

University of the State of New York. 27

32ND ADVANCED ACADEMIC EXAMINATION.

SOLID GEOMETRY.

MONDAY, November 19, 1888—Time, 1 : 30 to 4 : 30 P. M. only.

36 credits, necessary to pass, 27.

1. Define oblique prism ; frustum of a pyramid ; altitude of a cone ; cylinder ; parallelopiped ; radius of a cylinder..... 6
2. Prove that if a straight line is perpendicular to two straight lines at their point of intersection it is perpendicular to the plane of those lines. 4
3. Write theorems including and completing the following conditions :
 - (a) If a straight line is parallel to a line of a plane — 1
 - (b) If two angles, not situated in the same plane, have their sides parallel and lying in the same direction — 1
 - (c) If a plane be passed through the diagonally opposite edges of a parallelopiped — 1
 - (d) If two parallelopipeds have a common lower base and their upper bases between the same parallels — ... 1
4. Prove that if a pyramid be cut by a plane parallel to the base :
 - (a) The edges and the altitude will be divided proportionally 2
 - (b) The section will be a polygon similar to the base..... 2
5. Prove that any two opposite faces of a parallelopiped are equal and parallel..... 2
6. Prove that the volume of any pyramid is equal to one third the product of its base and altitude 2
7. Prove that similar pyramids are to each other as the cubes of their homologous edges 3
8. What relation exists between volumes of similar cylinders ; of similar cones ; of similar spheres ?... 3
9. Give the formula for finding each of the following : the volume of any prism ; the lateral area (convex surface) of a prism ; the volume of the frustum of a triangular pyramid ; the lateral area (convex surface) of a cylinder ; the volume of a cylinder ; the volume of a sphere..... 6
- 10 Find the number of square feet in the surface of a stone 12 feet long, 3 feet wide and two feet high..... 2