



UNIVERSITY OF PERADENIYA, SRI LANKA
 ජේරාදෙනිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
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CENTRE FOR DISTANCE AND CONTINUING EDUCATION
 UNIVERSITY OF PERADENIYA

Bachelor of Arts (External New Syllabus) Examination 2022

SUPE-107: සංඛ්‍යාතය හැඳින්වීම Introduction to Statistics

උපදෙස්:

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|---|---------------------------|
| 1. ප්‍රශ්න පහකට (5) පමණක් පිළිතුරු සපයන්න. | කාලය: පැය තුනක් (3) පමණයි |
| 2. ගණක යන්ත්‍රය භාවිතයට අවසර ඇත. සංඛ්‍යාත වගු සපයනු ලැබේ. | ලකුණු: 100 ක් පමණයි. |

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|----|------|---|-------------|
| 1. | I. | සංඛ්‍යාතය යනු කුමක්ද? ආර්ථිකවිද්‍යා සහ ව්‍යාපාර ක්ෂේත්‍රයේ එහි වැදගත්කම පෙන්වා දෙන්න.
(What is Statistics? Point out its importance in the field of economics and business.) | ලකුණු 7 යි. |
| | II. | "සංඛ්‍යාතය විද්‍යාවක් නොවේ: එය විද්‍යාත්මක ක්‍රමවේදයකි". මෙම ප්‍රකාශනය පැහැදිලි කරන්න.
(“Statistics is not a science: it is a scientific method”. Explain this statement.) | ලකුණු 6 යි. |
| | III. | නියදි සමීක්ෂණයකට සම්බන්ධ ප්‍රධාන පියවර මොනවාද? එවැනි සමීක්ෂණයකදී ඇතිවිය විවිධ වැරදි මූලාශ්‍ර සාකච්ඡා කරන්න.
(What are the main steps involved in a sample survey? Discuss the different sources of errors in such a survey.) | ලකුණු 7 යි. |
| 2. | I. | ප්‍රාථමික දත්ත රැස්කිරීමේදී භාවිත කරන විවිධ ක්‍රම පැහැදිලි කරන්න.
(Explain the various methods that are used in collecting primary data.) | ලකුණු 7 යි. |
| | II. | "ද්විතීක මූලාශ්‍රයක් ප්‍රාථමික මූලාශ්‍රයක් තරම් විශ්වාසදායක නොවේ" මෙම ප්‍රකාශයේ වලංගුභාවය සාකච්ඡා කරන්න.
(Discuss the validity of the statement: "A secondary source is not as reliable as a primary source") | ලකුණු 7 යි. |
| | III. | ප්‍රශ්නාවලියක් ගොඩනැගීමේදී සලකා බැලිය යුතු ප්‍රධාන සාධක මොනවාද?
(What are the chief factors to be considered in planning a questionnaire?) | ලකුණු 6 යි. |

3. 100 මට්ටමේ ශාස්ත්‍රවේදී උපාධි විභාගයේ සංඛ්‍යාන ප්‍රශ්නපත්‍රය සඳහා සිසුන් 50ක් ලබාගත් ලකුණු (ලකුණු සියයකින්) පහත වගුවේ දක්වා ඇත. (50 students a class obtained the following marks (out of 100) in the statistics paper of the 100 level Bachelor of Arts Examination.)

40	23	32	51	50	62	65	75	85	83
21	37	30	42	44	44	57	53	54	75
73	96	65	66	66	43	48	45	55	55
51	59	59	64	58	72	63	63	58	56
74	77	60	56	61	69	65	65	50	51

