A	L/2018/31/E-I	A	0549
B	යලු ම හිමිකම් ඇව්රිණි / முழுப பதிப்புரிமையுடை	யது / All Rights Reserved]	
Test of	g ஒவற நிறை குறைறேறேலின்றுற் இ ஒவற் திறை கேறை இலங்கைப் பரிடனசத் திணைக்கள்ம் இலங்கைப் Department of Examinations , Sri Lauka Department of Department of Examinations , Sri Lauka Department of	ලී ලංකා විභාග ලෙපාටන්ෂේන්තුව මංගානයට (ක්රිණාන් නිෂානයියා partment of Examinations, Sri Lar	oesபிகலின்றும் இருவை வேரை செற்றிகளின்று களம் இல்வகைப் பரிட்சைத் நிலைக்களம ப Lanka Department of Examinations, Sri Lanka குறற்றைறேறும் இருவை திலை கரைப்பைவேறும் இலங்கைய பரிடமைத் திலைக்களம்
Tanana III	අධානයක පොදු සං கல்விப் பொதுத் த General Certificate o	லகிகை அரு (උසස් පෙළ) லிலால ராதரப் பத்திர (டையர் தர)ப் பரீட் of Education (Adv. Level) Examin	ය, 2018 අගෝස්තු .කඅ, 2018 බුන්බො ation, August 2018
	ວນນອນດ໌ සංඛාນການ I ພະຍາດ ແມ່ນ ພະຍາດ I Business Statistics I	31EI	சாம சுது இரண்டு மணித்தியாலம் Two hours
ſī	nstructions:		<u> </u>
	 ** Answer all questions ** Write your Index Number in the ** Statistical tables will be provided ** Instructions are given on the back ** In each of the questions 1 to 50, p or most appropriate and mark you the correct option in accordance v 	space provided in the answer sheet Calculators are not allowed . to of the answer sheet. Follow those pick one of the alternatives from (1) ur response on the answer sheet w with the instructions given at the bu	carefully. , (2), (3), (4), (5) which is correct rith a cross (×) on the number of ack of the answer sheet
1.	 Which of the following statement (1) Non-sampling error cannot (2) In general target population (3) Pre-test is done after collect (4) Both sampling error and n (5) Sampling frame is the list 	ts is true? occur in a complete census. n is different from the sampled eting data. on-sampling error are included i of sampling units in the selecte	population in standard error ed sample.
2.	 Which of the following statement A - The area covered by to in the corresponding h B - The Lorenze curve is equally distributed thro C - The mode can be easi (1) A only (4) A and C only 	t/s is/are true? the frequency polygon is same a histogram a graphical method of indication oughout the relevant population ily obtained using the ogive of (2) B only (5) All A, B and C	is the sum of areas of rectangles ing whether a given quantity is a distribution (3) A and B only
3.	 Which of the following statement (1) The width of a certain cla from the upper class limit. (2) If a constant A is added to increase by A. 	ts is true? ass interval can be obtained by b each value of a data set then	subtracting the lower class limit the variance of the data set will
	 (3) A histogram cannot be cons (4) The class mark represents a in the class interval. (5) The class limit is also called 	structed, if class widths are not a class interval, if the data of the ed the class boundary	equal. class interval distribute uniformly
4.	The most suitable chart to represent (1) Simple bar chart.(4) Pictograms.	ent the total value with its com (2) Multiple bar chart. (5) Profile chart.	ponents is (3) Pie chart.
