

**B.SC. (A & G) SEM. – IV (ANIMATION & GAMING) (CBCS -
2015 COURSE) : SUMMER - 2018**
SUBJECT: PHYSICS & MATHEMATICS FOR GAMES

Day: **Friday**
Date: **18/05/2018**

S-2018-0999

Time: **10.00 am to 01.00 pm**
Max Marks: 60

N.B:

- 1) Attempt any **SIX** questions.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Assume values of physical constants. Clearly indicate values used.
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- Q.1** Two persons are standing on either side of a tower of height 50 m. They observe the angles of elevation of the top of tower to be 30 degrees and 60 degrees. If a car crosses these persons in 10 seconds, what is the speed of the car? **(10)**
- Q.2** Differentiate between mass and weight of a body. Explain giving reasons as to how the mass and weight of a body change when moving (a) directly upward gaining speed; (b) directly upward losing speed. **(10)**
- Q.3** What is a projectile? Describe all the forces that act on a bullet fired from a rifle. Explain how each of these forces affect the motion of the bullet. **(10)**
- Q.4** What do you understand by “Coefficient of Restitution”? Describe the factors on which coefficient of restitution depends. **(10)**
- Q.5** A cannon ball is fired with a velocity of 100 m/s. It reaches a height of 50 m in 5 seconds. Assuming flat earth, and neglecting all aerodynamic effects, find the time to impact and the velocity of the cannon ball at impact. **(10)**
- Q.6** A ball is thrown in the air from an initial height of 1m above the ground. The ball reaches a height of 15 m before falling back. Find (a) initial speed of the ball; (b) velocity when it hits the ground; (c) time ball is in the air. **(10)**
- Q.7** As a cricket ball spins through the air, it changes trajectory (direction). What effect causes this “swing”, and on what factors does the amount of swing depend? **(10)**

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