Q1

1) 450*520*25*12=70,200,000 bits/second
2) 450*520*25*(4*8+6+6)/4*10*60=38,610,000,000 bits

Q2

1) 1.75, 2.25, 2.25, 3.25, 3.25, 3.25, 2.5, 2.75, 2.75, 2.75, 1.5, 1.0, 1.25, 1.25, 1.75, 2.25, 2.25, 2.25, 2.0, 2.25, 1.25, 0.25, -1.25, -1.25, -1.75, -1.0, -2.25, -1.5, -1.5, -0.75, 0.0, 1.0
2) each value needs 5 bits, 32*5=160 bits

Q3

1) perimeter=3.14*0.4244=1.33m, 36 km/h = 10 m/s, 10 m/s / 1.33m = 7.52 rotations/sec
2) alias frequency = 8 Hz - 7.52 Hz = 0.48 Hz, tire rotation looks like 0.48 rotations/sec
3) The maximum frequency of tire is 30 Hz / 2 = 15 Hz = 15 rotations/sec, speed = 15*1.33=19.95 m/s = 71.82 km/h