5.	 Which of the following statement A - Original data can be r B - The shape of a distrib C - If the two boxes of a b symmetric 	t/s is/are true? recovered from a stem-and-leaf o pution can be identified by looki box-and-wishker diagram are equ	diagram. ng at a stem-and-leaf diagram. al then the distribution is exactly
	(1) A only(4) B and C only	(2) A and B only (5) All A, B and C	(3) A and C only

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6.	 Which of the following statement/s is/ A - The median of a distribution B - Mode cannot be calculated C - Geometric mean of a data (1) A only (4) B and C only 	are true? on is not affected by extream values. I for a distribution with unequal class set cannot be calculated when one v (2) A and B only (5) All A, B and C	intervals. value is negative. (3) A and C only
7.	In a certain factory a unit of work i in 6 minutes, by D in 10 minutes. T minutes is (1) 3 20 (2) 5 00	s completed by A in 3 minutes, by The average rate of working time by (3) 5.47 (4) 5.50	B in 5 minutes, by C these four persons ir (5) 6.00
8.	In a distribution, the difference of first a distribution is 25, the value of Bowley's (1) -1.50 (2) -1.00	nd third quartiles is 20 and their sum is coefficient of skewness is (3) - 0.50 (4) 0.50	40. If the median of the (5) 0.75
9.	Which of the following statement/s is A - The kurtosis of a distributio B - A more peaked curve relat C - Measures of kurtosis are n	/are true? on is measured relative to the peakedn ive to a normal curve is called meso ot relevant for a skewed distribution.	ess of a normal curve kurtic
	 A only B and C only 	(2) A and B only(5) All A, B and C	(3) A and C only
10.	If the mean of 10 values was 12 and the (1) 33.33% (2) 35.25%	sum of squares was 1600, the coefficien (3) 75.00% (4) 133.33%	t of variation is (5) 300.00%
11.	 Which of the following statement's is. A - The arithmetic mean of a future frequencies of classes. B - If a distribution has the log distribution. C - For a symmetric distribution 	requency distribution is a weighted aver onger tail towards left, it is said to b on Q_3 – Median = Median – Q_1 .	erage, the weight being be a positively skewed
	(1) A only(4) B and C only	(2) A and B only(5) All A, B and C	(3) A and C only
12.	The geometric mean of four values w was wrongly recorded as 22. The corr	vas calculated as 16. Later it was four rected value of geometric mean is gi	und that the value 132 ven by
	(1) $(16)^{\frac{3}{2}}$ (2) $16\left(\frac{1}{6^{\frac{1}{4}}}\right)$	(3) $16\left(\frac{1}{6^{\frac{1}{2}}}\right)$ (4) $16(6^{\frac{1}{2}})$	(5) $16(6^{\frac{1}{4}})$
13.	If the correlation coefficient between coefficient between U and V is	X and Y is r and $U = \frac{X}{h}$, $V = \frac{Y}{k}$, then the correlation
	(1) $\frac{r}{hk}$ (2) $\frac{r^2}{hk}$	$(3) \frac{r}{\sqrt{hk}} \qquad (4) \ r$	(5) <i>hkr</i>
14.	 Which of the following statement/s is, A - The regression line gives t B - In the method of least sq variable which has error an C - If in the regression of Y of the coefficient is b_{XY}, then 	/are true? he means of Y for given values of X pares, we assume that only the dep and independent variable has no error. In X, the coefficient is b_{YX} and in the $r^2 = b_{YX} \cdot b_{XY}$	C. endent variable is the e regression of X on 3
	(1) A only(4) A and C only	(2) B only(5) All A, B and C	(3) A and B only

