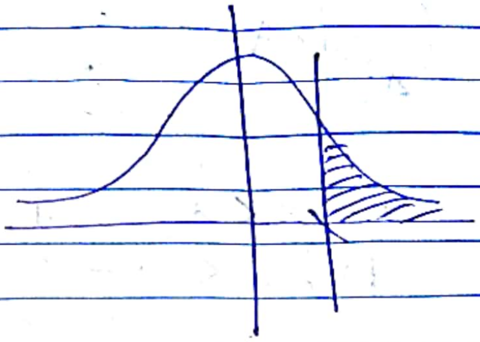
Question ⓪①

X = Proportion of Bank Card Holders pay.

$\mu = 5392$

$\sigma = 1528$

$X \sim N(5392, 1528^2)$



i). $Pr[X > 6200]$

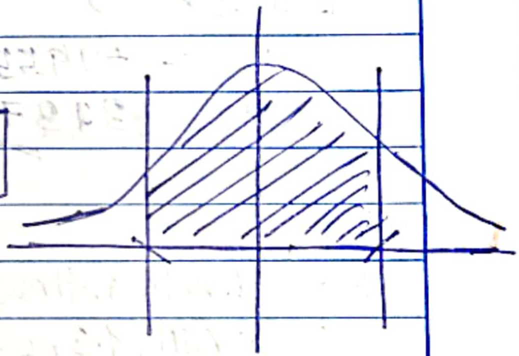
$Pr\left[Z > \frac{6200 - 5392}{1528}\right]$

$Pr[Z > 0.5287]$

$(0.5 - 0.1985)$

$= 0.3015$

ii). $Pr[4950 < x < 6850]$



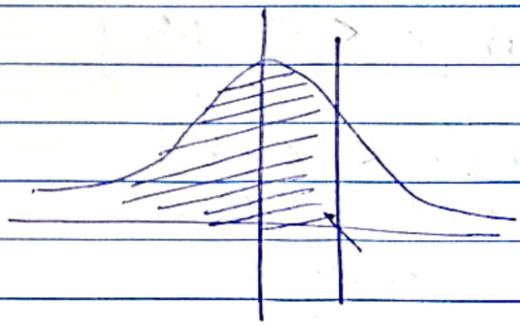
$Pr\left[\frac{4950 - 5392}{1528} < Z < \frac{6850 - 5392}{1528}\right]$

$Pr[-0.289 < Z < 0.9541]$

$= (0.1103 + 0.3289)$

$= 0.4392$

iii) $Pr[X < 5750]$



$Pr\left[Z < \frac{5750 - 5392}{1528}\right]$

$Pr[Z < 0.234]$

$= (0.5 + 0.0910)$

$= 0.5910$

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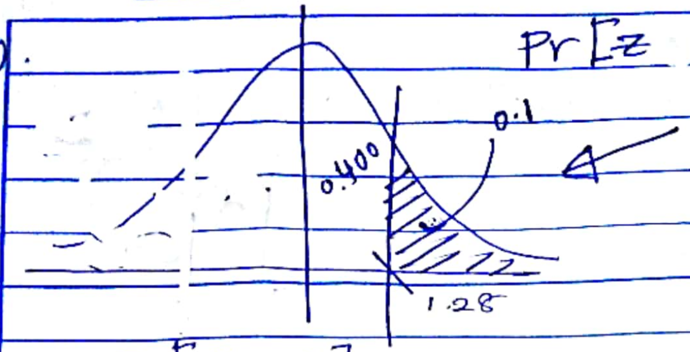
(iv).



$\Pr[z \quad K] = 0.3.$

$\Pr[z \quad K] = 0.\cancel{8}1$

$\Pr[X \quad a] = 0.1$

$\Pr\left[z \quad \frac{a-5392}{1528}\right] = \cancel{81\cdot 2}\ 0.1$

0.4

0.3997 0.4015

$\boxed{+1.28}$

$\left[\frac{a-5392}{1528}\right] = 1.28$

$a = 1955.84 + 5392.$

$a \quad 7347.84$

Question 02

$X =$ download time of the resources webpage.

$X \sim N(9.3, 2.7^2)$

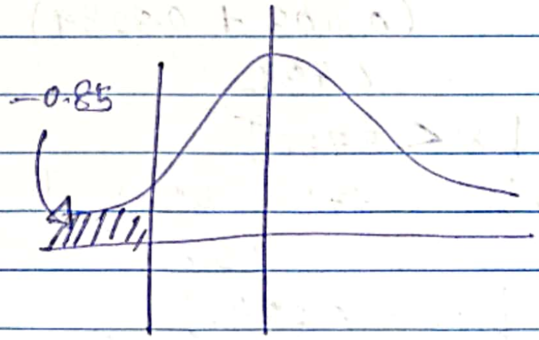
(a). $\Pr[X < 7]$

$\Pr\left[z < \frac{7-9.3}{2.7}\right]$

$\Pr[z < -0.85]$

$= 0.5 - 0.3023.$

$= 0.1977$



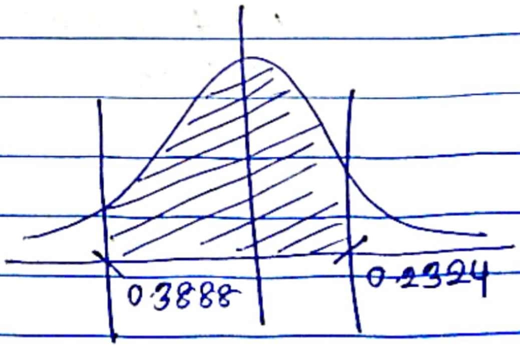
(b). $\Pr[6 < X < 11]$

$\Pr\left[\frac{6-9.3}{2.7} < z < \frac{11-9.3}{2.7}\right]$

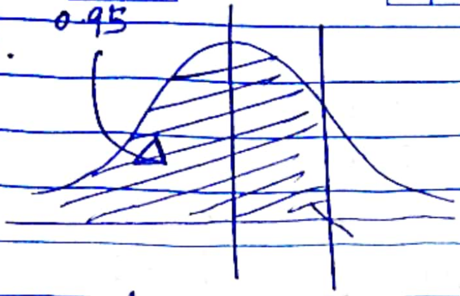
$\Pr[-1.22 < z < 0.62]$

$= (0.3888 + 0.2324)$

$= 0.6212$



(c).



