**Instructions**

1. **The test contains six questions**

Q1: A man wishes to estimate the distance of a nearby tower from him. He stands at a point A in front of the tower C and spots a very distant object O in line with AC. He then walks perpendicular to AC up to B, a distance of 100 m, and looks at O and C again. Since O is very distant, the direction BO is practically the same as AO; but he finds the line of sight of C shifted from the original line of sight by an angle estimate the distance of the tower C from his original position A. 10 Marks

Q2: The moon is observed from two diametrically opposite points A and B on Earth. The angle θ subtended at the moon by the two directions of observation is  . Given the diameter of the Earth to be about , compute the distance of the moon from the Earth. 10 Marks

Q3Givea simple method for estimating the molecular size of oleic acid. 10 Marks

Q4: Distinguish between two terms: **accuracy** and **precision**. Elaborate with the help of examples. 10 Marks

Q5:Two clocks are being tested against a standard clock located in a national laboratory. At 12:00:00 noon by the standard clock, the readings of the two clocks are :

**Clock 1 Clock 2**

Monday 12:00:05 10:15:06

Tuesday 12:01:15 10:14:59

Wednesday 11:59:08 10:15:18

Thursday 12:01:50 10:15:07

Friday 11:59:15 10:14:53

Saturday 12:01:30 10:15:24

Sunday 12:01:19 10:15:11

If you are doing an experiment that requires precision time interval measurements, which of the two clocks will you prefer ? 10 Marks

Q6Find the relative error in *Z*, if  20 Marks