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15. Which of the following statement/s is/are true? A - If in a debate contest, the rank correlation coefficient between two judges is close to -1, it indicates that judges are strongly agree on the judgement. B - Spearman's rank correlation coefficient is same as the product moment correlation coefficient between ranks. C - If X and Y are continuous variables, the rank correlation coefficient cannot be calculated between observed values of X and Y. (1) A only (2) B only (3) C only (4) A and B only (5) B and C only 16. Which of the following statement/s is/are true? A - Under the classical approach the true probability of an event can be calculated without performing the experiment. B - If the experimental conditions change when repeating the experiment, the more appropriate approach of probability is the relative frequency approach. C - The subjective probability approach cannot be applied, if the outcomes of an experiment are not equally likely. (2) B only (3) C only (1) A only (4) A and B only (5) A and C only 17. If A and B are two events with $P(A) = p_1$, $P(B) = p_2$ and $P(A \cap B) = p_3$, then the value of $P[A' \cap (A \cup B)]$ ĪS (2) $p_2 + p_3$ (5) $p_2 - p_3$ (1) $1 - p_1 - p_2 + p_3$ (3) $1 - p_3$ (4) $p_1 + p_2 - p_3$ 18. If A and B are independent events with P(A) < P(B), $P(A \cap B) = \frac{6}{25}$ and P(A|B) + P(B|A) = 1, the value of P(A) is, (2) $\frac{1}{5}$ (3) $\frac{6}{25}$ (4) $\frac{2}{5}$ (5) $\frac{3}{5}$ (1) 19. If A, B and C are three events, the probability that exactly one of them occur is given by (1) $P(A \cup B \cup C)$ (2) $P(A \cap B \cap C)$ $(3) \quad P(A' \cup B' \cup C')$ (4) $P(A \cap B' \cap C') + P(A' \cap B \cap C') + P(A' \cap B' \cap C)$ (5) $1 - P(A \cup B \cup C)$ 20. The random variable X has the following probability distribution. -2-10 1 2 3 x f(x)01 С 0.2 2c03 С The smallest value of x for which $P(X \le x) > 0.5$ is (1) -2(2) -1(3) 0(4) 1 (5) 221. Which of the following statements is true? (1) If Var(X) = 2, then Var(2X+5) = 13. (2) The expected value of the random variable X is same as the value of X occurred with the maximum probability. (3) If X is a random variable with mean μ and variance σ^2 , then $\operatorname{Var}\left(\frac{X-\mu}{\sigma}\right)=1$. (4) If X and Y are any two random variables, E(XY)=E(X)E(Y). (5) A mean of discrete random variable cannot have decimal values. 22. If for a binomial distribution n=6 and 9P(X=4)=P(X=2), then probability of success is (2) $\frac{1}{8}$ (3) $\frac{1}{4}$ (4) $\frac{1}{2}$ $\frac{1}{9}$ (5) $\frac{3}{4}$ (1)

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23.	Which of the follow A - The num items wh B - The varia C - For large the prob	wing statement/s is/ nber of defective ite hich consists of ' K ' ance of the binomial e n, the binomial $cability of the succe$	fare true? ems in <i>n</i> randomly defective items ha distribution may ex- listribution can be ess is also large. (2) R only	selected items wit as a binomial distr ceed the mean of the approximated by a	h replacement from <i>M</i> ibution te binomial distribution. poison distribution if
	(1) A only (4) B and C only		(5) All A, B and	С	(5) A and B only
24.	It has been found the that in a random sa (1) 0.3233	at 1% of the items ample of 200 items (2) 0.4060	produced by a certa , there are at most (3) 0.6767	in machine are def two defective ite: (4) 0.9814	fective. The probability ms is approximately (5) 0.9998
25.	If X is normally dis (1) 0.1915	tributed with mean (2) 0.3413	10 and $P(X < 12) =$ (3) 0.3830	0.8413 then the v (4) 0.6826	alue of $P(9 \le X \le 11)$ is (5) 0.9544
26.	 Which of the follow (1) The accuracy (2) The variance the sample m (3) The standard (4) The failure to (5) The term N/n 	wing statements is a of an estimate is a of the sample mean nean in sampling w error of an estimat o interview the units is called the samp	true? measured by the st n in sampling with ithout replacement, tor can be measure is in the selected sam pling fraction.	andard error of th replacement is sn d only in a proba nple is an example	at estimator. naller than variance of bility sampling. e for a sampling error.
