BB101-Quiz2: Evaluation Scheme

Question 1:

(i) If somebody wrote only correct expression of diffusion constant in terms of k_BT, pi, eta and R then 0.5 marks
If evaluated correct value of diffusion constant Diffusion then 0.5 marks
(ii) If somebody wrote only correct expression of drag coefficient in terms of pi, eta and R then 0.5 marks
If evaluated correct value of drag coefficient then 0.5 marks
(iii) If wrote correct formula for distance travelled then 0.5 marks
If evaluated correct value of distance travelled then 0.5 marks.

Separate penalty of 0.25 marks penalty for each minor mistake in part (i), (ii) or (iii) and zero marks on gross mistake.

Values should be within +/- 5 %

Question 2:

(i) If correct expression for partition function written then 0.25 marks, and if correct value of partition function evaluated then additional 0.25 marks
(ii) 0.25 Marks for correct value of partition function in the limit T tending to zero
(iii) 0.25 Marks for correct value of partition function in the limit T tending to infinity
(iv) 0.25 Marks for correct value of probability
(v) 0.25 Marks for correct value of probability
(vi) 0.25 Marks for correct value of probability
(vii) 0.25 Marks for correct value of probability

Separate penalty of 0.25 marks penalty for each minor mistake in part (i), (ii), (iii), (iv), (v) and (vi), and zero marks on gross mistake.

Question 3:

(i) If wrote correction expression for velocity in terms of r, rho, g and eta then 0.5 marks and if evaluated correct value of velocity with +/-5% error then 0.5 marks
(ii) If wrote correction expression for time in terms of r, rho, g, eta and distance then 0.5 marks and if evaluated correct value of time with +/-5% error in seconds then 0.5 marks

Separate penalty of 0.25 marks penalty for each minor mistake in part (i) or (ii) and zero marks on gross mistake.

Question 4:

(i) If wrote correct expression for equation of motion for $t < \tau$ then then 0.25 marks
(ii) If wrote/used initial conditions correctly then 0.25 marks
(iii) If wrote correct expression for x for $t < \tau$ explicitly then 0.5 marks.
(iv) If wrote correct expression for x at $t= \tau$ then 0.25 marks
(v) If wrote equation of motion for $t \geq \tau$ then 0.25 marks
(vi) If wrote correct expression for x for $t \geq \tau$ then 0.5 marks.

Marks have been given if correct expression has been obtained using definite integral Separate penalty of 0.25 marks for any minor mistake in each of the above steps of Question 5 and zero marks on any gross mistake. Penalty of 0.5 marks has been imposed when mass has been considered. Penalty has not been imposed in case students have wrongly assumed that tau is a time constant. In this question tau was not given as time constant. Please be careful next time.

Question 5:

(i) If wrote correct expression for c(x) with correct units then 0.25 mark.
(ii) If wrote correct expression for J(x) with correct sign then 0.25 marks
(iii) If evaluated corrected value of J(x) with correct units then 0.25 marks
(iv) If wrote correct direction of flux then 0.25 marks.

Penalty of 0.25 marks on not writing the units. Separate penalty of 0.25 marks on any minor mistake at each step (i), (ii), (iii) and (iv) Zero marks on gross mistake.