$Pr[Z<K] = 0.95$

$\boxed{a=10}$

$Pr[X<a] = 0.95.$

$\cancel{X}$

$Pr\left[Z < \frac{10-\mu}{2.7}\right] = 0.95.$

$\frac{10-\mu}{2.7} = 0.3289.$

$10-\mu. = 0.8880$

$\mu = 10-0.8880$

$\mu = 9.112$ //

~~Question (2)~~

(ii). X = length of life of an instrument.

$X \sim N(18, 2.8^2)$

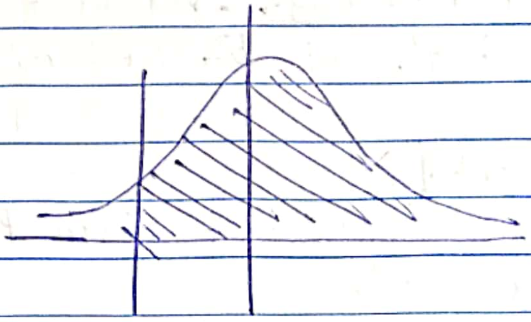
$Pr[X>12]$

$Pr\left[Z > \frac{12-18}{2.8}\right]$

$Pr[Z > -2.14]$

$= 0.4838+0.5$

$= 0.9838$ //



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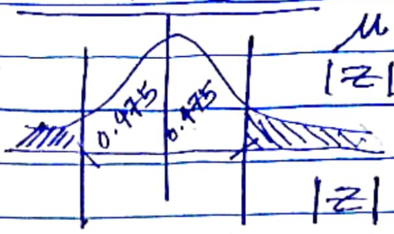
Question ⓪③

i) μ = mean amount of Cut Steel Strips.

$H_0 : \mu = 1200$

$H_a : \mu \neq 1200$

Critical Region.



$\mu \neq \mu_0$

$|Z| > Z_{\alpha/2}$

$|Z| > Z_{\frac{0.05}{2}}$

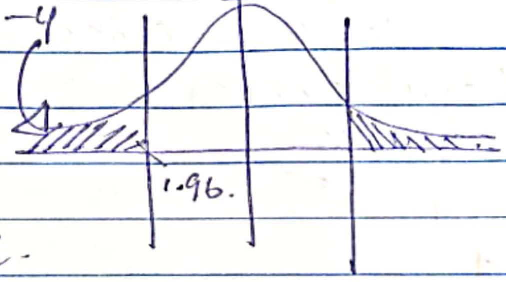
$\boxed{|Z| > Z_{0.025}}$

$$Z = \frac{\bar{x} - \mu_0}{\left(\frac{\sigma}{\sqrt{n}}\right)}$$

$$= \frac{1197 - 1200}{\left(\frac{3}{\sqrt{16}}\right)}$$

$= (-4)$

$\boxed{1.96}$



Since the Calculated test statistic falls in the Critical Region. we have enough evidance to reject H_0 favour of H_a at 5% level of Significance.

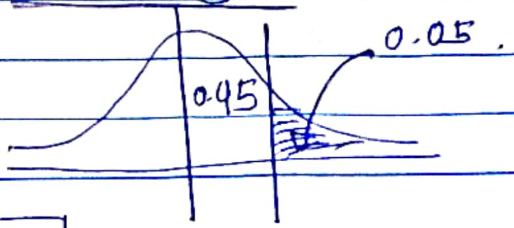
(ii). above 75. [>]

μ = mean number of Math proficiency tests

$H_0 : \mu = 75$

$H_a : \mu_a > 75.$

Critical Region.

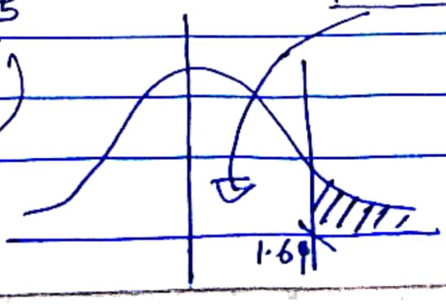


$$Z = \frac{(\bar{x} - \mu_0)}{(\sigma/\sqrt{n})}$$

$$= \frac{79.15 - 75}{\left(\frac{13.43}{\sqrt{17}}\right)}$$

$= 1.274$

$\boxed{1.274}$



$= (1.64 + 1.65)/2$

$= 1.645$

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Question 04

$${}^{n}C_{x} P^{x} (1-p)^{n-x} \; : \; x = 0,1,2,3 \ldots n.$$

(i). $X \sim Bin(\overset{n}{19}, \overset{p}{0.57})$

(a). $Pr[X<4] \Rightarrow P[X=0] + P[X=1] + P[X=2] + P[X=3]$

$${}^{19}C_0 (0.57)^0 (1-0.57)^{19} + {}^{19}C_1 (0.57)^1 (1-0.57)^{18}$$

$$+ {}^{19}C_2 (0.57)^2 (1-0.57)^{17}$$

$$+ {}^{19}C_3 (0.57)^3 (1-0.57)^{16}$$

$$= 0.00028$$

(b). $Pr[X \geq 6] \Rightarrow 1 - Pr[X<6]$

$$= 1 - (Pr[X=0] + Pr[X=1] + Pr[X=2] + Pr[X=3] + Pr[X=4] + Pr[X=5])$$

$$= 1 - 0.00675$$

$$= 0.99325$$

(ii). Using Binomial Distribution.

$n = 10$ / $P = 1/5$ $X =$ correct Answers.

