ECE&M (18CV24) - IAT-III

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Section *

N

Semester

2nd sem

Subject Code

18CV24

1. Moment of inertia may be defined as *   2 points

○ First moment of area

◉ Second moment of area

○ Product of force and distance

○ square root of area

2. Moment of inertia of a plane area in xy plane is Ixx= 2x10^7 mm^4, Iyy = 3x10^8   2 points
mm^4, Calculate polar moment of inertia of the lamins. *

◉ 32x10^7 mm^4

○ 32x10^8 mm^4

○ 5x10^7 mm^4

○ 6x10^7 mm^4

3. Calculate the moment of inertia of a rectangular lamina with respect to its base,   2 points
Take width(b) = 20 mm, and depth (d) = 40mm *

◉ 4.26x10^5 mm^4

○ 3.13x10^5 mm^4

○ 1.06x10^5 mm^4

○ 2.21x10^5 mm^4

4. Which of the following is the correct expression for calculating moment of inertia   2 points
of a triangular lamina with respect to its centroidal horizontal axis. Take base width as
b (Parallel to centroidal horizontal axis), and height as h . *

○ bh^/3

◉ bh^/36

○ bh^/12

○ bh^/42

5. Parallel axis theorem is used to calculate moment of inertia of a plane lamina with   2 points
respect to ---------- *

○ Centroidal vertical axis

○ Centroidal horizontal axis

○ Any axis in the plane of lamina

◉ All the above

6. Calculate the moment of inertia of a symmetrical I section shown in figure *   2 points

○ 8.47x10^7 mm^4

○ 9.56x10^7 mm^4

○ 10.71x10^7 mm^4
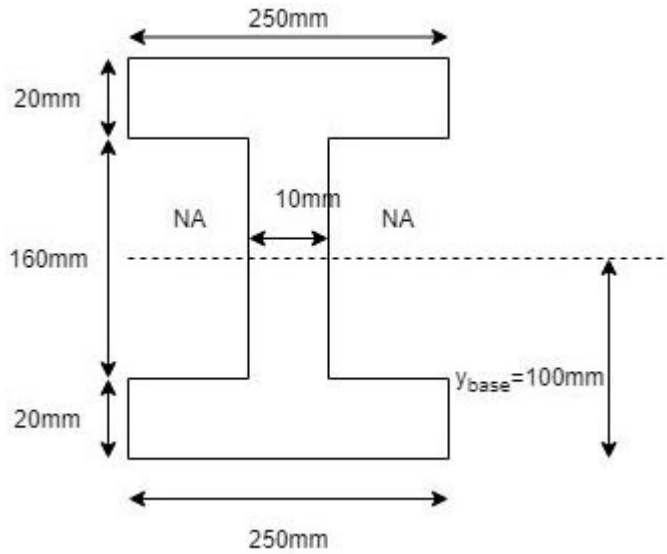
◉ 11.38x10^7 mm^4

7. The point at which the total area of a plane figure is assumed to be concentrated is   2 points
called _____

◉ Centroid

○ Centre of gravity

○ Central point

○ Inertial point

8. Where will be the centre of gravity of a uniform rod lies?   2 points

◉ At its centre

○ Anywhere on its radius

○ Anywhere on its circumference

○ Anywhere on its diameter

9. The center of gravity of a circle of radius 10 cm will be _____   2 points

◉ At its center of the diameter

○ At the center of the radius

○ Anywhere on the circumference

○ Anywhere in its area

10. A rectangle has dimension of 10cm x 20cm. where will be its Centroid distance?   2 points

○ (10,10)

○ (20,5)

◉ (10,5)

○ (5,10)

11. What is the centroidal distance of an equilateral triangle of side 2 m?   2 points

○ 0.866 m

○ 0.769 m

○ 1.000 m

⦿ 0.577 m

12. An airplane accelerates down a runway at 3.20 m/s2 for 32.8 s until is finally lifts   2 points
off the ground. Determine the distance traveled before takeoff.

○ 1650 m

⦿ 1720 m

○ 1800 m

○ 1680 m

13. A kangaroo is capable of jumping to a height of 2.62 m. Determine the takeoff   2 points
speed of the kangaroo.

○ 6.54 m/s

○ 6.96 m/s

○ 5.54 m/s

⦿ 7.17 m/s

14. A car starts from rest and accelerates uniformly over a time of 5.21 seconds for a   2 points
distance of 110 m. Determine the acceleration of the car.

○ 7.54 m/s^2

○ 9.10 m/s^2

◉ 8.10 m/s^2

○ 7.90 m/s^2

15. A feather is dropped on the moon from a height of 1.40 meters. The acceleration   2 points
of gravity on the moon is 1.67 m/s^2. Determine the time for the feather to fall to the
surface of the moon.

○ 1.98 s

◉ 1.29 s

○ 0.85 s

○ 3.28 s

16. A racehorse coming out of the gate accelerates from rest to a velocity of 15.0 m/s   2 points
due west in 1.80 s. What is its average acceleration?

◉ -8.33 m/s^2

○ 7.76 m/s^2

○ -8.04 m/s^2

○ 9.54 m/s^2

17. Upton Chuck is riding the Giant Drop at Great America. If Upton free falls for 2.60   2 points
seconds, what will be his final velocity?

- ○ -30.5 m/s
- ● -25.5 m/s
- ○ -18.5 m/s
- ○ 20.5 m/s

18. The change of position of body with respect to time from an arbitrary fixed point   2 points
is known as

- ○ speed
- ● displacement
- ○ velocity
- ○ kinetics

19. The rate of change of displacement in a specific direction is known as   2 points

- ○ acceleration
- ○ speed
- ○ distance traversed
- ● velocity

20. A body is moving with a velocity of 2 m/sec. After 5 second the velocity of the body reaches 6 m/sec. Find the acceleration of the body.   2 points

◉ 0.8 m/sq. sec

○ 0.6 m/sq. sec

○ 1.2 m/sq. sec

○ 1 m/sq. sec

21. Displacement is a scalar quantity.   2 points

○ True

◉ False

22. Which one is the equations of motion   2 points

○ v= u+at

○ s=ut+at2

○ v2=u2+2as

◉ All of above

23. Which of the following remains constant if a body travels with constant acceleration?   2 points

○ Time

○ Velocity

○ Displacement

◉ None of the above

24. The path traced by the projectile in the space is known as   2 points

○ Angle of projection

○ Time of flight

○ Range

◉ Trajectory

25. D'Alembert's principle states that the resultant of the external forces F and the kinetic reaction acting on a body equals zero. The kinetic reaction is defined as the negative of the product of the mass m and the acceleration a.   2 points

◉ True

○ False

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