27.	 Which of the follow (1) In stratified ra (2) A quota samp (3) The efficiency (4) If the intra-cla sampling. (5) In simple ran single sample 	ving statements is t andom sampling, the de is selected using of the systematic s ses correlation is clos dom sampling, the	true? e differences among a sampling frame. campling depends or e to one, cluster sam standard error of a	strata are included in the structure of the pling is more effici- n estimator cannot	in sampling error ne population ent than simple random be calculated using a
28.	Which of the follow	ving statements is t	true?		
	(1) If μ is the un	known population r	mean, then $\frac{1}{n-1}\Sigma(x)$	$(\mu_i - \mu_i)^2$ is an unbia	sed estimator for σ^2
	 (2) Since the samalso an unbias (3) If both bias a it is a consist (4) If the value of (5) An estimator 	ple variance S^2 is a sed estimator for σ . and variance of an tent estimator. of an estimator is equivalent of an estimator of an variance of an estimator.	n unbiased estimate estimator approach qual to the population iance is called a su	or for σ^2 , sample and set of the set of the set of the same tern of the set of the s	standard deviation S is sample size increases, an unbiased estimator.
29.	Which of the follow A - Accordin of the sa B - For a gi value tak C - F-distribu variances	ving statement/s is/a g to the central lim imple proportion ha ven significance lev cen from Z -table. ution is used for co	are true? it theorem for suffi is a normal distribu- vel, the table value omparing means of	ciently large n, the ition approximately taken from t-tab several normal pop	e sampling distribution / le is smaller than the pulations with unequal
	(1) A only(4) A and C only		(2) C only(5) All A, B and	C	(3) A and B only

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30.	Which of the following formulas gives the population of size N ?	e standard error of the sample prope	ortion p , from a finite
	(1) $\sqrt{\frac{N-n}{N}} \frac{\pi(1-\pi)}{n}$	(2) $\sqrt{\frac{N-n}{N-1}} \frac{\pi(1-\pi)}{n}$ (4)	3) $\sqrt{\frac{N-1}{N-n}} \frac{\pi(1-\pi)}{n}$
	(4) $\sqrt{\frac{\pi(1-\pi)}{n}}$	(5) $\sqrt{\frac{N-1}{N-n} \frac{\pi(1-\pi)}{n-1}}$	
31.	. If the mean of a random sample of size 20, the approximate probability that \overline{X} li	80 taken from a population with m ies between 127 and 129 is	ean 128 and variance
	(1) 0.2280 (2) 0.3413 ((3) 0.4772 (4) 0.6826	(5) 0.9544
32.	 Which of the following statement/s is/are A - The confidence limits for the (point estimate) ± (table value B - Confidence intervals can be us C - Confidence intervals with 99% (1) A only ((4) B and C only (true? population mean can be expressed e) * (standard error). sed for testing some hypothesis. level is wider than confidence inter (2) A and B only (5) All A, B and C	as rvals with 95% level. (3) A and C only
33.	In testing the mean of a normal population The P -value for this test is	as a two-tailed test, the Z-value wa	as observed as $Z=1.4$.
	(1) 0.0808 (2) 0.1616 (3) 0.4192 (4) 0.5808	(5) 0.8384
	 decrease. B - If the variance of a normal p simple hypothesis. C - In hypothesis testing, both types (1) A only (1) 	opulation is unknown, the hypothe of error can be reduced only by incre 2) B only	esis H_0 : $\mu = 100$ is a easing the sample size. (3) C only
