1 -A man standing on the deck of a ship, which is 10 m above water level, observes the angle of elevation of the top of a hill as 60º and the angle of depression of the base of the hill as 30º. Find the distance of the hill from the ship and the height of the hill.

2- From a point P on the ground, the angle of elevation of the top of a 10 m tall building is 300. A flag is hoisted at the top of the building and the angle of elevation of the length of the flagstaff from P is 450. Find the length of the flagstaff and distance of building from point P.

3-An aeroplane, when flying at a height of 4000 m from the ground passes vertically above another aeroplane at an instant when the angles of elevation of the two planes from the same point on the ground are 60º and 45º respectively. Find the vertical distance between the aeroplanes at that instant.

4-  A solid consisting of a right circular cone of height 120 cm and radius 60 cm standing on a hemisphere of radius 60 cm is placed upright in a right circular cylinder full of water such that it touches the bottom.

5- Find the volume of water left in the cylinder, if the radius of the cylinder is 60 cm and its height is 180 cm. Q2. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that 1 cm3of iron has approximately 8g mass. (Use $\pi$ = 3.14)

6-  A solid is in the form of a cylinder with hemispherical ends. The total height of the solid is 19 cm and the diameter of the cylinder is 7 cm. Find the volume and the total surface area of the solid. [Take $\pi$ =22/7]

7 -During the admission procedure in a school, the number of students seeking admission is more than that of the seats available in the class so that school administration decides to organize a draw so that each student has equal possibility of getting admission in the school. The following category of students applied for admission.

| Service/ Social Category. | GEN | SC | OBC | ST |
|---|---|---|---|---|
| 1 | 60 | 40 | 25 | 12 |
| 2 | 45 | 15 | 18 | 10 |
| 3 | 20 | 17 | 12 | 8 |
| 4 | 18 | 13 | 10 | 15 |
| 5 | 72 | 50 | 45 | 25 |
| TOTAL | 215 | 135 | 110 | 70 |

(A)     If all the admission forms are shuffled and one form is drawn randomly, what is the probability that an OBC student belonging to either of the categories 1,2,3 or 4 will get admission?

(B)     If SC and ST category"s admission forms are shuffled and one form is drawn randomly, what is the probability that student from service category 1either SC or ST will get admission?

(C)     What is the probability of a general student of any category will get admission

**8 -Geeta wanted to watch football world cup final match. She saw an advertisement that a radio station has 30 free tickets to football world cup final match to give away. Radio announced that one participant can send only one SMS for free ticket. SMS`s are received from 20000 listeners out of which 14000 are female. SMS`s are then selected at random one at a time until all free tickets are given away**

**(a)        The first 24 tickets have been given away to the participants and Gita"s SMS`s has yet not been selected. What is Geeta"s chance of winning the last ticket, based on above said information.**

**(b)Out of first 24 tickets 14 males have already won the ticket and remaining are won by females.**

**Find the Chances that last ticket is won by Geeta.**

**9 -Find the mean, median and mode of the following data**

| C.I | 0-20 | 20-40 | 40-60 | 60-80 | 80-100 | 100-120 | 120-140 |
|-----|------|-------|-------|-------|--------|---------|---------|
| Freq. | 6 | 8 | 10 | 12 | 6 | 5 | 3 |

**10- Determine the missing frequency x, from the following data when Mode is 67 (3)**

| Class | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
|-------|-------|-------|-------|-------|-------|
| Frequency | 5 | X | 15 | 12 | 7 |