

WELCOME
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*“If there is no
struggle, there is no
progress.”—
Frederick Douglass*

For a certain engine having an average speed of 1200 rpm, a flywheel approximated as a solid disc, is required for keeping the fluctuation of speed within 2% about the average speed. The fluctuation of kinetic energy per cycle is found to be 2 kJ. What is the least possible mass of the flywheel if its diameter is not to exceed 1 m?

- (a) 40 kg (b) 51 kg
(c) 62 kg (d) 73 kg

[2003 : 2 Marks]

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Maximum fluctuation of kinetic energy in an engine has been calculated to be 2600 J. Assuming that the engine runs at an average speed of 200 rpm, the polar mass moment of inertia (in kg.m^2) of a flywheel to keep the speed fluctuation within $\pm 0.5\%$ of the average speed is _____.

[2014 : 2 Marks, Set-2]

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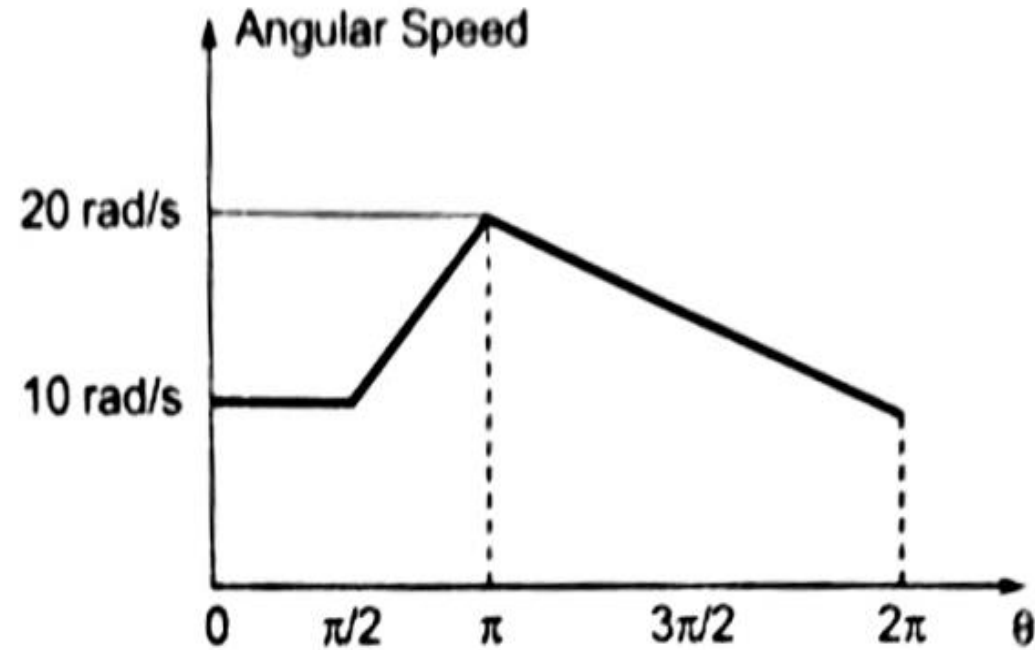
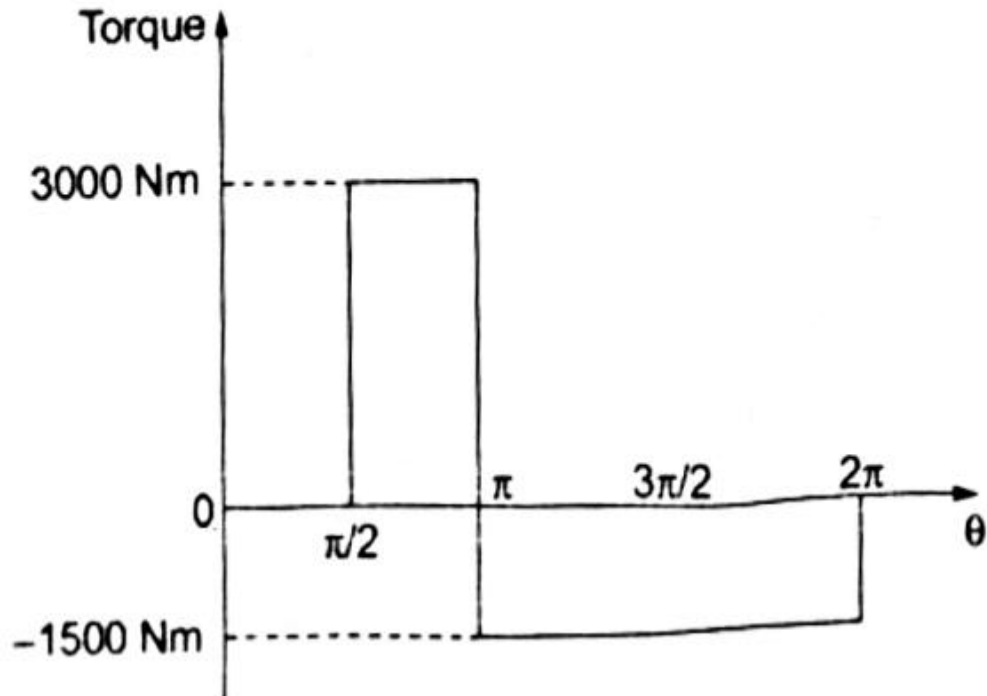


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Torque and angular speed data over one cycle for a shaft carrying a flywheel are shown in the figures. The moment of inertia (in kgm^2) of the flywheel is _____.