- i. සුදුසු ක්‍රමවේදයක් භාවිත කර දූහත දත්ත වගුගත කරන්න. (Using a suitable method, tabulate the above data.) ලකුණු 5 යි.
 - ii. ඉහත දත්ත සඳහා මධ්‍යන්‍ය සහ මධ්‍යස්ථය මිණුම් කරන්න. (Calculate the Mean and Median for the above data) ලකුණු 5 යි.
 - iii. ඉහත දත්ත සඳහා පළමු, දෙවන, සහ තෙවන වාතුර්තක (Q_1, Q_2, Q_3) මිණුම් කර මධ්‍යස්ථය දෙවන වාතුර්තකයට ($Median = Q_2$) සමාන බව මප්පු කරන්න. (Calculate the quartiles (Q_1, Q_2, Q_3) of the above data and prove that $Median = Q_2$) ලකුණු 5 යි.
 - iv. ඉහත දත්ත සඳහා සම්මත අපගමනය ගණනය කරන්න. (Calculate the standard deviation of the above data.) ලකුණු 5 යි.
- 4.
- i. සසම්භාවී පරීක්ෂණයක් යනු කුමක්ද යන්න පැහැදිලි කරන්න. (Explain what is meant by a random experiment.) ලකුණු 2 යි.
 - ii. අන්තර්ගත වශයෙන් බහිස්කාරී සිද්ධි සහ ස්වායත්ත සිද්ධි අතර වෙනස් කම් දක්වන්න. (Distinguish between mutually exclusive events and independent events.) ලකුණු 3 යි.
 - iii. බද්ධ සම්භාවිතාව අර්ථ දක්වන්න. (Define joint probability.) ලකුණු 2 යි.
 - iv. සාධාරණ දාදුකැට දෙකක් පෙරලන ලදී. මෙම පරීක්ෂාවේ සම්භාවිතා ව්‍යාප්තිය ගොඩනගා එහි අපේක්ෂිත අගය සහ විචලතාව සොයන්න. (Two fair of dice are rolled. Construct the probability distribution of this experiment and find the expected value and variance of the experiment.) ලකුණු 6 යි.
 - v. නිෂ්පාදන සමාගමක් නිෂ්පාදනාගාර තුනකින් දිනපතා නිෂ්පාදනය කරන රූපවාහිනී කට්ටල ප්‍රමාණ පිළිවෙලින් ඒකක 250, 500 සහ 1,000ක් වේ. පසුගිය අන්දකීම් අනුව ඒක එක නිෂ්පාදනාගාරය දෝෂ සහිත නිමවුමක් නිෂ්පාදනය වීමේ හැකියාව (සම්භාවිතාව) පිළිවෙලින් 0.005, 0.008 සහ 0.010කි. දිනක නිෂ්පාදනය කළ සමස්ත නිමවුමෙන් එක් රූපවාහිනී යන්ත්‍රයක් තෝරාගත්තේ නම් සහ එය දෝෂ සහිත එකක් වුවේ නම්, එය දෙවන නිෂ්පාදනාගාරය මගින් නිපදවූ එකක් වීමේ සම්භාවිතාව සොයන්න. ලකුණු 7 යි.

(A manufacturing company produces TV sets in three plants with daily production volume of 250, 500 and 1000 units respectively. According to past experience, it is known that the fractions of defective outputs produced by each plant are 0.005, 0.008 and 0.010 respectively. If a TV set is selected from a day's total production and found to be defective, find out the probability that it comes from the second plant.)

