

(b) Draw a flow chart and also write a program in BASIC to find one real root of the non linear equation $x = \phi(x)$ by the fixed point iteration method. Illustrate it to find one real root, correct upto four places of decimals, of $x^3 - 2x - 5 = 0$. 30

Q. 8. (a) A plank of mass M , is initially at rest along a line of greatest slope of a smooth plane inclined at an angle α to the horizon, and a man of mass M' starting from the upper end walks down the plank so that it does not move. Show that he gets to the other end in time

$$\sqrt{\frac{2M'a}{(M + M') g \sin \alpha}}$$

where a is the length of the plank. 30

(b) State the conditions under which Euler's equations of motion can be integrated. Show that

$$-\frac{\partial \phi}{\partial t} + \frac{1}{2} q^2 + \frac{d\rho}{\rho} = F(t)$$

where the symbols have their usual meaning. 30

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