Question	Answer	Comments	Marks
1 SUVAT a)Find the speed b)Find the distance	a. 16 m/s b. 40m		1 2
2 Forces a)Find reaction force (R = mg) b)Find frictional force c)Find coefficient of friction	a. R= 5g (49N) (g=9.8) b. F = 21 c. u= 0.43(2sf)		1 2 1
3 SUVAT a) Find speed b) Find T c) Find c	a. 7.62ms-1 b. T = 10 c. C = 10	I think 3 and 4 are mixed up	4 3 3
4 Vector a) speed/velocity through A (t=0) b)	 c) t= 2 only d) 1.5 seconds	c) reject t=-5 since t>0 Wheres a and b	4 3 3

c) Find the values of t when it is moving in the direction of (i+j) d) Find the time when moving perpendicular to i			
5 Projectiles (?) a) Show that T=10/7cos(alpha) b) Show that tan^2(a) - 4 tan(a) + 3 =0 c) Find the max height d) Explain why the model might not be suitable	a) Self explanatory b) Self explanatory use sec^2 = 1 + tan^2 c) 36m d) wind direction, doesn't take into account rotational force Dimensions and weight of the particle	a) Resolving horizontally. You had to use g=9.8! b) Resolving vertically. s=ut+1/2AT^2 and sub in T from a) c) use v^2-u^2=2as, with v=0 and tan(theta) = 3/4 9.81 would not work as it would not cancel o'ut 49/50	2 5 3 1

6 Ladders (?) a. Which direction is friction acting b. Show that ½ Mg cot(theta) = T c. Find μ	a. To the right because the ladder is on the point of slipping to the left b. Show that ½ Mg cot(theta) = T c. μ = ⅔ d. something about resultant force at A (sqt13)/3 Mg (Resultant force at B would be larger as Mgcosphete would have a bigger value etc.) e. resultant force at B would be larger because the perpendicular force would be greater if the centre of mass moved further away from B as tan(a) stays the same	For this question. The moments and Net forces are 0. Using this idea, equate and solve. For the last bit, just formulate an equation, the distance of the mass's act will be larger, and then solve for reaction force, numerator will be larger and hence Normal force is larger.	1 2 5 3 1

		Not doing all that for 1 mark ok	

Statistics

Question	Answer	Comments	Marks
1 Probability a. P(A) b. Find p and q c. Find P(A|B')	a. 0.38 b. p= 0.2, q= 0.07 c. 0.325	P(B) * P(C) = P(B n C)	1 2 3
2 Binomial Distribution a. Why was the binomial suitable? b. Find P(T=6) c. Find P(T<3) d. Probability that exactly	a) Fixed no. of trials. · Independent events. · Same probability for each event. · Two outcomes b) 0.173 c) 0.0615 d) 0.0312? e) X~N(110, 0.0312) Reject null for hypothesis	The type of Question this question was that if there were x trials and if the probability for the even was 'r', what is the probability for the event to occur 'a' to 'b' times. The probability occuring an 'n'th time would be (xC n)(r^n)(1-r)^(x-n) and then	1 3 3

2 boxes have P(T<3) e. Hypothesis test for claim that p<1/7		form a series while simplifying/factorise the summations which makes typing into calculator easier or just use the binomial calculator in the statistics part.	
3 Large Data Set a. How would you clean the data? b. Calculate the mean and SD c. Why isn't it suitable to use the LDS d. How would the actual mean would differ?	a. Treat tr as 0.025mm (0mm is also accepted) b. Mean = 2.12, c. SD = 4.37 d. The Large Data set only ranges from May-Oct 1987. Therefore these 6 months are not an accurate measure of the annual mean daily rainfall e.	(Alternative reason: The 1987 storm, [I put this] I don't think you can suggest the storm as that mainly affected the South	2 3 1

4 Normal Distribution?	H0: μ = 175.4 H1: μ ≠ 175.4 P(A(bar)>177.5) = 0.028 Or H0: μ = 177.5 H1: μ ≠ 177.5 P(A(bar)<175.4) = 0.028 0.028 > 0.025 so insufficient evidence to reject H0. No reason to believe mean height of men at destination B is not = 175.4	I swear this was a one tail test Dont remember the values someone correct pls xx Alsom was this the p-value question? Yes this was the p value, just double the probability to get total probability as it's a two tailed test. P was something like 0.058	4 1

5 Probability Distribution a. Show that c = 8/5b	a. bk/50 = ck/80 as probability is the same. Rearranging to get c = 8/5b b. a=2/25, b=⅕, c=8/25, d=⅖ c. Nav got the probability of success being 0.3, but table shows d = 0.4 hence model isn't suitable	Use this equation (bayes formula) and given probabilities to get For part a I said 80/50 = c/b So c = 85/b and then for part 2 I did that for all of them and got them in terms of b, all terms of b add to 1 so b=0.2 and then you substitute that into your equations. Gave me the same answer. P({X=x} ∩ S) = P(X=x)P(S I {X=x}) Use bayes formula and just repeat it all the time for a linear combination of a variable in all other variables, for example: a=x1c, …, d=x4c and then sum probs to 1 and sub in c, and solve for c and then using value of c, find all the other elements's prob.	2 5 1

		P(A N B)=P(A|B)P(B)=P(B|A)P(A) Probability theory, its a basic formula.	
6 Frequency polygons and histograms	a) 48.4/90 Y = kre^-r (i changed form x to r as someone wrote the answer in terms of 'x' so it can cause some confusion if the answer were in terms of 'x' and limits in terms of x as well while the original integrand being in terms of x too) [1-(1+x)e^-n] Show K=99 to nearest integer (99.07) P(Xiang's model) = 0.59 Limitation of the model ● Xiang's model is only valid 0<=n<=4 P(10<X<30) using X-N(14.9,9.3^2) = 0.6486	Remember that 1n = 10 Hours. K was 1 right Integration by parts Lol I didn't see this question the back page low IQ moment. Good. if you had not got 0.59, then that would be weird. Because the integral from 1 to 3 is equal to integral of 0 to 3 minus the integral of 0 to 1 then divide by 90. I just used my calculator to get a decimal for the integral	2 1 4 3 1 1 1

		🙂 Valid way too. I did it in closed form (linear combination of powers of ‘e’ and then put it in decimal form)	