(a). $Pr[X=4] \longrightarrow {}^{10}C_4 \left(\frac{1}{5}\right)^4 \left(1-\frac{1}{5}\right)^{10-4} \; : x = 0,1,2,3 - 10.$

$$= 0.0880$$

(b). $Pr[X \geq 5] \Rightarrow$ ~~Pr~~ $1 - Pr[X<5]$

$$= 1 - (Pr[X=0] + Pr[X=1] + Pr[X=2] + Pr[X=3] + Pr[X=4])$$

$$= 0.03279$$

(c). 60% greater than.

$Pr[X \geq 6] = 1 - Pr[X<6]$

$$= 0.00637$$

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Question (05)

(i). $Pr[x=1] = 0.4\,Pr[x=2]$

$Pr[x=x] = \frac{e^{-\lambda}\lambda^{x}}{x!}$; $x=0,1,2,3,\dots$

$$\frac{\cancel{e^{-\lambda}}\lambda^{1}}{1!} = (0.4)\frac{\cancel{e^{-\lambda}}\lambda^{2}}{2!}$$

$$\frac{\overset{5}{\cancel{20}}}{\cancel{4}} = \lambda$$

$\lambda = 5$

$$Pr[X=0] = \frac{e^{-5}5^{0}}{0!}$$

$= 0.00673$

(ii). X = number of sells insurance Policies per week.

(a). $Pr[X=0] = \frac{e^{-4}4^{0}}{0!}$

$= 0.0183$

(b). $Pr[3 \leq X < 5] \longrightarrow Pr[3] + Pr[4] + \cancel{Pr[5]}$

$$= \frac{e^{-4}.4^{3}}{3!} + \frac{e^{-4}4^{4}}{4!}$$

$$= \frac{e^{-4}}{3!}\left[4^{3} + \frac{4^{4}}{4}\right]$$

$$= \frac{e^{-4}}{3!}4^{3}[2]$$

$= 0.3907$

(c).

$\lambda = \frac{4}{6} \longrightarrow (\lambda = 0.6667)$

$$Pr[X=1] = \frac{e^{-0.6667} \cdot (0.6667)^1}{1!}$$

$= 0.3422$

Question (06)

(i) using Normal Distribution.

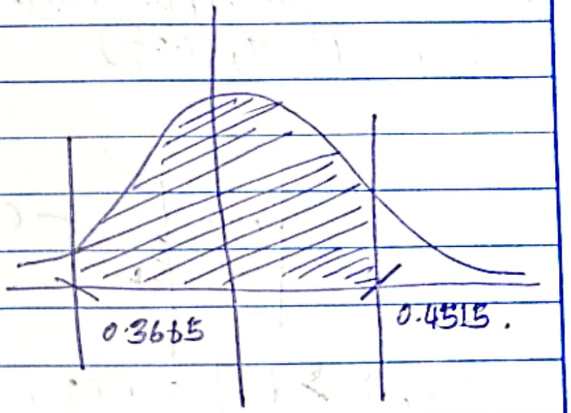
X = Number of Phone Calls.

$X \sim N(65, 9^2)$

$Pr[55 < X < 80]$

$$Pr\left[\frac{55-65}{9} < Z < \frac{80-65}{9}\right]$$

$Pr[-1.112 < Z < 1.667]$



$= 0.3665 + 0.4515.$

$= 0.8180$

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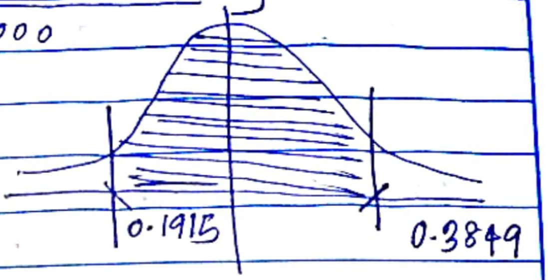
(i) X – tax Policy Amount.

$X \sim N(40{,}000, 10{,}000^2)$

$Pr[35\,000 < X < 52\,000]$

$Pr\left[\frac{35\,000 - 40\,000}{10\,000} < Z < \frac{52\,000 - 40\,000}{10\,000}\right]$

$Pr[-0.50 < Z < 1.20]$



$= 0.1915 + 0.3849.$

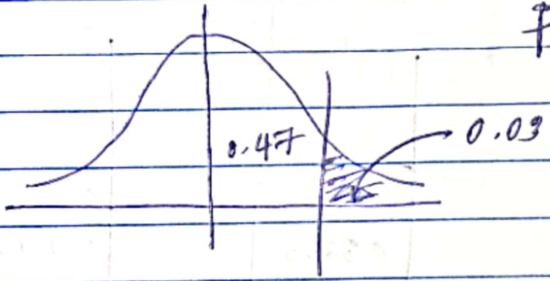
$= 0.5754$

(ii). Presentage → 57.54%

(iii). X = golden apples weigh.

$X \sim N(9, 1.3^2)$

$Pr[Z > k] = 0.03.$



$Pr[X > k] = 0.03.$

$Pr\left[Z > \frac{k-9}{1.3}\right] = 0.03.$

$\frac{k-9}{1.3} = 1.88$

~~+9~~ [illegible]

$K = 11.44$

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Question (07)

(i). X = number of Industrial Injuries. per week.

(a). $Pr[X = x] = \frac{e^{-\lambda}\lambda^{x}}{x!}$; $x = 1, 2, 3, 4, 5, \ldots$

$X \sim Poi(0.78)$

$Pr[X<2] = \frac{e^{-0.78}(0.78)^{2}}{2!}$

$= 0.1394$

(b). $Pr[X>3] = \frac{e^{-0.78}(0.78)^{3}}{3!}$

$= 0.0362$

(c). $\frac{e^{-\lambda}\lambda^{x}}{x!} \longrightarrow (e^{-0.78})^{4}$

0.04415

(ii). X = number of misprints on a Page of weekly.

$X \sim Poi(1.64)$.

$Pr[X<4] = \frac{e^{-1.64}(1.64)^{4}}{4!}$

$= \cancel{0.0584}\ 0.9155$

at least 4.

