

**B.SC. (A & G) SEM. – IV (ANIMATION & GAMING) (CBCS -  
2015 COURSE) : WINTER - 2017**

**SUBJECT: PHYSICS & MATHEMATICS FOR GAMES**

Day: **Friday**  
Date: **22/12/2017**

**W-2017-0892**

Time: **02.30 PM TO 05.30 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** The angle of elevation of the top of a tower from a point on the ground is  $\sin^{-1}(3/5)$ . If the point of observation is 20 m away from the foot of the tower, what is the height of the tower? **(10)**
- Q.2** a) State Newton's laws of motion. **(03)**  
b) The driver of a car applies brakes suddenly, bringing the car to a halt in a very short time. Describe the motion of the driver, giving reasons. **(07)**
- Q.3** Assuming a flat earth, and neglecting all aerodynamic effects, comment on the following for the motion of a projectile: - **(10)**  
a) Its trajectory.  
b) Launch angle for maximum range.  
c) Velocity at impact, if launch point and impact point are at the same level.
- Q.4** Distinguish between elastic and inelastic collisions giving examples for each. **(10)**
- Q.5** A tennis ball is fired from a gun mounted on the floor. The ball has an initial speed of 25 m/s and is launched at an angle of 35 degrees above horizontal. A player is standing 57 m away. At what time will the ball reach the player, and what will be the speed of the ball? **(10)**
- Q.6** A 0.3 kg brick falls from a height of 8m and hits the ground. Find (a) speed of brick before it hits the ground; (b) impulse exerted by ground on brick. **(10)**
- Q.7** Explain "Magnus Effect" What are the factors on which the magnitude of Magnus Effect depends? **(10)**

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