# Sample Entrance Exam Questions

## Physics

1. Consider two satellites $S_1$ and $S_2$ with periods of revolution 1 hr and 8 hr respectively revolving around a planet in circular orbits. The ratio of angular velocity of satellite $S_1$ to the angular velocity of satellite $S_2$ is:

   (a) 8:1

   (b) 2:1

   (c) 1:4

   (d) 1:8

2. If momentum P, area A and time T are taken as fundamental quantities, then the dimensional formula for coefficient of viscosity is:

   (a) $PA^{-1}T^{0}$

   (b) $PAT^{-1}$

   (c) $PA^{-1}T$

   (d) $PA^{-1}T^{-1}$

3. A planet has double the mass of the earth. Its average density is equal to that of the earth. An object weighing $W$ on earth will weigh on that planet:

   (a) $2^{\frac{1}{4}}W$

   (b) $2^{\frac{1}{3}}W$

   (c) $2W$

   (d) $2^{\frac{2}{3}}W$

## Mathematics

4. A scientific committee is to be formed from 6 Indians and 8 foreigners, which includes at least 2 Indians and double the number of foreigners as Indians. Then the number of ways, the committee can be formed, is:

   (a) 1050

   (b) 1625

   (c) 575

   (d) 560

5. If $\alpha, \beta, \gamma, \delta$ are the roots of the equation $x^4+x^3+x^2+x+1 = 0$, then $\alpha^{2021}+\beta^{2021}+\gamma^{2021}+\delta^{2021}$ is equal to:

   (a) 4

   (b) 1

   (c) -4

   (d) -1

6. The sum of the first 20 terms of the series 5 + 11 + 19 + 29 + 41 + ... is:

   (a) 3520

   (b) 3450

   (c) 3250

   (d) 3420