$Pr[X \geq 4] \Rightarrow 1 - Pr[X<4]$

$= 1 - \cancel{0.0584}\ 0.9155$

$= 0.0844$

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Question (08)

(i) X = problems from textbook.

$X \sim Bin(25, 0.36)$

(a). $Pr[X \leq 3] \longrightarrow Pr[X=0] + Pr[X=1] + Pr[X=2] + Pr[X=3]$

$= {}^{25}C_{0}(0.36)^{0}.(0.64)^{25} + {}^{25}C_{1}(0.36)^{1}(0.64)^{24} + {}^{25}C_{2}(0.36)^{2}(0.64)^{23}$

${}^{25}C_{3}(0.36)^{3}(0.64)^{22}.$

$=$ ~~$ {}^{25}C_{0}(1.4272\times10^{-5}) + {}^{25}C_{1}\ 8.0222.$~~

$=$ ~~0.00157~~ 0.00741

(b). $Pr[X \geq 4] \longrightarrow 1 - Pr[X < 4]$

$= 1 - [Pr[X=0] + Pr[X=1] + Pr[X=2] + Pr[X=3] + Pr[X=4])$

$= 1 - ({}^{25}C_{0}(0.36)^{0}\ 0.64^{25} + {}^{25}C_{1}(0.36)^{1}(0.64)^{24} + {}^{25}C_{2}(0.36)^{2}(0.64)^{23}$

$+ {}^{25}C_{3}(0.36)^{3}(0.64)^{22} +)$

$= 1 - 0.00741$

$= 0.99259$

$\boxed{{}^{n}C_{x}\,p^{x}(1-p)^{n-x}. \quad x: 0, 1, 2, \ldots n.}$

(ii). X = generate profit

$X \sim Bin(12, 0.67)$

(c). $Pr[X=7] = {}^{12}C_{7}(0.67)^{7}(0.33)^{5}$

$= \frac{12!}{7!\,5!}(0.67)^{7}(0.33)^{5}$

$= 0.1878$

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(d). $Pr[X<5] = {}^{12}C_0 (0.67)^0 (0.33)^{12} + {}^{12}C_1 (0.67)^1 (0.33)^{11}$

$+ {}^{12}C_2 (0.67)^2 (0.33)^{10} + {}^{12}C_3 (0.67)^3 (0.33)^9$

$+ {}^{12}C_4 (0.67)^4 (0.33)^8$

$= 0.0176$ //

(e). $Pr[X<4]$

$= {}^{12}C_0 (0.67)^0 (0.33)^{12} + {}^{12}C_1 (0.67)^1 (0.33)^{11}$

$+ {}^{12}C_2 (0.67)^2 (0.33)^{10} + {}^{12}C_3 (0.67)^3 (0.33)^9$

$= 0.00357$ //

Question (09)

(i). $1h \longrightarrow \frac{1}{210}$

$X \sim Bin(210, 0.0047)$

X = Car passes the Road at time.

$Pr[X>6] = {}^{n}C_x \, p^x (1-p)^{n-x} \; ; \; x = 0, 1, 2, 3 \ldots n$

$= {}^{210}C_x \cdot (1 - Pr[X<5])$

$= 1 - \Big({}^{210}C_0 (0.0047)^0 (0.9953)^{210} + {}^{210}C_1 (0.0047)^1 (0.9953)^{209}$

${}^{210}C_2 (0.0047)^2 (0.9953)^{208} + {}^{210}C_3 (0.0047)^3 (0.9953)^{207}$

$+ {}^{210}C_4 (0.0047)^4 (0.9953)^{206} + {}^{210}C_5 (0.0047)^5 (0.9953)^{205} \Big)$

= ~~0.99664~~ (1 − 0.99664)

= 0.00007

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~~(ii) X = misprints OF Book.~~

~~$X \sim Bin(150, 0.667)$~~

~~(a). $Pr[X=0] = {}^{150}C_0 \, 0.667^0 \, 0.333^{150}$~~

~~$= 0.00003$~~

(i). $210 \longrightarrow 60 \qquad \frac{210}{x} = \frac{60}{1}$

$x \longrightarrow 1$

$\lambda = x = 3.5$

$Pr[X>6] = \cancel{\frac{e^{3.5}\,3.5^6}{6!}}$

$= 1 - Pr[X \leq 6]$

$= 1 - \big(Pr[X=0] + Pr[X=1] + Pr[X=2] + Pr[X=3] + Pr[X=4] + Pr[X=5] + Pr[X=6]\big)$

$= 1 - \cancel{0.85762}\ 0.93471$

$= 0.06529$

(iii) $\lambda = \frac{100}{150} = 0.6667$

(a). $Pr[X=0] = \frac{e^{-0.6667} \cdot (0.6667)^0}{0!}$

$= 0.5134$

(b). $Pr[X=4] = \frac{e^{-0.6667}(0.6667)^4}{4!}$

$= 0.00423$

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Question ⑩

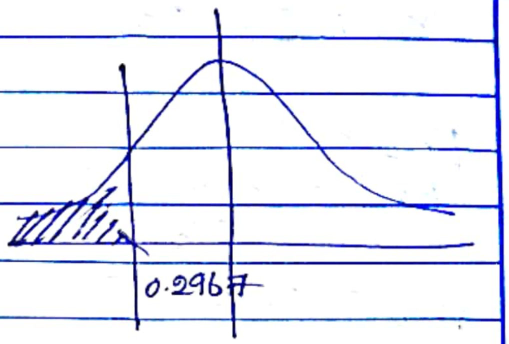
X = annal Salaries of employee.