5. i. **ලමුන් 5 දෙනෙකුගෙන් යුත් පවුල් 100ක් සලකන්න. එක් පවුලක් තුළ පහත දක්වා ඇති සාමාජිකයන් ගණනක් සිටීමේ සම්භාවිතාව කොපමණ අගයන් වේදැයි ඔබ අපේක්ෂා කරනවා ද? (පිරිමි සහ ගැහැණු ලමුන් වීමේ සම්භාවිතාව සමාන වේ යැයි උපකල්පනය කරන්න).**
 (Out of 100 families with 5 children each, what is the probability would you expect to have, (Assume that equal probabilities for boys and girls?)
- a. පිරිමි ලමුන් තිදෙනෙක්. (3 boys.) ලකුණු 4 යි.
 - b. ගැහැණු ලමුන් පස් දෙනෙක්. (5 girls.) ලකුණු 4 යි.
 - c. පිරිමි ලමුන් දෙදෙනෙක් හෝ තිදෙනෙක්. (Either 2 or 3 boys.) ලකුණු 4 යි.
- ii. **කිසියම් මාර්ගයක දිනකට ඇතිවන මාර්ග අනතුරුවල සාමාන්‍ය 2.1ක් වේ. මේ සඳහා පොයිසොන් ව්‍යාප්තියක් වඩා යෝග්‍යයැයි උපකල්පනය කර, පහත දැක්වෙන සම්භාවිතාවන් ගණනය කරන්න.**
 (The number of accidents on a particular road averages 2.1 per day. Assuming that a Poisson distribution is appropriate, find the probability of,)
- a. දෙනලද එක් දිනයක මාර්ග අනතුරු 4ක් ඇතිවීම. (4 accidents will occur on a given day) ලකුණු 4 යි.
 - b. අවම වශයෙන් දිනකට මාර්ග අනතුරු 3ක් ඇතිවීම. (Less than 3 accidents occur in a day.) ලකුණු 4 යි.
6. i. **ප්‍රමත ව්‍යාප්තියක ලක්ෂණ මොනවා ද?**
 (What are the characteristics of normal distribution?) ලකුණු 5 යි.
- ii. **Z වගුව භාවිත කරමින් (සම්මත ප්‍රමත ව්‍යාප්ති වගුව) පහත දක්වා ඇති අගයන්ගේ සම්භාවිතාව සොයන්න.**
 (Using the Z table (Standard normal distribution table) find the probability of the following.)
- a. $P(Z > 1.046)$
 - b. $p(0 < Z < 1.042)$ ලකුණු 5 යි.
- iii. **නිෂ්පාදන ආයතනයක් නිෂ්පාදනය කරනු ලැබූ විදුලි බල්බ 20,000 සම්බන්ධව කරන ලද පරීක්ෂණ සම්බන්ධ ප්‍රතිඵල අනුව ඒවාගේ ජීවන කාලයෙහි මධ්‍යන්‍ය පැය 2,040ක් සහ සම්මත අපගමනය පැය 60ක් ලෙස ප්‍රමතව ව්‍යාප්තව ඇති බව හඳුනාගෙන තිබේ. මෙම තොරතුරු මත පදනම්ව පහත දැක්වෙන කාල තුළ බල්බයක් පිලිස්සීයාමේ හැකියාව ඇස්තමේන්තු කරන්න.**
 (As a result of tests on 20,000 electric bulbs manufactured by a company, it was found that the lifetime of the bulb was normally

distributed with an average of 2,040 hours and a standard deviation of 60 hours. Based on the information estimate the number of the bulbs that are expected to burn for.)

a) 2,150ට වඩා වැඩි සහ, (More than 2,150 and)

ලකුණු 5 යි.

b) පැය 1,960ට වඩා අඩු (Less than 1,960 hours)

ලකුණු 5 යි.

7. i. කල්පිත පරික්ෂාවේ දී "වෙසෙසියා මට්ටම" යන්නෙන් මඬ අදහස් කරන්නේ කුමක් ද?

(What do you mean by 'level of significance' in the testing hypothesis?)

ලකුණු 4 යි.

ii. නිමානක අරමුණු කල්පිත පරික්ෂා අරමුණුවලින් වෙනස් වෙන්නේ කෙසේද යන්න දක්වන්න?

(Explain how the purpose of estimation differs from the purpose of hypothesis tests.)

ලකුණු 4 යි.

iii. ඒකත් වලිඟ පරික්ෂාව සහ ද්වි වලිඟ පරික්ෂාව අතර වෙනස්කම විවරණය කරන්න.

(Explain the difference between one tail test and two tail test.)

ලකුණු 4 යි.

iv. කොඟි අවුන්ස 16 කින් ජෝශුවක් පිරවිය හැකි ආකාරයට යන්ත්‍රයක් නිර්මාණය කර ඇත. ජෝශුව පූර්ණ ලෙස නොපිරෙන බවට පරිභෝගිකයන් සැක පහළ කරයි. ජෝශු 8කින් යුත් නියදියක මධ්‍යන්‍ය අවුන්ස 15.6ක් සහ සම්මත අපගමනය අවුන්ස 0.3ක් ව තිබේ. $\alpha = 0.10$ දී පාරිභෝගික අනුමානය අනුමත කරන මට්ටමක සාක්ෂි පවතිනවා ද?

(A machine is designed to fill jars with 16 ounces of coffee. A consumer suspects that the machine is not filling the jars completely. A sample of 8 jars has a mean of 15.6 ounces and a standard deviation of 0.3 ounces. Is there enough evidence to support the consumer's conjecture at $\alpha = 0.10$?)

ලකුණු 8 යි.



