1	Design a connecting rod for a petrol engine from the following data: Diameter of piston = 110 mm; Mass of reciprocating parts = 2 kg; Length of connecting rod = 325 mm; Stroke = 150 mm; Speed = 1500 rpm with possible over speed of 1850 rpm; Compression ratio = 4:1; Factor of safety = 4; Maximum explosion pressure = 5.5 MPa. Select suitable material and permissible stresses.
2	Design a connecting rod for a high speed diesel engine from the following data: Cylinder bore = 100 mm, Stroke = 120 mm, Maximum speed = 1800 rpm, Compression ratio = 18, Max. Explosion pressure = 5 MPa, Mass of reciprocating parts = 3.5 Kg, Length of connecting rod = 240 mm, If the connecting rod is made of drop forged steel, determine the size of I- section, size of small end bearing, big end bearing and bolts. Assume suitable stresses.
3	Design a connecting rod for a 4 –stroke petrol engine from the following data: Cylinder bore = 100 mm Stroke length = 140 mm Engine speed = 1500 rpm Possible over speed of engine = 2500 rpm Maximum explosion pressure = 2.5 MPa Weight of reciprocating parts = 18.5 N Length of connecting rod = 315 mm Yield strength of connecting rod material = 320 MPa Factor of safety = 5 Permissible bearing pressure for big end = 12.5 MPa Permissible bearing pressure for small end = 15 MPa
4	Design a connecting rod for a four-stroke petrol engine for following data. Piston diameter =0.1 m Stroke=0.14 m, Length of C.R. =0.315 m Weight of reciprocating part =18.2 N Speed = 1500 rpm with over speed 2500 Compression ratio 4:1 Maximum explosion pressure = 2.45 MPa. F.O.S. =5 , For connecting rod σ_y = 380 N/mm^2 , σ_u = 580 N/mm^2
5	Design a connecting rod for 4 stroke petrol engine with the following data: Piston diameter = 0.10 m Stroke length = 0.15 m Length of connecting rod (centre to centre) = 0.30 m Weight of reciprocating parts = 20 N Speed = 1500 rpm Possible over speed = 2500 rpm Compression ratio = 4:1 Maximum explosion pressure = 2.5 MPa. Assume suitable additional data if required.