$X \sim N(900\,000,\ 120\,000^2)$

(a) $Pr[x < 800\,000]$

$Pr\left[Z < \frac{800\,000 - 900\,000}{120\,000}\right]$

$Pr[Z < -0.833]$



$= 0.5 - 0.2967$

$= 0.2033$

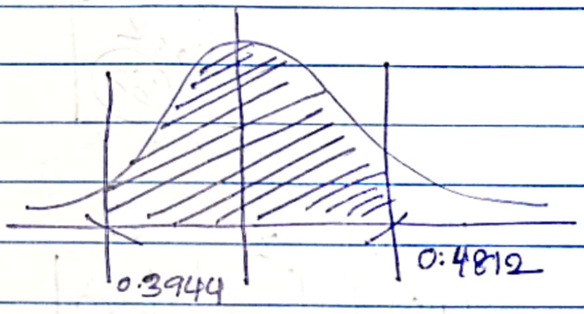
(b) $Pr[750\,000 < X < 1150\,000]$

$Pr\left[\frac{750\,000 - 900\,000}{120\,000} < Z < \frac{1\,150\,000 - 900\,000}{120\,000}\right]$

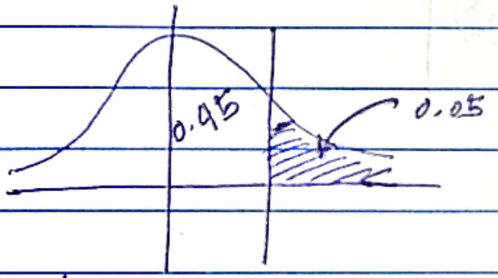
$Pr[-1.25 < Z < 2.083]$

$(0.3944 + 0.4812)$

$= 0.8756$



(c)



$Pr\left[Z > \frac{k - 900\,000}{120\,000}\right] = 0.05$

0.450

0.4495 0.4505

(1.64) (1.65)

1.645

$\frac{k - 900\,000}{120\,000} = 1.645$

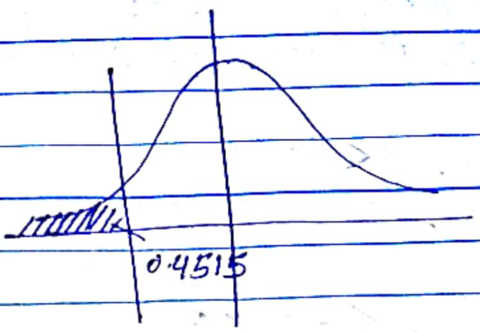
$k - 900\,000 = 1.645 \times 120\,000$

$k = 197\,400 + 900\,000$

$k = 1097\,400$

(ii). X = length of life of an instrument.

$X \sim N(15, 3^2)$



$Pr[X<10]$

$Pr\left[Z < \frac{10-15}{3}\right]$

$Pr[Z < -1.66]$

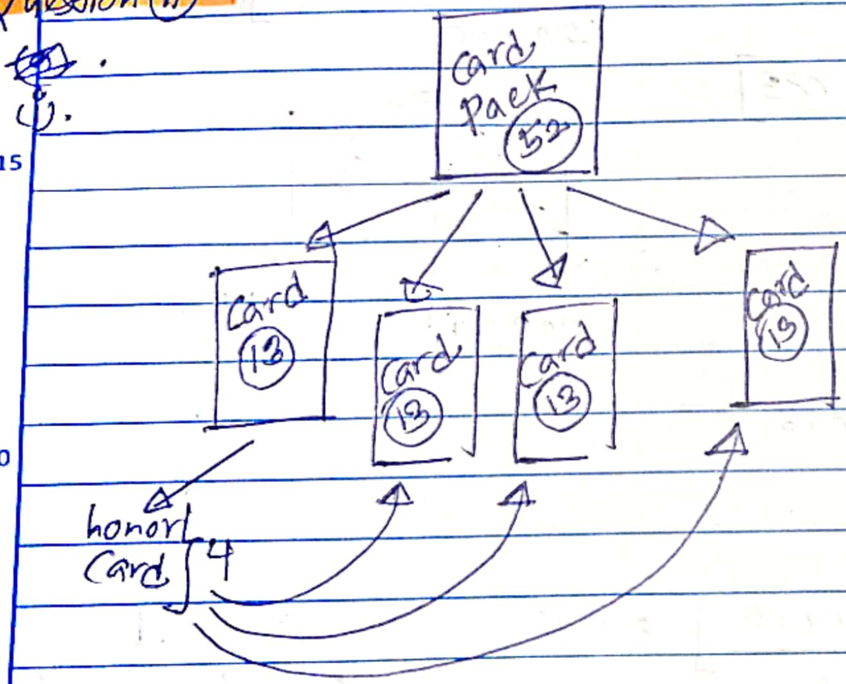
$= 0.5 - 0.4515$

$= \underline{\underline{0.0485}}$

Question ⑪

~~(a)~~.

(i).



(a). $\frac{16}{52}$

(b). $\frac{12}{52}$

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(ii). $P(A) = 0.65$ $P(A) \rightarrow A$ selected the college.

exactly one selected } 0.5

$$\boxed{0.5 = P(A' \cap B) + P(A \cap B')}$$

$P(A) = P(A \cap B) + P(A \cap B') \rightarrow 0.65 - P(A \cap B) = P(A \cap B') \leftarrow$ ⓪①

$P(B) = P(A \cap B) + P(A' \cap B)$

$\rightarrow P(B) = x.$

$x - P(A \cap B) = P(A' \cap B) \leftarrow$ ②

⓪① and ②

$0.5 = x - P(A \cap B) + 0.65 - P(A \cap B)$

$(-0.15) = x - 2P(A \cap B) + x. \leftarrow$ ③

$\rightarrow 0.5 = P(A' \cap B) + P(A \cap B')$

$= P(B)P(A') + P(A)P(B')$

$0.5 = x(1 - 0.65) + 0.65(1 - x)$

$0.5\cancel{x} = \cancel{x}\ 0.35x + 0.65 - 0.65x$

$-0.15 = -0.3x.$

$\underline{\underline{0.5 = x}}$

$\underline{\underline{P(B) = 0.5}}$

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(iii). $P(X) = \frac{7}{10}$ $\quad P(Y) = \frac{3}{10}$

$P(E|X)$ = Probability that a Standard Quality Car is manufactured in plant.

