

Major Examination on Kinematics and Dynamics of Machines (MEL-211) 2008

Read the Instructions carefully

This paper is for 100 marks distributed in three parts.

Part-I contains one question of 10 marks.

Part-II contains six questions of 10 marks each ($6 \times 10 = 60$ marks)

The last part contains 25 objective questions, of which 20 questions are of 1 mark each and 5 questions are of 2 marks each ($20 \times 1 + 5 \times 2 = 30$ marks).

Answer Part-I on the **thin** answer-book, Part-II on **thick** answer-book and tick the answers to the objective questions **on the question booklet**, which you should return.

Part-I

Problem-1

The turning moment diagram of a single acting 4-stroke engine may be assumed, for simplicity, to be composed of four triangles, the areas of which, when measured over the 0 line are $+8.5 \text{ cm}^2$ for the ~~compression~~ ^{expansion} stroke, -0.56 cm^2 for the suction stroke, -2.14 cm^2 for the compression stroke and -0.80 cm^2 for the exhaust stroke. The scale is represented by $1 \text{ cm}^2 \equiv 90000 \text{ Nm}$. Assuming uniform resisting torque find the mass of the flywheel of mean radius of 1 m to keep the speed of the engine between 98 and 102 rpm.

(10)