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ජේරාදෙනිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
பேராதனைப் பல்கலைக்கழகம், இலங்கை

CENTRE FOR DISTANCE AND CONTINUING EDUCATION
UNIVERSITY OF PERADENIYA

Bachelor of Arts (External New Syllabus) Examination 2022

SUPE-107: Introduction to Statistics

Instructions:

1. Answer only **Five** questions. Time allocated: **Three (03)** hours.
2. Calculator is allowed, Statistics tables are given. Marks allocated: **100 Marks** only.

1. I. What is Statistics? Point out its importance in the field of economics and business. 7 Marks
II. "Statistics is not a science: it is a scientific method". Explain this statement. 6 Marks
III. What are the main steps involved in a sample survey? Discuss the different sources of errors in such a survey. 7 Marks
2. I. Explain the various methods that are used in collecting primary data. 7 Marks
II. Discuss the validity of the statement: "A secondary source is not as reliable as a primary source" 7 Marks
III. What are the chief factors to be considered in planning a questionnaire? 6 Marks

3. 50 students a class obtained the following marks (out of 100) in the statistics paper of the 100 level Bachelor of Arts Examination.

40	23	32	51	50	62	65	75	85	83
21	37	30	42	44	44	57	53	54	75
73	96	65	66	66	43	48	45	55	55
51	59	59	64	58	72	63	63	58	56
74	77	60	56	61	69	65	65	50	51

- i. Using a suitable method, tabulate the above data. 5 Marks
- ii. Calculate the Mean and Median for the above data 5 Marks
- iii. Calculate the quartiles (Q_1, Q_2, Q_3) of the above data and prove that Median = Q_2 5 Marks
- iv. Calculate the standard deviation of the above data. 5 Marks

4. i. Explain what is meant by a random experiment. 2 Marks
- ii. Distinguish between mutually exclusive events and independent events. 3 Marks
- iii. Define joint probability. 2 Marks
- iv. Two fair dice are rolled. Construct the probability distribution of this experiment and find the expected value and variance of the experiment. 6 Marks
- v. A manufacturing company produces TV sets in three plants with daily production volume of 250, 500 and 1000 units respectively. According to past experience, it is known that the fractions of defective outputs produced by each plant are 0.005, 0.008 and 0.010 respectively. If a TV set is selected from a day's total production and found to be defective, find out the probability that it comes from the second plant. 7 Marks
5. i. Out of 100 families with 5 children each, what is the probability would you expect to have, (Assume that equal probabilities for boys and girls)?
- a. 3 boys. 4 Marks
- b. 5 girls. 4 Marks
- c. Either 2 or 3 boys. 4 Marks
- ii. The number of accidents on a particular road averages 2.1 per day. Assuming that a Poisson distribution is appropriate, find the probability of,
- a. 4 accidents will occur on a given day 4 Marks
- b. Less than 3 accidents occur in a day. 4 Marks
6. i. What are the characteristics of normal distribution? 5 Marks
- ii. Using the Z table (Standard normal distribution table) find the probability of the following. 5 Marks
- a. $P(Z > 1.046)$
- b. $p(0 < Z < 1.042)$
- iii. As a result of tests on 20,000 electric bulbs manufactured by a company, it was found that the lifetime of the bulb was normally distributed with an average of 2,040 hours and a standard deviation of 60 hours. Based on the information estimate the number of the bulbs that are expected to burn for.
- a) More than 2,150 and 5 Marks
- b) Less than 1,960 hours 5 Marks

7. i. What do you mean by 'level of significance' in the testing hypothesis? 4 Marks
- ii. Explain how the purpose of estimation differs from the purpose of hypothesis tests. 4 Marks
- iii. Explain the difference between one tail test and two tail test. 4 Marks
- iv. A machine is designed to fill jars with 16 ounces of coffee. A consumer suspects that the machine is not filling the jars completely. A sample of 8 jars has a mean of 15.6 ounces and a standard deviation of 0.3 ounces. Is there enough evidence to support the consumer's conjecture at $\alpha = 0.10$?) 8 Marks

the first two years of life. The first year of life is the most critical period for the development of the brain.

The second year of life is the most critical period for the development of the brain.

The third year of life is the most critical period for the development of the brain.

The fourth year of life is the most critical period for the development of the brain.

The fifth year of life is the most critical period for the development of the brain.

