

**RAN-2008000206020002**

T. Y. B. Com. (Hon.) (Sem. - VI) Examination October - 2025
Business Statistics - VI

Time: 2 Hours]**[Total Marks: 50****સૂચના : / Instructions**

(1) ઉપરોક્ત દશાંશ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.

Fill up strictly the above details on your answer book.

Seat No.:

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Student's Signature

Q. 1. a. What is decision theory? Explain it. State the structure of statistical decision theory. **(04)**

b. The manufacturing price of a commodity is Rs. 50 and the sales price is Rs. 90. The product is vested after a week. The past record of sales is as follows. **(08)**

Demand per week	20	21	22	23	24
No.of Weeks	200	300	400	600	500

Prepare a pay-off table and calculate EMV and EVPI.

Q. 2. a. Define X^2 Statistics. State uses of X^2 statistics and its limitations. **(03)**

b. The following is the information of 800 families each having 4 children. **(05)**

No.of Male children	0	1	2	3	4
No.of Female children	4	3	2	1	0
No of families	32	178	290	236	64

Assuming that the births of child of any sex as equi-probable can you say that the data follows a binomial distribution.

c. The following table gives for a sample of married women, the level of education and marriage adjustment score **(05)**

Level of education \ Marriage adjustment score	Very low	Low	High	Very high
College	24	97	62	58
High school	22	28	30	41
Middle school	32	10	11	20

Can you conclude from the above that the higher level of education. Greater the degree of adjustment in marriage?

- Q. 3. a.** Obtain probability of acceptance for double sampling plan (2500, 50,100,1, 4) proportion defective 3%. Also find ASN, ATI, AOQ. **(08)**
- b.** For the acceptance of the lots containing 0.5 percent defective, the following three sampling plans are found to be satisfactory to customer, which plan will you suggest to a producer? Why? **(04)**
- (a) 1000, 100, 0 (b) 1000, 170, 1
(c) 1000, 240, 2

- Q. 4. a.** A shopkeeper purchases a particular item of fireworks for Rs. 10 each and sells it for Rs. 16 each on the occasion of Diwali. Unsold items will be spoiled and would be a net loss. **(05)**

Sale of items	50	100	150
Probability	0.5	0.3	0.2

Construct an opportunity loss table and take a proper decision for selecting a stock of items during Diwali in the basis of EOL.

- b.** From the following pay-off matrix state the best act according to the following rule: **(05)**
- (1) Hurwitch rule ($\alpha = 0.6$)
(2) Laplace rule
(3) Max-Min rule

	EVENT			
ACT	E1	E2	E3	E4
A	10	2	-8	8
B	-2	14	20	0
C	16	8	2	10

- c.** In the usual notations, the non-parametric median test reveals A following data Find X^2 . **(03)**

Observations	X	Y
$\geq M$	4	6
$\leq M$	7	4