	(4) A and C only (4)	5) All A, B and C	
35.	Which of the following statements is true	?	
	 (1) A test statistic cannot have parameter (2) The <i>P</i>-value for a test is calculated true. 	ers. d under the assumption that the alte	ernative hypothesis is
	 (3) The sampling distribution of a test st hypothesis is true. (4) The observed value for a test statis (5) The probability of accepting the contract of the probability of the probabilit	atistic is decided under the assumption tic is called a critical value. rrect null hypothesis is called the p	on that the alternative
36.]	Let \overline{X} be the mean of a random sample of region for testing H ₀ : $\mu = 50$ against H ₁ : $\mu =$ (1) 0.3413 (2) 0.3830 (3)	of size 100 from a distribution with = 60 is given by $\overline{X} > 55$, the power 3) 0.4772 (4) 0.6826	$\sigma = 25$. If the critical of the test is (5) 0.9772
37.	 Which of the following statement/s is/are A - If P-value > 0.05, the null hy B - The P-value of a test is calcute the relevant statistical table. C - The confidence interval for paramof a test statistic. 	true? ypothesis should be rejected at 5% ilated using the observed value for neters cannot be calculated using the	significance level. the test statistic and sampling distribution
	(1) A only (2 (4) B and C only (2	2) A and B only 5) All A, B and C	(3) A and C only

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AL/2018/31/E-II 0549கீல்கு ட கிறிகற் விற்குப் பதிப்புரிமையுடையது/All Rights Reserved] ලි ලංකා විභාග දෙපාර්තමේන්තුව ලී ලංකා විභාග ලින්පානාතා UI (බාපලා නිකාශකසාලාකා මින්තානය) Department of Examinations, Sn Lanka Department ී ලංකා විභාග දෙපාර්තමේන්තුව ලී ලංකා විභාග Department of Examinations, Sn Lanka දෙපාර්තමේන්තුව ලී ලංකා විභාග ull mnb අධානයන පොදු සහතික පතු (උසස් පෙළ) විභාගය, 2018 අගෝස්තු සමාබ්ධ ධොතුළ නොතොට පුනිහ (කොර් නොටා පාර්කාන, 2018 ඉසණාම General Certificate of Education (Adv. Level) Examination, August 2018 වතාපාර සංඛානතය Π வணிகப் புள்ளிவிவரவியல் Π 16.08.2018 0830- 11 40 **Business Statistics** Π පැය තුනයි අමතර කියවීම් කාලය මිනිත්තු 10 යි மூன்று மணித்தியாலம் மேலதிக வாசிப்பு நேரம் 10 நிமிடங்கள் -Three hours **Additional Reading Time** -10 minutes Use additional reading time to go through the question paper, select the questions and decide on the questions that you give priority in answering. Instructions: Answer five questions selecting at least two questions from each part. * Ж Statistical tables and graph papers will be provided. Calculators are not allowed. Part I 1. (a) Describe three uses and three limitations of statistics. (03 marks) (b) Describe what you mean by primary data and secondary data. State two advantages and two disadvantages of each type of data. (04 marks) (c) Explain the role of a pre-test and a pilot survey in conducting a sample survey (04 marks) (d) What are the points that should be taken into account when constructing a data table? In the year 2014, out of a total 2000 workers of a factory, 1500 workers were permanent. The number of women workers was 300 out of which 200 were temporary. In the year 2017, the number of workers increased to 2800 of which 2000 were men. On the other hand the number of temporary workers fall down to 250 of which 150 were women. Present the above data in the form of an appropriate table. (04 marks) (e) The age distribution of the workers of a certain factory is given below. 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 Age No. of workers 30 35 55 80 70 65 40 25 Draw 'the less than ogive' and find the median age of workers using it. (05 marks)2. (a) Explain the importance of the following measures for identifying the shape of the distribution of a data set. (i) Measures of Central Tendency (ii) Measures of Variability (iii) Measures of Skewness (iv) Measures of Kurtosis (06 marks) (b) The wages of 60 workers in a factory are given in the following distribution. 20-24 25-29 30-34 35-39 40-44 45-49 Wages (Rs.' 000) 50-54 No. of workers 03 10 20 15 05 04 03 (i) Calculate the mean, median, mode and standard deviation of the distribution. (ii) Calculate Karl Pearson's coefficient of skewness and comment on the distribution (08 marks)

- CU	Distinguis	sh bety	ween a	bsolute	e varia	tion ar	nd rela	tive va	ariation	ι.				
(-)	In an exa	minati	on, the	e mear	n mark	of a	group	of 150) stude	ents fo	г Math	ematio	25	
	was 78 a	and the	e stand	dard d	eviatio	n was	8. Ti	ne mea	an mai	k of	the gr	oup fo	10	
	statistics y	was 73	3 and t	the sta	ndard	deviati	on was	5 7. Fo	or whic	ch subj	ject wo	ould th	ne	
	(i) absolut	te vari	ation t	be higl	her val	ue?								
	(ii) relativo	e varia	ation b	e high	er valı	ie?							(06) mark.
