

**2008000206020002**  
**EXAMINATION FEBRUARY-MARCH 2024**  
**BACHELOR OF COMMERCE (HONORS)**  
**(SIXTH SEMESTER)**  
**BUSINESS STATISTICS – II LEVEL 2**

[Time: As Per Schedule]

[Max. Marks: 50]

**Instructions:**

1. Fill up strictly the following details on your answer book
  - a. Name of the Examination : **BACHELOR OF COMMERCE (HONORS) (SIXTH SEMESTER)**
  - b. Name of the Subject : **BUSINESS STATISTICS – II LEVEL 2**
  - c. Subject Code No : **2008000206020002**
2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.
5. Simple calculator can be used.
6. Statistical tables and graph paper would be supplied on request.

Seat No:

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Student's Signature

- Q.1** (a) State the uses and limitations of Chi-square. **4**
- (b) From the data given below about the treatment of 250 patients suffering from a disease, state whether the new treatment is superior to the conventional treatment. **5**

Treatment	No. of patients Favorable	No. of patients not Favorable	Total
New	140	30	170
Conventional	60	20	80
<b>Total</b>	200	50	250

- (c) The following data is obtained about a random sample, taken from a normal population. **3**

Mean = 70,

$$\sum_{i=1}^{10} (x_i - \bar{x})^2 = 307$$

then obtain 90% confidence limits for the population variance.

- Q.2** (a) Explain the working process of the double sampling plan (N, n<sub>1</sub>, n<sub>2</sub>, C<sub>1</sub>, C<sub>2</sub>). **3**
- (b) For the single sampling plan (50, 3, 1), with p = 12%, obtain the value of ATI with the help of hypergeometric distribution. **6**
- (c) For SSP (1000, 200, 1), p = 0.015, find the probability of rejection. **4**

- Q.3** (a) What is decision theory? Explain EMV. **4**
- (b) The following shows a payoff matrix for different strategies and for different states of nature. **9**

Action	Events			
	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>
A <sub>1</sub>	225	225	225	225
A <sub>2</sub>	-100	450	450	450
A <sub>3</sub>	-425	125	675	675
A <sub>4</sub>	-750	-200	350	900

Decide best strategy according to

1. Maximax Principle.
2. Maximin Principle.
3. Laplace Principle.
4. Mini-max regret criterion.

- Q.4** (a) Using Hurwicz criteria with the coefficient of optimism  $\alpha = 0.5$ , find the best strategy for the given payoff matrix. **4**

Act	State of nature		
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
A <sub>1</sub>	1	1	1
A <sub>2</sub>	1	3	2
A <sub>3</sub>	3	2	1

- (b) A plan to be used is [1000, n, c]. The probability of rejection of the lot with 2% defective units is 0.143 and ATI = 228.7. Find n and c. **5**
- (c) Write a note on Decision tree. **3**

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