1. Motion is uniform
Acceleration in unform

2. Distance by car Bo = x m
Car A is ahead of B by 10.5 m

time taken to meet eachother = t sec
u = 0 m/s
Distance travelled by car B

$$S_1 = ut + \frac{1}{2}at^2 = \frac{1}{2}at^2$$

Ace^n of car B = $\tan\theta = \tan 45^\circ = 1$

$$S = \frac{t^2}{2}$$

V of A = 10 m/s time = t

Distance travelled by $A = vt = S_2$

$$S_1 = S_2 + 10.5$$

$$\frac{t^2}{2} + 10t + 10.5$$

$$2t^2 - 20t - 21 = 0 \quad (t-21)(t+1)$$

Hence time is 21 secs. $t - 21 = 0$

3. A - particle moving with constant speed - S
B - Particle moving with increasing acc^n - R
C - Particle moving with constant Negative acceleration - P
D - Particle moving with 0 acc^n - Q

(4) a - from A - B it is at rest and from B - C it is moving with negative acc^n or retardation

b) A - B it is 0 acceleration because the time is increasing but velocity is constant

(c) From B - C the object has negative acceleration because time is increasing at a constant rate but velocity is decreasing.

(5) (i) OA - Uniform motion AB - Rest
(ii) after 10s = 20 m/s after 40s - 0

(iii) - 2

(iv) Distance travelled from 10th to 30th sec
= 0 m