[2014 : 2 Marks, Set-4]

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Consider a flywheel whose mass M is distributed almost equally between a heavy, ring-like rim of radius R and a concentric disk-like feature of radius $R/2$. Other parts of the flywheel, such as spokes, etc, have negligible mass. The best approximation for α , if the mass moment of inertia of the flywheel about its axis of rotation is expressed as αMR^2 is _____.

[GATE : 2014]

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A flywheel is attached to an engine to keep its rotational speed between 100 rad/s and 110 rad/s. If the energy fluctuation in the flywheel between these two speeds is 1.05 kJ then the moment of inertia of the flywheel is _____ kg.m² (round off to 2 decimal places).

[2020 : 1 Mark, Set-1]

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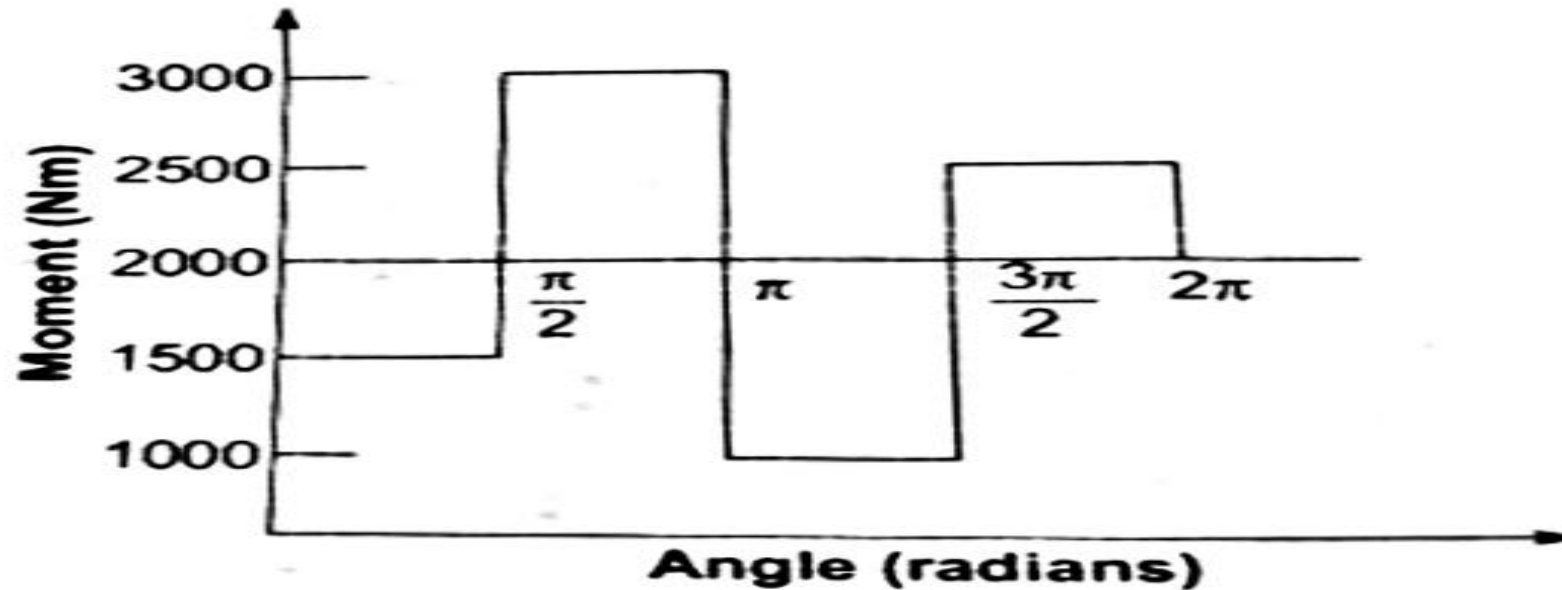
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The turning moment diagram of a flywheel fitted to a fictitious engine is shown in the figure.



The mean turning moment is 2000 Nm. The average engine speed is 1000 rpm. For fluctuation in the speed to be within $\pm 2\%$ of the average speed, the mass moment of inertia of the flywheel is _____ kgm^2 .

[2020 : 2 Marks, Set-2]

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