

## JEE MAIN LAWS OF MOTION — DYNAMICS OF CIRCULAR MOTION (BANKING OF ROADS, CONICAL PENDULUM) — PYQS

Max. Marks: 12

Questions: 3

### Section A (MCQ) — 3 questions

- Q.1** A car moving with a speed of 54 km/h takes a turn of radius 20 m. A simple pendulum is suspended from the ceiling of the car. Determine the angle made by the string of the pendulum with the vertical during the turning. (Take  $g = 10 \text{ m/s}^2$ )

[JEE Main 2026 (Online) 8th April Evening Shift]

- (1)  $\tan^{-1}(0.5)$                       (2)  $\tan^{-1}(0.75)$   
(3)  $\tan^{-1}(1.125)$                     (4)  $\tan^{-1}(0.25)$

Scan or tap for the  
full solution

- Q.2** A 0.5 kg mass is in contact against the inner wall of a cylindrical drum of radius 4 m rotating about its vertical axis. The minimum rotational speed of the drum to enable the mass to remain stuck to the wall (without falling) is 5 rad/s. The coefficient of friction between the drum's inner wall surface and mass is \_\_\_\_\_. (Take  $g = 10 \text{ m/s}^2$ )

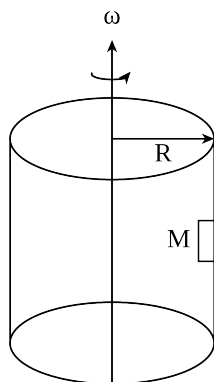
[JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) 0.1              (2) 0.5              (3) 0.7              (4) 0.3

Scan or tap for the  
full solution

- Q.3** A large drum having radius  $R$  is spinning around its axis with angular velocity  $\omega$ , as shown in figure. The minimum value of  $\omega$  so that a body of mass  $M$  remains stuck to the inner wall of the drum, taking the coefficient of friction between the drum surface and mass  $M$  as  $\mu$ , is :

[JEE Main 2026 (Online) 21st January Evening Shift]



$$(1) \sqrt{\frac{2g}{\mu R}}$$

$$(2) \sqrt{\frac{g}{2\mu R}}$$

$$(3) \sqrt{\frac{\mu g}{R}}$$

$$(4) \sqrt{\frac{g}{\mu R}}$$

Scan or tap for the  
full solution

### ANSWER KEY

| Ques. | 1 | 2 | 3 |  |  |  |  |  |  |  |  |
|-------|---|---|---|--|--|--|--|--|--|--|--|
| Ans.  | 3 | 1 | 4 |  |  |  |  |  |  |  |  |