$P(E|X) = \frac{8}{10}$ $\quad$ E - Standard Quality

$P(E|Y) = \frac{9}{10}$

$$P(X|E) = \frac{P(X) \cdot P(E|X)}{P(X) \cdot P(E|X) + P(Y) \cdot P(E|Y)}$$

$$= \frac{\frac{7}{10} \times \frac{8}{10}}{\left(\frac{7}{10} \times \frac{8}{10}\right) + \left(\frac{3}{10} \times \frac{9}{10}\right)}$$

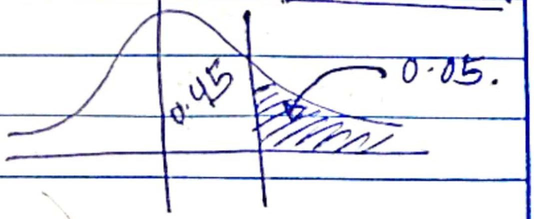
$$P(X|E) = \frac{56}{83} \quad //$$

Question (12)

(i). μ = mean number of monthly allowances

$H_0 : \mu = 55\,000$ $\quad Z > Z_\alpha$ $\quad \boxed{\alpha = 0.05}$

$H_a : \mu > 55\,000$

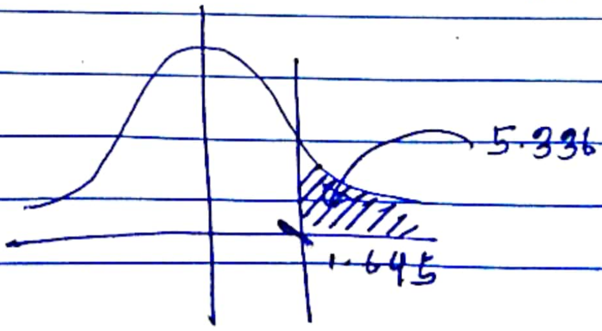


$$Z = \frac{\bar{x} - \mu_0}{\left(\frac{\sigma}{\sqrt{n}}\right)}$$

$= 1.645 \quad //$

$$= \frac{(84\,000 - 55\,000)}{\frac{8600}{\sqrt{26}}}$$

$= 5.336.$



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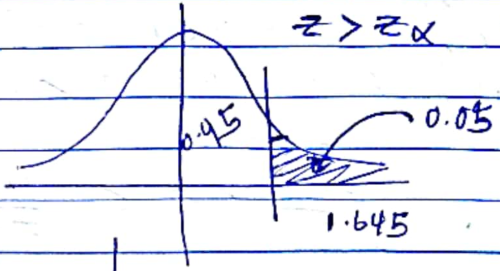
(ii) μ = mean number of Sales.

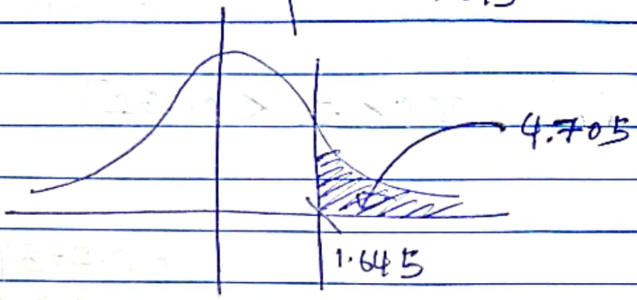
$H_0 : \mu = 100\,000$

$H_1 : \mu > 100\,000$



$$Z = \frac{110\,000 - 100\,000}{\frac{8500}{\sqrt{16}}}$$

$Z = 4.7058$ //



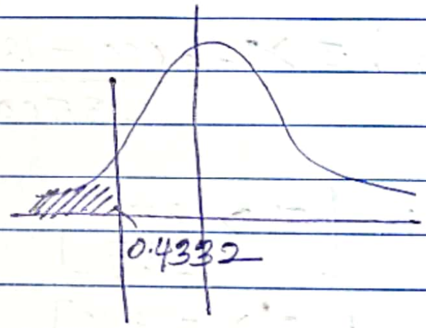
Question ⑬

(i) X = Bags of Sugar.

$\Pr[X < 2000]$

$$\Pr\left[Z < \frac{2000 - 2012}{8}\right]$$

$\Pr[Z < -1.5]$



$= 0.5 - 0.4332$

$= 0.0668$ //

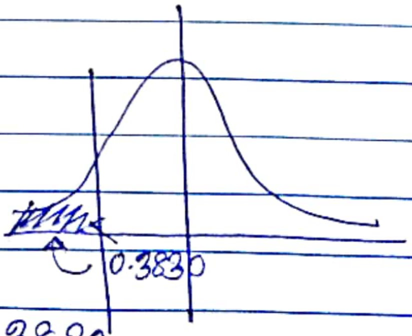
(ii).

X = monthly Salaries of employees.

(a) $\Pr[X < 110\,000]$

$$\Pr\left[Z < \frac{110\,000 - 138\,350}{23\,700}\right]$$

$\Pr[Z < -1.196]$



$0.5 - 0.3830$

0.117 //

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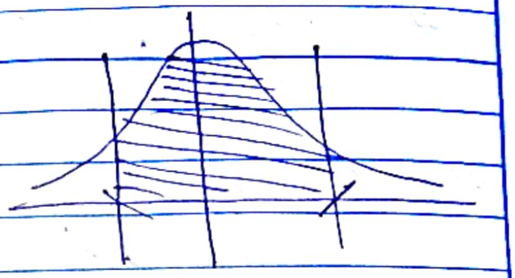
(b). $Pr[120\,000 < x < 153\,000]$

$Pr\left[\frac{120\,000 - 138\,000}{23\,700} < z < \frac{153\,000 - 138\,000}{23\,700}\right]$