The sixth year of life is the most critical period for the development of the brain.

The seventh year of life is the most critical period for the development of the brain.

The eighth year of life is the most critical period for the development of the brain.

The ninth year of life is the most critical period for the development of the brain.

The tenth year of life is the most critical period for the development of the brain.

The eleventh year of life is the most critical period for the development of the brain.

The twelfth year of life is the most critical period for the development of the brain.

The thirteenth year of life is the most critical period for the development of the brain.

The fourteenth year of life is the most critical period for the development of the brain.

The fifteenth year of life is the most critical period for the development of the brain.

The sixteenth year of life is the most critical period for the development of the brain.

The seventeenth year of life is the most critical period for the development of the brain.

The eighteenth year of life is the most critical period for the development of the brain.

The nineteenth year of life is the most critical period for the development of the brain.

The twentieth year of life is the most critical period for the development of the brain.

The twenty-first year of life is the most critical period for the development of the brain.

The twenty-second year of life is the most critical period for the development of the brain.

The twenty-third year of life is the most critical period for the development of the brain.

The twenty-fourth year of life is the most critical period for the development of the brain.

The twenty-fifth year of life is the most critical period for the development of the brain.



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ජේරාදෙනිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
பேராதனைப் பல்கலைக்கழகம், இலங்கை

CENTRE FOR DISTANCE AND CONTINUING EDUCATION
UNIVERSITY OF PERADENIYA

கலைத்தேர்வுப் பரீட்சை (வெளிவாரி-புதிய பாடத்திட்டம்) - 2022
Bachelor of Arts (External New Syllabus) Examination 2022

SUPE-107: புள்ளிவிபரவியலுக்கான அறிமுகம்

SUPE-107: Introduction to Statistics

அறிவுறுத்தல்கள்:

1. ஐந்து வினாக்களுக்கு மட்டும் விடை தருக. ஒதுக்கப்பட்ட நேரம்: மூன்று (03)
2. கணிப்பான் அனுமதிக்கப்பட்டுள்ளது. புள்ளிவிபரவியல் மணித்தியாலங்கள்.
அட்டவணை வழங்கப்படும். ஒதுக்கப்பட்ட புள்ளிகள்: 100
புள்ளிகள் மாத்திரம்.

1. I. புள்ளிவிபரவியல் என்றால் என்ன? பொருளாதார மற்றும் வியாபாரத் துறையில் அதன் முக்கியத்துவத்தைச் சுட்டிக்காட்டுக. 7 marks
What is Statistics? Point out its importance in the field of economics and business.
 - II. “புள்ளிவிபரவியல் ஆனது ஒரு விஞ்ஞானம் அல்ல: அது ஒரு சமூக விஞ்ஞான முறை ஆகும்”. இக் கூற்றினை விளக்குக. 6 marks
“Statistics is not a science: it is a scientific method”. Explain this statement.
 - III. ஒரு மாதிரி-கணக்கெடுப்பில் உள்ள முக்கிய படிமுறைகள் எவை? அத்தகைய கணக்கெடுப்பில் வழக்களின் பல்வேறு மூலங்கள் பற்றி கலந்துரையாடுக. 7 marks
What are the main steps involved in a sample survey? Discuss the different sources of errors in such a survey.
2. I. முதன்மை தரவுகளை சேகரிப்பதில் பயன்படுத்தப்படும் பல்வேறு முறைகளை விளக்குக. 7 marks
Explain the various methods that are used in collecting primary data.
 - II. “இரண்டாம் நிலை மூலமானது முதன்மை மூலத்தைப் போல நம்பகமானதல்ல”. இக் கூற்றின் பொருத்தப்பாட்டினைப் பற்றி கலந்துரையாடுக. 7 marks

Discuss the validity of the statement: "A secondary source is not as reliable as a primary source".

- III. ஒரு வினாக்கொத்தை திட்டமிடுவதில் கவனத்தில் கொள்ள வேண்டிய முக்கிய காரணிகள் யாவை? 6 marks
What are the chief factors to be considered in planning a questionnaire?

3. 100 வது தேர்ச்சி மட்ட இளங்கலை தேர்வின் புள்ளிவிபர பரீட்சை வினாத்தாளில் ஒரு வகுப்பிலுள்ள 50 மாணவர்கள் பின்வரும் மதிப்பெண்களைப் (100க்கு) பெற்றுள்ளனர்.
50 students a class obtained the following marks (out of 100) in the statistics paper of the 100 level Bachelor of Arts Examination.