(a)	 (a) Describe three types of index numbers which are commonly used. What are the main problems involved in the construction of a cost of livin 								g	-				
	index? Explain three main uses of a cost of living index.									(06	o mark.			
(b)	The following table provides the group index and the weight of various expenditure groups of a particular worker group for 2010 and 2015													
	Ennendit				Gre	oup Ind	dex		W	ight				
	Expendit	ure Gi	roup	2	010	10 2015		weight						
	Food]	150		170	1	4	40				
	Fuel				20		30			10				
	Textiles				70		80			20				
	House Re	ent			30		40			10				
	Miscellan	ieous			40		50			20				
(d)	making an The follow	analy	vsis. able pr	ovides	the ar	nual c	sary n	i the t	te of S	ries ra Sri Lar	iw data ika fro	m 200	(04 15	mark
(d)	making an The follow to 2017.	analy	vsis. able pr	ovides	the ar	nual c	sary n	inth ra	te of S	ries fa	iw data	m 200	(04 05	mark
(d)	making an The follow to 2017. ear	analy wing ta 2005	vsis. able pr 2006	ovides	the ar	nual c	erude b	irth ra	te of \$ 2012	ries fa Sri Lar 2013	ika fro 2014	m 200 2015	(04 95 2016	mark 2017
(d) Ye	making an The follow to 2017. ear Crude Birth	analy wing ta 2005 18.9	vsis. able pr 2006 18.8	ovides 2007 19.3	the ar 2008 18.5	10003 1000000	2010 17.6	irth ra 2011	te of \$ 2012	ries Ta Sri Lan 2013 17.8	w data 1ka fro 2014 16.9	2015 16.0	(04 05 2016 15.6	2017 15.0
(d) (d) Ye R	making an The follow to 2017. Tear Crude Birth tate	analy wing ta 2005 18.9	vsis. able pr 2006 18,8	ovides 2007 19.3	the ar 2008 18.5	2009 18.0	2010 17.6	irth ra 2011 174	te of 5 2012 17.5	ries Ta Sri Lar 2013 17.8	w data 1ka fro 2014 16.9	2015 16.0	(04 95 2016 15.6	2017 15.0
(d) Ye R	making an The follow to 2017. fear Frude Birth ate Predict the	analy wing ta 2005 18.9 e crud	vsis. able pr 2006 18.8 le birth	ovides 2007 19.3 1 rate	the ar 2008 18.5 for the	111111 c 2009 18.0 c year	2010 2018 2018	irth ra 2011 174 by fit	te of S 2012 17.5 ting a	ries fa Sri Lar 2013 17.8 trend	ika fro 2014 16.9 line b	m 200 2015 16.0 y usin	(04 95 2016 15.6	2017 15.0
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	(c) Suppose a large lot is shipped to a certain company. The acceptance sampling plan is to accept the lot if the number of defectives of a sample of 100 is less than or equal to 2.	
	(i) If the defective percentage of the lot is 5%, calculate the probability of accepting the lot	
	(ii) What is the Operating Characteristic (OC) Curve of this sampling plan?	(06 marks)
	Part II	
5.	(a) Describe the classical approach to probability. State two limitations of this approach	
	to probability.	(03 marks)
	(b) A company has 40 female employees and 60 male employees. If two of them are selected at random what is the probability that(i) both will be males?	
	(i) both will be females?	
	(iii) there will be one female and one male?	
	(iv) Are these events collectively exhaustive and mutually exclusive?	(05 marks
	(c) (i) Explain what you mean by conditional probability.	
	Why is the Bayes' theorem considered as a special case of conditional probability?	
	(ii) The probabilities of a man coming to work by train, bus, motor car or	
	other means of transport are $\frac{3}{10}, \frac{2}{5}, \frac{1}{10}$ and $\frac{1}{5}$ respectively. The probabilities	
	that he will be late if he comes by train, bus, motor car are $\frac{1}{4}$, $\frac{1}{3}$ and $\frac{1}{12}$ respectively but if he comes by other means he will not be late. If he is	
	late for the work what is the probability that he comes by train?	(07 marks
	(d) Define the independence of two events A and B. Can mutually exclusive two events be independent?	(Or marks
	The probability that the student A solving a problem is $\frac{3}{7}$ and the probability that the student B solving this problem is $\frac{7}{15}$.	