$= Pr\left[\frac{-60}{79} < z < \frac{50}{79}\right]$

$Pr[-0.759 < z < 0.632]$



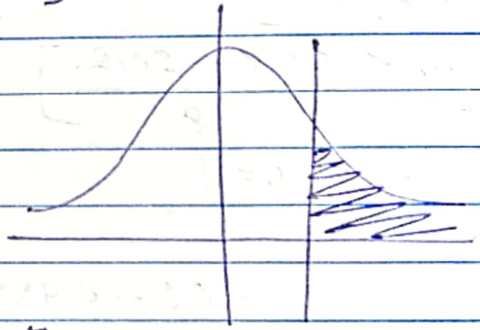
$= 0.2734 + 0.2357$

$= 0.5091$

(c). $Pr\left[z > \frac{325\,000 - 138\,000}{23\,700}\right]$

$Pr\left[z > \frac{1870}{237}\right]$

$P[z > 7.890]$



0.5

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Question ⑭

i) . X = purchasing bulk orders of batteries.
shipment accepted.
↳ $Pr[X \leqslant 3]$
$X \sim Bin(9000, 0.026)$

$Pr[X \leqslant 3] = {}^nC_x p^x (1-p)^{n-x}$: $x = 0, 1, 2 \ldots n$.

$\cdot\ {}^{9000}C_x\ Pr[X=0] + Pr[X=1] + Pr[X=2] + Pr[X=3]$

$= \underline{\underline{1}}$

ii) . X = Households have a broadbands .
$X \sim Bin(100, 0.667)$
$Pr[X < 40] = Pr[X=0] + Pr[X=1] + \ldots + Pr[X=39]$
$= \underline{\underline{0.0374}}$

iii). X = Number of Industrial. injuries.
$X \sim Poi(0.75)$.
(a) $\boxed{Pr[X \geqslant 2] \Rightarrow 1 - Pr[X < 2]}$

$$= 1 - (Pr[X=0] + Pr[X=1])$$
$$= 1 - \left(\frac{e^{-0.75}(0.75)^0}{0!} + \frac{e^{0.75}(0.75)^1}{1!} \right)$$

$= \underline{\underline{0.1733}}$

(b) $Pr[X > 1] \longrightarrow 1 - Pr[X \leqslant 1]$
$= 1 - (Pr[X=0] + Pr[X=1])$
$= \underline{\underline{0.17336}}$

(c). $$\Pr[x=0] = \frac{e^{-0.75}(0.75)^0}{0!}$$

$$= 0.4723$$

Question (15)

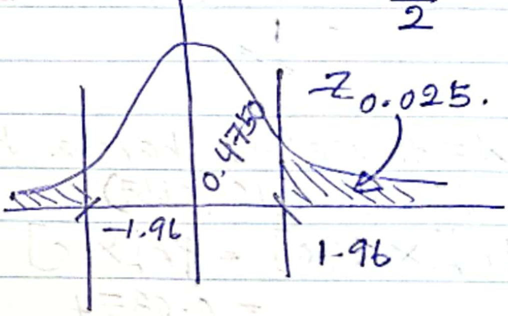
(i). ~~[illegible]~~

μ = mean amount of AA News started. Years.

$H_0 : \mu = 4.3$

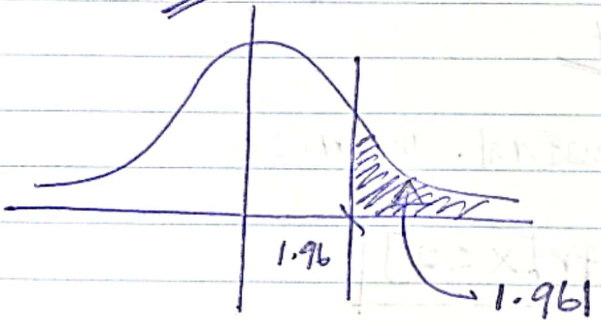
$H_a : \mu \neq 4.3$

$|Z| > Z_{\frac{\alpha}{2}}$



$$Z = \frac{(4.8-4.3)}{\frac{1.3}{\sqrt{26}}}$$

$$= 1.9611$$



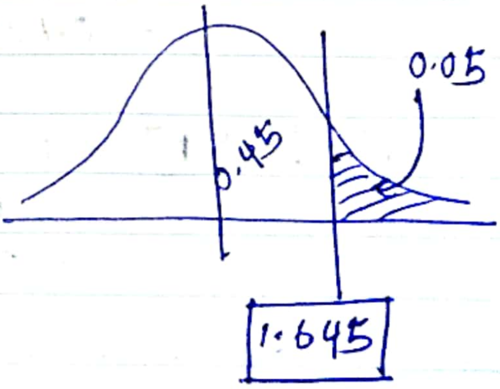
(ii).

μ = mean amount of inventor gallon time.

$H_0 : \mu = 300$.

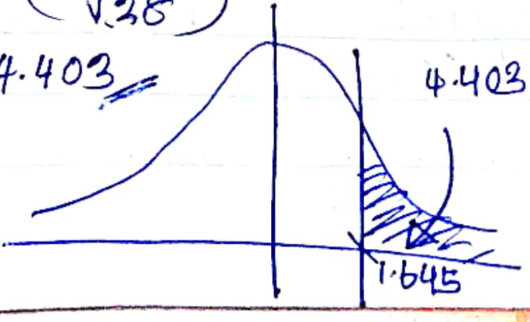
$H_a : \mu > 300$

$Z > Z_\alpha$



$$Z = \frac{320-300}{\left(\frac{28}{\sqrt{28}}\right)}$$

$$Z = 4.403$$



Question (16)

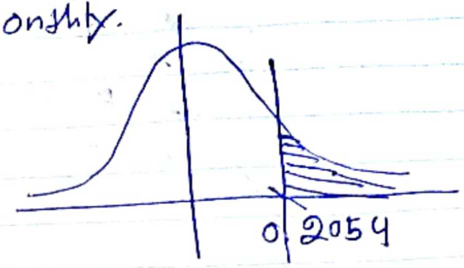
X = amount of interest paid monthly.