40	23	32	51	50	62	65	75	85	83
21	37	30	42	44	44	57	53	54	75
73	96	65	66	66	43	48	45	55	55
51	59	59	64	58	72	63	63	58	56
74	77	60	56	61	69	65	65	50	51

- i. பொருத்தமான முறையைப் பயன்படுத்தி, மேலே உள்ள தரவை அட்டவணைப்படுத்துக. 5 marks
Using a suitable method, tabulate the above data.
- ii. மேலே உள்ள தரவுக்கான சராசரி மற்றும் இடையத்தைக் கணிப்பிடுக. 5 marks
Calculate the Mean and Median for the above data
- iii. மேலே உள்ள தரவின் காலணைகளைக் (Q_1, Q_2, Q_3) கணிப்பிட்டு இடையம் = Q_2 என்பதை நிரூபிக்க. 5 marks
Calculate the quartiles (Q_1, Q_2, Q_3) of the above data and prove that Median = Q_2 .
- iv. மேலே உள்ள தரவின் நியம விலகலைக் கணிப்பிடுக. 5 marks
Calculate the standard deviation of the above data.
4. i. எழுமாற்றுப் பரிசோதனை என்றால் என்ன என்பதை விளக்குக. 2 marks
Explain what is meant by a random experiment.
- ii. பரஸ்பர பிரத்தியேக நிகழ்வுகள் மற்றும் சுயாதீன நிகழ்வுகளை வேறுபடுத்துக. 3 marks
Distinguish between mutually exclusive events and independent events.
- iii. கூட்டு நிகழ்தகவை வரையறுக்குக. 2 marks
Define joint probability.

- iv. கோடலற்ற இரு தாயக்கட்டைகள் உருட்டப்படுகின்றன. இந்த பரிசேதனையின் நிகழ்தகவு பரம்பலை உருவாக்கி, சோதனையின் எதிர்பார்க்கப்படும் பெறுமதி மற்றும் மாற்றிறனைக் கண்டறிக. 6 marks
Two fair of dice are rolled. Construct the probability distribution of this experiment and find the expected value and variance of the experiment.
- v. ஒரு உற்பத்தி நிறுவனம் தினசரி 250, 500 மற்றும் 1000 அலகுகள் உற்பத்தி செய்யும் மூன்று ஆலைகளில் தொலைக்காட்சிப் பெட்டிகளை உற்பத்தி செய்கின்றது. கடந்த கால அனுபவத்தின்படி, ஒவ்வொரு ஆலையும் உற்பத்தி செய்யும் குறைபாடுள்ள வெளியீடுகளின் அளவுகள் முறையே 0.005, 0.008 மற்றும் 0.010 என்று அறியப்படுகிறது. ஒரு நாளின் மொத்த உற்பத்தியில் இருந்து ஒரு தொலைக்காட்சிப் பெட்டி தேர்ந்தெடுக்கப்பட்டு குறைபாடு இருப்பதாகக் கண்டறியப்பட்டால், அது இரண்டாவது ஆலையில் இருந்து வருவதற்கான நிகழ்தகவைக் கண்டறிக. 7 marks
A manufacturing company produces TV sets in three plants with daily production volume of 250, 500 and 1000 units respectively. According to past experience, it is known that the fractions of defective outputs produced by each plant are 0.005, 0.008 and 0.010 respectively. If a TV set is selected from a day's total production and found to be defective, find out the probability that it comes from the second plant.
5. i. தலா 5 குழந்தைகளைக் கொண்ட 100 குடும்பங்களில், பின்வருவனவற்றிற்கு நீங்கள் எதிர்பார்க்கும் நிகழ்தகவு என்ன? (ஆண்பிள்ளைகள் மற்றும் பெண்பிள்ளைகளுக்கு சமமான நிகழ்தகவு இருப்பதாகக் கருதுக.) 4 marks
Out of 100 families with 5 children each, what is the probability would you expect to have, (Assume that equal probabilities for boys and girls)?
- a. 3 ஆண்பிள்ளைகள் 4 marks
- b. 5 பெண்பிள்ளைகள் 4 marks
- c. 2 அல்லது 3 ஆண்பிள்ளைகள் 4 marks
- ii. ஒரு குறிப்பிட்ட வீதியில் ஒரு நாளைக்கு சராசரியாக 2.1 விபத்துக்கள் ஏற்படுகின்றன. ஒரு புவசோன் பரம்பல் பொருத்தமானது என்று கருதி, பின்வருவனவற்றிற்கான நிகழ்தகவைக் கண்டறிக. 4 marks
The number of accidents on a particular road averages 2.1 per day. Assuming that a Poisson distribution is appropriate, find the probability of,
- a. ஒரு நாளில் 4 விபத்துகள் இடம்பெறுதல்.
4 accidents will occur on a given day