	(i) What is the probability that the problem will be solved, if both of them try it independent of each other?	
	(ii) What is the probability that none of them is able to solve the problem?	(05 marks)
ó.	(a) Describe the random experiment relevant to the binomial distribution.	
	A multiple choice test consists of 10 questions and 4 answers to each question of which only one is correct. If a student who is completely unprepared for the test selects one answer randomly out of four for each question, find the probability of getting,	
	(i) exactly 3 correct answers.	
	(ii) at most 3 correct answers	
	(iii) If the student gets 80% correct answers he will receive a distinction. What is the probability that the student will receive a distinction?	(05 marks
	(b) Describe the random experiment relevant to the Poisson distribution	
	Suppose that flaws in a certain fabric occur at random with an average of one per 20 square metres. What is the probability that a 2×5 metre piece of fabric will have	
	(I) no flaws?	

	Sugar Pills	50	10	40					
	Drug	60	15	25					
	ale ronowing ta	Helped	Harmed	No effect					
(c)	 at 5% significance level A certain drug is claimed to be effective in curing colds. In an experiment on 200 people with cold, half of them were given the drug and other half of them were given sugar pills. The patients' reaction to the treatment are recorded in 								
	(ii) Test the hypothesis that the true mean of the IQ values of the population is 100 at 5% significance level								
(b)	 (b) The mean and variance of the IQ values of a random sample of 40 boys were 98 and 160 respectively. (i) Find a 99% confidence interval for the true mean of IO values of the 								
	Find 95% confide and state which	ence interval for the advertisement is r	e difference betweer nore effective.	true population proportions	(06 marks				
(a)	a) A company is considering two different advertisements for the promotion of a new product. Advertisement A is used in one area and advertisement B is used in another area. In a random sample of 60 customers who saw the advertisement A , 36 bought the product. In a random sample of 80 customers who saw the advertisement B , 34 bought the product.								
	houses within th sample that shou the percentage o	e range P±5 exce ld be taken from t f rental houses as	pt one in twenty s he population to ac 50%.	ample. Find the size of the shieve this. You can assume	(05 marks				
(c)	disadvantages of sampling with c It is expected to	systematic samp uster sampling? estimate the perc	bling. How do yo	ou compare the systematic	(05 marks				
(b)	(iii) Find the var verify that v sample since Describe the me	iance of the sample ariance of \overline{y} can the population va- ethod of systematic	le mean \overline{y} from the be found using a briance is known compliance to sampling. Explaince the sampling is t	e sampling distribution and formula with only a single n two advantages and two	(10 marks				
	(ii) Using all the construct the an unbiassed	some source of the source of t	andom samples of tion of the sample ulation mean.	size 2 from this population, mean \overline{y} and show that \overline{y} is					
	(i) Calculate the	population mean	and population var	iance.					
(a)	than 25 perso	ons have the disea ation with <i>N</i> =5 th	se? e v. values are 2. 1	3. 6. 8. 11	(05 marks				
	(ii) In a certain p are selected a	distribution. opulation 6% of th t random from thi	e people have a ce s population, what	rtain disease. If 300 persons is the probability that more					
(d)	(i) State the cor	iditions under whi	ch binomial distril	oution can be approximated					
	which would be	expected to weigh	ot less than 85 gran	nmes.	(05 mark.				
	the values of μ	and σ^2 of the d	istribution and the	percentage of bars produced					
	less than 90 gra	mmes and 24% o	of bars weighted m	ore than 100 grammes. Find					
	mean μ and va	riance o ² Accordin	ng to the past expe	rience, 5% of bars weighted					

Test the hypothesis that "drug is not better than sugar pills for curing colds" at 1% significance level.

(08 marks)