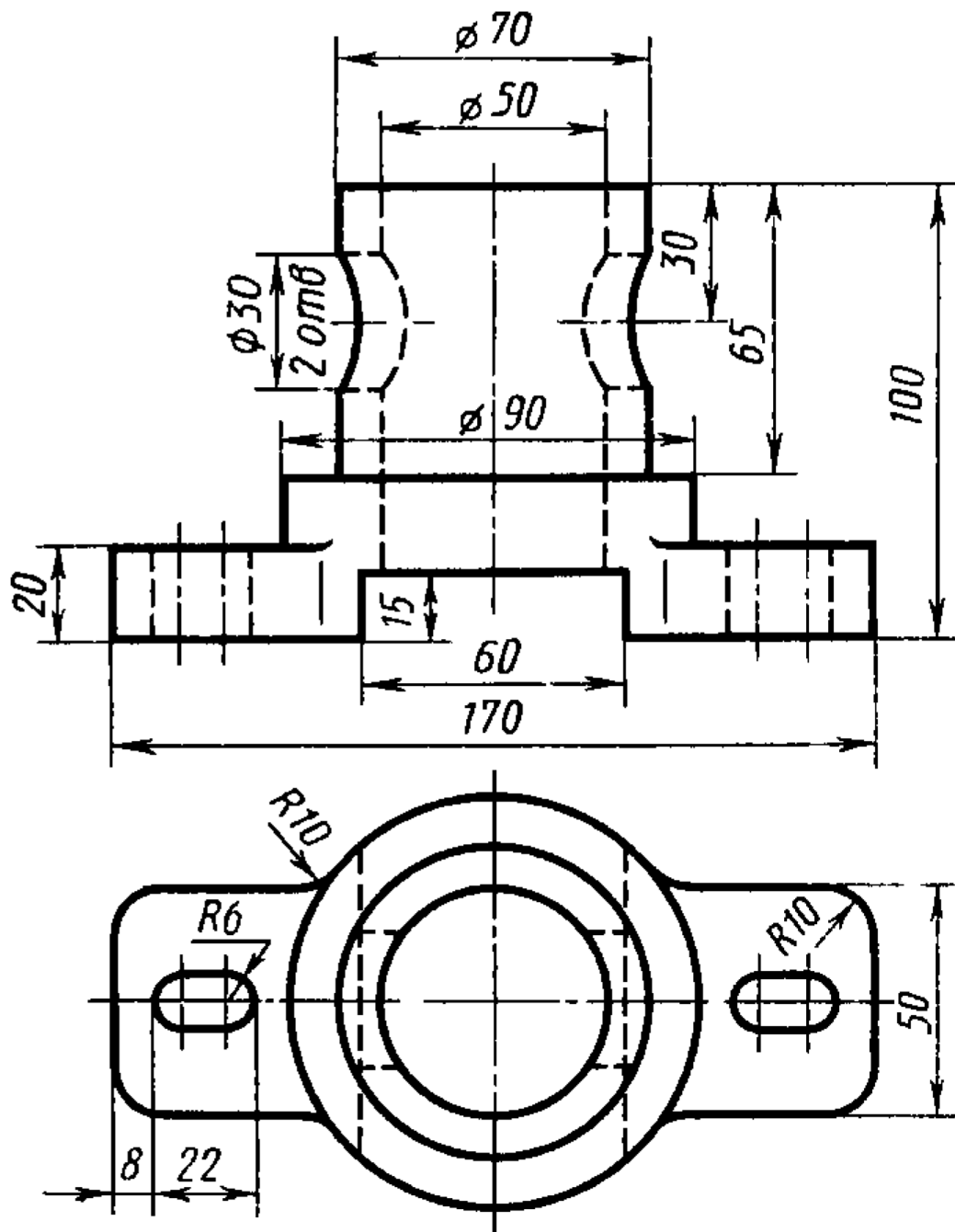
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Final Exam

CAD part

Variant: 8

1. (10 score) Make a CAD model of the blueprint, which provided below.
2. (2 extra score) Make the same blueprints (without dimensions), based on your CAD model.
3. (3 extra score) Perform the stress analysis of the detail. All forces and fix supports are on the picture. Material — Steel. You have to show the stress and strain diagrams and explain what happens to the parts after such a load.



