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*The University of the State of New York*

EXAMINATION FOR QUALIFYING CERTIFICATES

**ADVANCED ARITHMETIC**

Monday, September 11, 1916—9.15 a. m. to 12.15 p. m., only

*Answer eight questions. Papers entitled to less than 75 credits will not be accepted.*

- 1 *a* Divide by .009 *each* of the following numbers: 108; 10.8; .0108.  
*b* Arrange in order of magnitude to *six* decimal places the three values of  $\pi$ : 3.1415926,  $\frac{22}{7}$ ,  $\frac{355}{113}$
- 2 A solid board fence is 1000 feet long and 6 feet high; the boards are nailed to three rows of scantling 2"  $\times$  4" and the fence is supported by cedar posts 8 feet apart. If the boards cost \$28 per M, the scantlings \$32 per M and the posts 30 cents apiece, what will be the cost of the materials used?
- 3 A 90 day note for \$750, dated July 31, 1916, and bearing interest at 6%, was discounted at the bank today at 6%; find the date of maturity and the proceeds.
- 4 A tank filled with vinegar is .975 meters high, 1.5 meters wide and 2.8 meters long; what is the value of the vinegar in francs when sold at 25 centimes a liter?
- 5 If 30 men can dig a ditch 180 rods long in 4 days, how many days will it take 40 men to dig a ditch 300 rods long?
- 6 A man discharges a debt in yearly payments in such a way that each payment is 3 times the preceding; if his first payment is \$10 and his last \$7290, what was his indebtedness?
- 7 The bottom of a cistern is a circle 7 feet in diameter and the top is 5 feet in diameter; if its depth is 7 feet, how many gallons will it hold?
- 8 A cake of ice 2 $\frac{1}{4}$  ft  $\times$  1 ft  $\times$  9 in. when melted just fills a cubic tank; the volume of the water is 92% of the volume of the ice. Find the dimensions of the tank in feet to *three* decimal places.
- 9 A house rents for \$28 a month; the expenses for taxes, insurance and repairs are \$144 a year. At what price must a man buy the house in order to realize 6% on his investment?
- 10 A man has \$32,300 to invest; he can buy railway stock 6's at 85 or 7's at 95. Which is the more profitable investment and how much per year? [Do not consider brokerage.]