(i). $X \sim N(4375, 1023^2)$

$Pr[X > 4930]$

$Pr\left[Z > \frac{4930 - 4375}{1023}\right]$

$Pr[Z > 0.5425]$



$0.5 - 0.2054$

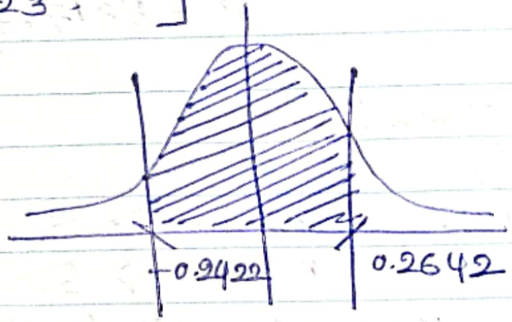
$\underline{\underline{0.2946}}$

(ii). $Pr[3700 < X < 5115]$

$Pr\left[\frac{3700 - 4375}{1023} < Z < \frac{5115 - 4375}{1023}\right]$

$Pr\left[-\frac{225}{341} < Z < \frac{740}{1023}\right]$

$Pr[-0.659 < Z < 0.723]$



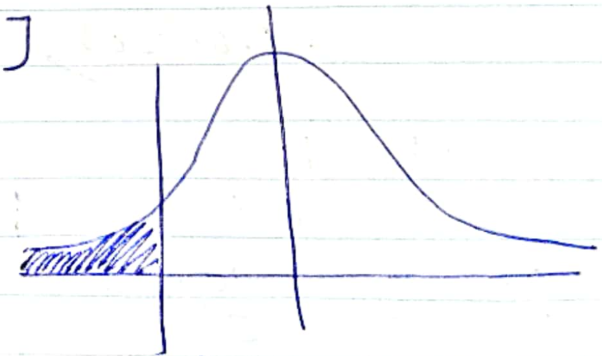
$0.2422 + 0.2642$

$\underline{\underline{0.5064}}$

(iii). $Pr[X < 3000]$

$Pr\left[Z < \frac{3000 - 4375}{1023}\right]$

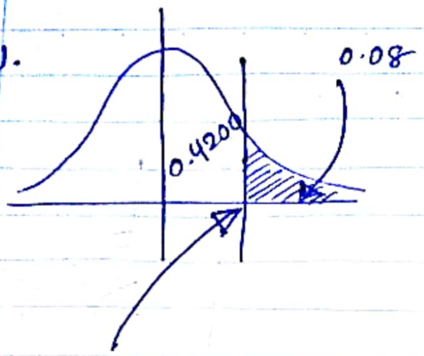
$Pr[Z < (-1.344)]$



$= (0.5 - 0.4099)$

$= \underline{\underline{0.0901}}$

(iv).



0.4200
(1.41)

$$Pr\left[Z > \frac{a-4375}{1023}\right] = 0.08$$

$$\frac{a-4375}{1023} = 1.41$$

$$a - 4375 = 1442.43$$

$$\underline{\underline{a = 5817.43}}$$

Question ⑰

(i)

(a).

$$8.5 \longrightarrow 6$$

$$8.5. \longrightarrow 6.$$

X = number of particles. at time.

$$Pr[X=0] = \frac{e^{-8.5}(8.5)^0}{0!}$$

$$= \underline{\underline{0.000203}}$$

(b).

$$8.5 \longrightarrow 6$$

$$\lambda \longrightarrow 10$$

$$\cancel{\frac{8.5}{\lambda} = \frac{6}{10}}$$

$$\frac{10}{6} \times 8.5$$

$$\cancel{\frac{8.5}{6}} \quad \cancel{(\lambda = 14.166)}$$

$(\lambda = 14.16)$

$$Pr[X \geq 6] = 1 - Pr[X<6]$$

$$= \underline{\underline{0.99506}}$$

(ii). X = number of radioactive source emits.

(a).

$12 \longrightarrow 7$ seconds. $\qquad \frac{12}{x} = \frac{7}{7}$

$X \sim$ Poin(12). $\qquad \boxed{x = 12}$

$$Pr[X=7] = \frac{e^{-12}\, 12^{7}}{7!}$$

$= 0.0436$

(b). $Pr[X \geq 5]$

$12 \longrightarrow 7$

$\lambda_1 \longrightarrow 10$

$\frac{12}{\lambda_1} = \frac{7}{10}$

$\frac{120}{7} = \lambda_1$

$1 - Pr[X<5]$

$1 - Pr[X<5]$ $\qquad \lambda_1 = 17.142$

$1 - [Pr[X=0] + Pr[X=1] + Pr[X=2] + Pr[X=3] + Pr[X=4]]$

$= 0.99983$

(c). $12 \longrightarrow 7$ $\qquad \frac{12}{\lambda_2} = \frac{7}{5}$

$\lambda_2 \longrightarrow 5$

$\frac{12 \times 5}{7} = \lambda_2$

$$Pr[X=5] = \frac{e^{-8.57}(8.57)^{5}}{5!}$$

$\lambda_2 = 8.571$

$= 0.0730$

Question ⑱

(i).

(a). $3p + 2p + p + 2p + 4p + p = 1$

$13p = 1$

$p = 1/13$

$p = 0.0769$

(b).

$\mu = E[X]$

$= 1.3p + 2.2p + 4p + 5.2p + 8.4p + 10p.$

$= 3p + 4p + 4p + 10p + 32p + 10p$

$= 31p + 32p.$

$= 63p$

$\mu = 63 \times 0.0769$

$\mu = 4.8447$

(c) $(\sigma)^2 = \frac{\Sigma (x_i - 4.844)^2}{n}$

$= (1 - 4.84)$

(d).

$Pr[X \geq 4] \longrightarrow Pr[X = 4] + Pr[X = 5] + Pr[X = 8] + Pr[X = 10]$

$= p + 2p + 4p + p$

$= 8p$

$= 8 \times \frac{1}{13}$

$= 0.6153$

(e).

(ii).

(a) There are Specific - Time Period (Continuous Variable)
(b)(Continuous Variable)
(c).discrete Variable.
(d). Continuous Variable.
(e). discrete Variable.