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Question:

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Answer:

m = Mass attached to shafts,

r = Distance of CG from axis of rotation.

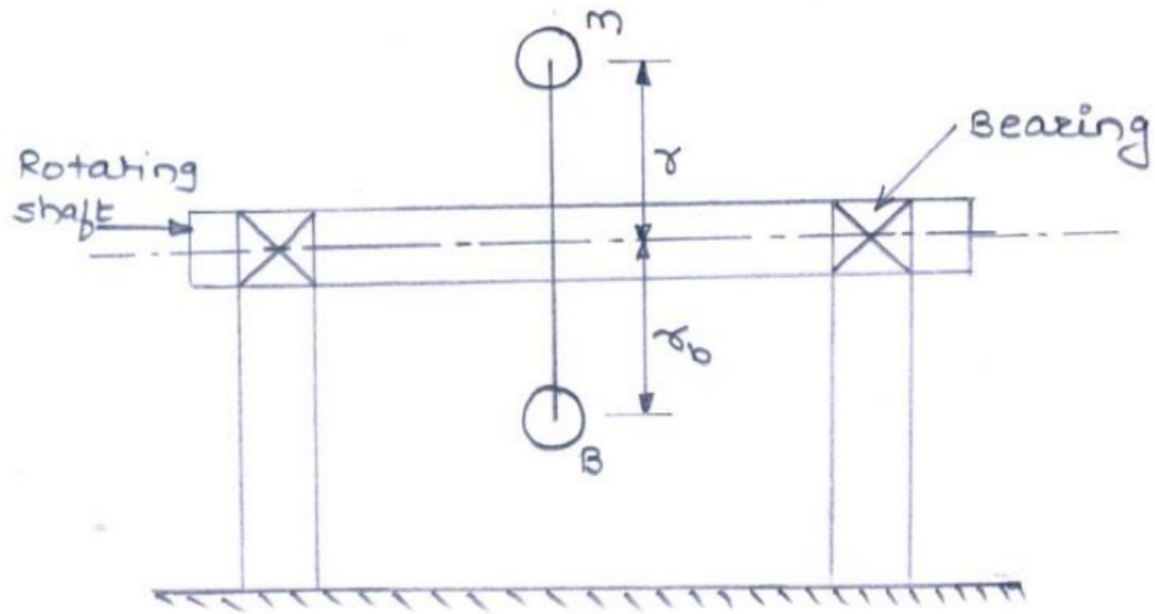
Consider mass 'm' is attached to rotating shaft at a radius are then the centrifugal force exerted by mass 'M' on the shaft is

$F_c = Mw^2R$ Where,

W = Angular velocity of shaft

R = Distance of CG from axis of rotation

M = Mass attached to shaft.



Due to continuous rotation of shaft the centrifugal force developed will be continuously changing its direction. It will cause bending moment on shaft. To counter act the effect of centrifugal force the balance weight may be introduced in same plane of rotation. This balance weight should be attached it will result in exactly equal but opposite centrifugal force to that of disturbing weight 'M'.

The balanced centrifugal force is given by $F_b = mbw^2R_b$ For balancing the shaft - $Mw^2R = mbw^2R_b$.

