SECTION A (40 MARKS)

Antwer all the quartons in this Section

- 1 A and B are Markally anchorse events 300 that P(A) = 0.5 and P(B) = 0.4 Find:
 - (i) PLA'NB'L
 - (II) P(A'UB)

(05marks)

- the particle is at least 9 motors above the populor projection. (05marks)
- 3. The table below shows an extract of costs

X-30	6	12'	33
Cola	D 8652	0.8543	0.8634

Use linear interpolation or extrapolation to I

- (i) Cos30/251
- (U) Cos (0.8647)

(05marks)

- 4. The weights of Packets of wheat flour to as wain factory are normally distributed with mean 3 0kg and Variance 2.89 Kg². Find the prohibility that a random sample of 150 packets has sample mean between 2.8kg and 3.3kg.
- 5. Three forces of magnitudes 5N, 10N and 8N for along the rider AE BC and AC respectively of an equilateral triangle ABC. Find the resultant force and above that he i he of action of the resultant force interaccus AB at a distance of potrom A. (05 marks)
- 6. Using 2010 as the base year, the price of indices of a commodity in 2012 and 2015 are 118 and 125. Calculate the price Index of the Commodity in 2010 and 2015 when 2012 in taken as the base Year (05 marks)
- 7. A particle is initially moving with a velocity of -2i +5j 1i's accelerated a state 1 is given by a = -4ii +6j +2ik ms⁻². Find the speed of the particle when t = 3; (05 marks)
- B. Given that the values of x = 4.3 and Z = 61,001 are rounded off = 15, the Corresponding percentage error of 0.5 and 0.05, Find the relative error in x = 2, co many your answer to 3 Significant

 (05 marks)

SECTION II (M) MARKS)

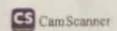
danner une five questions from this scatter dil quemons Corry equal marks)

- 9.(a) A uniform rod AB of mass 15kg hargs Venerally with end A freely hinged to a fixed point. The roal is pulled aside a horizontal form V applied as B until it rees in equilibrium making as a pulled aside a horizontal form V applied as B until it rees in equilibrium making an angle of 25" with the downward Verti to Determine the Value of F. (05 marks)
- (b) A ladder AB rests with it's end A on a rough a manned floor and the other end B against a rough Vertical wall, the coefficients of fractions and proceed proceed at the floor and on the wall respectively, if the Center of gravity of the ladder was a distance a and b from the ends A and B, show that when the laider is limiting equilibrian, the receives of the ladder with the (07miris)
- 10.(a) The weights of 400 books in a bookshell was a man a first of a mean 50g and standard deviations Sg. Given that 99.456 of the last weather see 41g. Criston many books
- (b) A random sample of 100 mass trapected to a mad on a narrow with gave the eges (in years), X Summarized below Es = 560 Es = 1500 December 1
- (i) Un biased estimate for the Veriance of all the same and and
- (u) 91.86% Confidence limits for the most speed at the second and the second
- 11(e) Use the trapezium rule with 7 ordinates to en and decimal places.
- (b) Calculate the exact value of fi 1 (1 ting) dx
- (c) Determine the percentage error made in your or your accuracy.
- 12. A continuous random Variable X has a proven

$$I(x) = \begin{cases} k(3-x) & 1 \le x \le 2 \\ k & 2 \le x \le 3 \\ k(x-2) & 3 \le x \le 4 \end{cases} \text{ where K is a sum of their wise}$$

- (a) Sketch the graph of ((a) and find the value of
- (b) Determine the cumulanve distribution function
- (c) Calculate P (2:4 <x < 3 5)

(12marks)

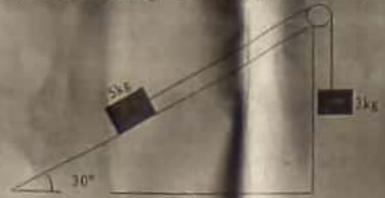


- IN(a) Turces the application and an angular and value along side AB, BC, DC, AD, It and OF regretively, where ABCD is a gare of side in. Find the;
 - (0) TENNESS PRINCE
 - Equation of the line of scuon of the poultant force (11)

(08 marks)

is just sufficient to pre-en-the 5kg mass from Jiding down the slope.

(b) The diagram letter shows a mass of far lying on a rough plane inclined at 30" to the horizontal. From the Signatus, a light matter to be strong passes up the line of greatest slope and over a smooth fixed pulley carrying a quart. I sky hanging freely. The Tension in the string



Determine the Coefficient of Inction between us 5kg mass and the rough plane (04 mark)

- 14. (a) show that the equation $e^2 + x = 10$ has a root between 2 and 3.
- (b) Using Newton's Raphson method Calculate the most of the squapon. Correct to three decimal places (12marks)

15(a) Two events X and Y are such that
$$P(X) = \frac{1}{2}$$
, $P(x/y) = \frac{2}{3}$ and $P(x/y) = \frac{3}{7}$
Find $P(x \text{ or } y)$ (05 marks)

(b) The table below shows the distribution of the a of students in a less

Score	Frequency
20 Sx<30	4
X45	3 1 1 1 1 1
X<50	2
X<65	21 21
X<75	THE RESERVE
X<80	5
X<100	14

02023 Kunungu Direct Con Mack Examination.

