

- (1) Draw an Otto cycle on a p-v diagram and explain each of the processes. Comment on the difference between an Otto cycle and a Diesel cycle?
- (2) What is the mean effective pressure in a air standard cycle?
- (3) In an air standard Otto cycle, the maximum and minimum temperatures are 1400 and 15°C. The heat supplied per kilogram is 800kJ. Calculate the pressure ratio and the cycle efficiency.
[5.27/1; 45.5%]
- (4) For the cycle described in question 2, calculate the ratio of maximum to minimum pressures in the cycle.
[30.65/1]
- (5) A four-cylinder petrol engine has a swept volume of 2000 cm³, and the clearance volume in each cylinder is 60cm³. Calculate the air standard cycle efficiency. If the introduction conditions are 1 bar and 24°C, and the maximum cycle temperature is 1400°C, calculate the mean effective pressure based on the air standard cycle.
[59.1%; 8.38bar]
- (6) Calculate the cycle efficiency and mean effective pressure on an air standard Diesel cycle with a compression ratio of 15/1, and maximum and minimum cycle temperatures of 1650°C and 15°C respectively. The maximum cycle pressure is 45 bar.
[59.1%; 8.38 bar]