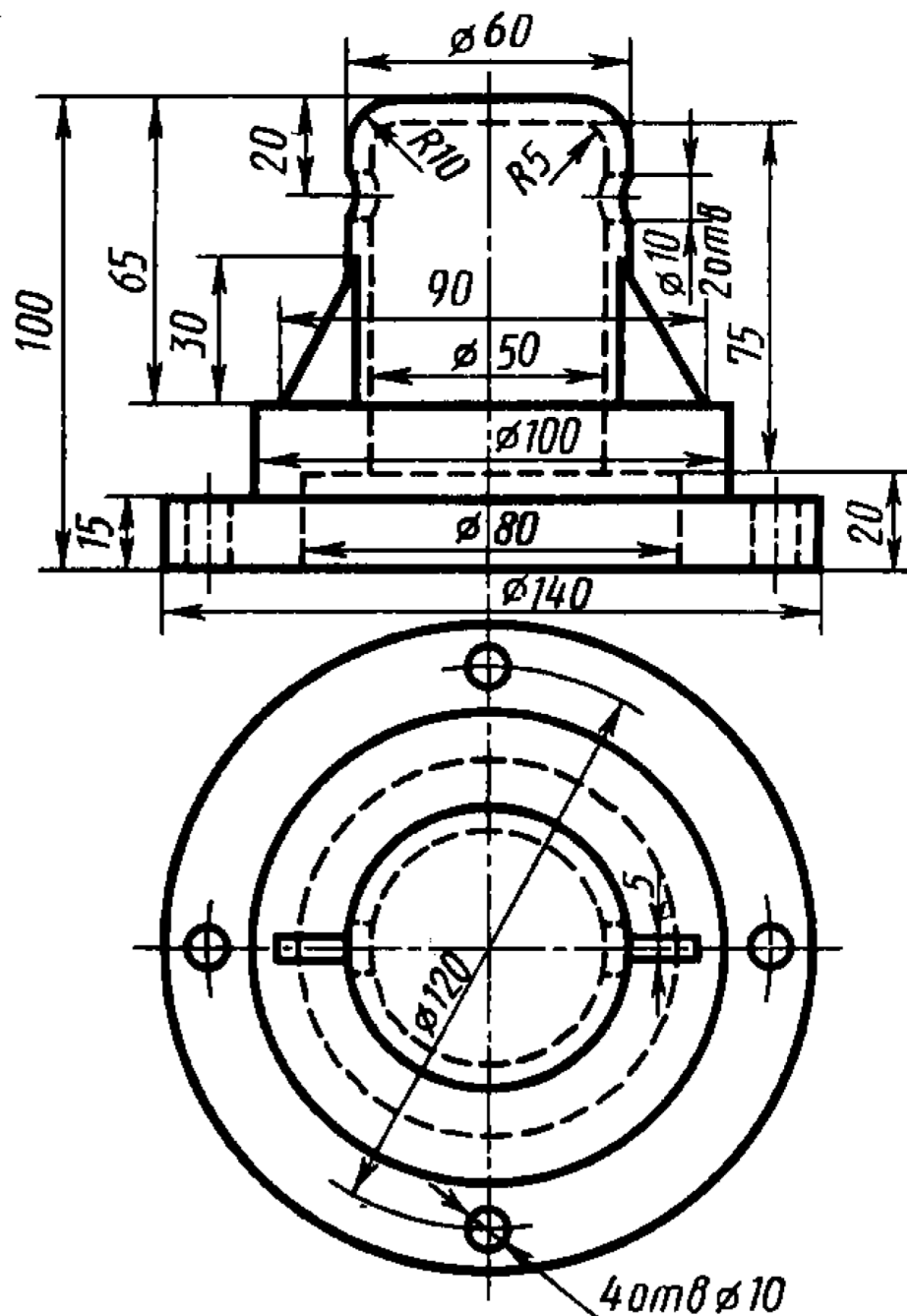
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Final Exam

CAD part

Variant: 9

1. (10 score) Make a CAD model of the blueprint, which provided below.
2. (2 extra score) Make the same blueprints (without dimensions), based on your CAD model.
3. (3 extra score) Perform the stress analysis of the detail. All forces and fix supports are on the picture. Material — Steel. You have to show the stress and strain diagrams and explain what happens to the parts after such a load.



Variant: 10

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- Technical drawing of a mechanical part, showing front and top views with dimensions.
- Front View (Top):**
- Overall width: 145
 - Overall height: 100
 - Top flange width: $\phi 40$
 - Top flange hole diameter: $\phi 20$
 - Inner hole diameter: $\phi 30$
 - Shoulder diameter: $\phi 80$
 - Shoulder height: 30
 - Base diameter: $\phi 60$
 - Base height: 15
 - Side view shows a base thickness of 20 and a shoulder thickness of 50.
 - Internal features include a hole with diameter $\phi 14$ and a distance of 20mm from the shoulder.
 - Other dimensions: 65, 90.
- Top View (Bottom):**
- Overall width: 170
 - Overall height: 50
 - Central hole diameter: $\phi 12$ (with 20mm distance from the side)
 - Side hole diameter: $\phi 12$
 - Distance from side hole to center: 120
 - Distance from side hole to outer edge: 10
 - Corner radius: R5