- b. ஒரு நாளில் 3க்கும் குறைவான விபத்துகள் இடம்பெறுதல். 4 marks
Less than 3 accidents occur in a day.
6. i. சாதாரண பரம்பலின் பண்புகள் என்ன? 5 marks
What are the characteristics of normal distribution?
- ii. அட்டவணையைப் பயன்படுத்தி (நியம சாதாரண பரம்பல் அட்டவணை) 5 marks
பின்வருவனவற்றின் நிகழ்தகவைக் கண்டறிக.
Using the Z table (Standard normal distribution table) find the probability of the following.
a. $P(Z > 1.046)$
b. $p(0 < Z < 1.042)$
- iii. ஒரு நிறுவனத்தால் தயாரிக்கப்பட்ட 20,000 மின்குமிழ்களின் 5 marks
சோதனைகளின் விளைவாக, மின்குமிழின் ஆயுட்காலம் சராசரியாக 2,040 மணிநேரம் மற்றும் 60 மணிநேர நியம விலகலுடன் சாதாரணமாக பரம்பியுள்ளது எனக் கண்டறியப்பட்டது. தகவல்களின் அடிப்படையில், எரியும் என்று எதிர்பார்க்கப்படும் மின்குமிழ்களின் எண்ணிக்கையை மதிப்பிடுக.
As a result of tests on 20,000 electric bulbs manufactured by a company, it was found that the lifetime of the bulb was normally distributed with an average of 2,040 hours and a standard deviation of 60 hours. Based on the information estimate the number of the bulbs that are expected to burn for.
a) 2,150க்கும் மேற்பட்டது மற்றும் 5 marks
More than 2,150 and
b) 1,960 மணிநேரத்திற்கும் குறைவானது 5 marks
Less than 1,960 hours
7. i. சோதனைக் கருதுகோளில் “பொருளுண்மை மட்டம்” என்றால் என்ன? 4 marks
What do you mean by ‘level of significance’ in the testing hypothesis?
- ii. கருதுகோள் சோதனைகளின் நோக்கத்திலிருந்து மதிப்பீட்டின் நோக்கம் 4 marks
எவ்வாறு வேறுபடுகிறது என்பதை விளக்குக.
Explain how the purpose of estimation differs from the purpose of hypothesis tests.
- iii. ஒரு வால் சோதனைக்கும் இரண்டு வால் சோதனைக்கும் உள்ள 4 marks
வித்தியாசத்தை விளக்குக.
Explain the difference between one tail test and two tail test.
- iv. ஒரு இயந்திரம் ஜாடிகளில் 16 அவன்ஸ் கோப்பியை நிரப்ப 8 marks

வடிவமைக்கப்பட்டுள்ளது. இயந்திரம் ஜாடிகளை முழுமையாக நிரப்பவில்லை என்று ஒரு நுகர்வோர் சந்தேகிக்கிறார். 8 ஜாடிகளின் மாதிரி சராசரி 15.6 அவுன்ஸ் மற்றும் நியம விலகல் 0.3 அவுன்ஸ் ஆகக் காணப்படுகின்றது. $\alpha = 0.10$ இல் நுகர்வோரின் அனுமானத்தை ஆதரிக்க போதுமான சான்று உள்ளதா?

A machine is designed to fill jars with 16 ounces of coffee. A consumer suspects that the machine is not filling the jars completely. A sample of 8 jars has a mean of 15.6 ounces and a standard deviation of 0.3 ounces. Is there enough evidence to support the consumer's conjecture at $\alpha = 0.10$?

