

Part - B

3×2=6

Answer any 3 questions. Question No. 14 is compulsory:

- 11) What is the principle of homogeneity of dimensions?
- 12) What is relative velocity?
- 13) State Newton's Second Law.
- 14) Distinguish fundamental quantity and derived quantity.
- 15) What is vector product? Give example.

Part - C

3×3=9

Answer any 3 questions. Question No. 19 is compulsory:

- 16) How will you measure height of the tree using triangulation method?
- 17) Explain cross error and how will you minimize it?
- 18) Deduce the relation between linear velocity and angular velocity.
- 19) Two vectors are given as $\vec{r} = 2\hat{i} + 3\hat{j} + 5\hat{k}$ and $\vec{F} = 3\hat{i} - 2\hat{j} + 4\hat{k}$. Find the resultant $\vec{\tau} = \vec{r} \times \vec{F}$.
- 20) Define angle of friction. Deduce the relation between coefficient of static friction and angle of friction.

Part - D

Answer all questions:

2×5=10

- 21) a) Convert 76 cm of mercury pressure into Nm^{-2} using the method of dimension. (OR)
b) Deduce the expression for magnitude and direction of resultant vector of addition using triangular law.
 - 22) a) Drive the kinematics equations of motion for constant acceleration. (OR)
b) Compare static friction and kinetic friction.
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