



**OFFICE OF THE DEPUTY PRINCIPAL**

**ACADEMICS, RESEARCH AND STUDENTS' AFFAIRS**

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## **UNIVERSITY EXAMINATIONS**

### **2020 /2021 ACADEMIC YEAR**

**SECOND YEAR FIRST SEMESTER REGULAR EXAMINATION**

**FOR THE DEGREE OF BACHELOR OF HOTEL  
AND HOSPITALITY MANAGEMENT**

**COURSE CODE: BHM 213**

**COURSE TITLE: BUSINESS MATHEMATICS AND STATISTICS**

**DATE: 16<sup>TH</sup> MARCH, 2021**

**TIME: 2pm-5pm**

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### **INSTRUCTION TO CANDIDATES**

- **SEE INSIDE**

**THIS PAPER CONSISTS OF 5 PRINTED PAGES**

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**REGULAR – MAIN EXAM****BHM 312: BUSINESS MATHEMATICS AND STATISTICS****STREAM: BBM / BED (Arts)****DURATION: 3****Hours****INSTRUCTIONS TO CANDIDATES**

- i. Answer Question **ONE** and any other **TWO** questions.
- ii. Do not write on the question paper.

**SECTION A****QUESTION ONE****(30 MARKS)**

- a) Differentiate between Correlation and Regression. (4 marks)
- b) Use the table below to answer the following questions:

X	15	24	25	30	35	40	45	65	70	75
Y	60	45	50	35	42	46	28	20	22	15

- i. Determine the product moment coefficient of correlation (8 marks)
- ii. Determine the regression equation and estimate y when  $x = 20$  (6 marks)
- c) State and explain four limitations of quantitative techniques. (4 marks)
- d) Discuss five uses of index numbers in management. (8 marks)

**QUESTION TWO****(20 MARKS)**

- a) Quantitative techniques have become popular in analyzing and solving management problems. Discuss how they are used in influencing management decisions (10 marks)
- b) Examine five major problems a modern manager would experience in using quantitative techniques in analyzing and solving business problems. (10 marks)

**QUESTION THREE****(20 MARKS)**

A woven cloth is liable to contain faults and is subjected to an inspection procedure. Any fault has a probability of 0.7 that it will be detected by the procedure, independent of whether any other fault is detected or not.

**Required:**

- a) If a piece of cloth contains three faults, A, B and C,
- i) Calculate the probability that A and C are detected, but that B is undetected; (4 marks)
  - ii) Calculate the probability that any two of A, B and C be detected, the other fault being undetected; (4 marks)
  - iii) State the relationship between your answers to parts (i) and (ii) and give reasons for this. (2 marks)
- b) Suppose now that, in addition to the inspection procedure given above, there is a secondary check which has a probability of 0.6 of detecting each fault missed by the first inspection procedure. This probability of 0.6 applies independently to each and every fault undetected by the first procedure.
- i) Calculate the probability that a piece of cloth with one fault has this fault undetected by both the inspection procedure and the secondary check; (4 marks)
  - ii) Calculate the probability that a piece of cloth with two faults has one of these faults detected by either the inspection procedure or the secondary check, and one fault undetected by both; (4 marks)
  - iii) Of the faults detected, what proportion are detected by the inspection procedure and what proportion by the secondary check? (2 marks)

**QUESTION FOUR****(20 MARKS)**

The following data pertain to Bar lengths and the number of bar in each class.

Bar lengths (cm)	No. of bars(f)
201 – 250	25
251 – 300	36
301 – 350	49
351 – 400	80
401 – 450	51
451 – 500	42
501 - 550	30

Calculate;

- a) Mean (3 Marks)
- b) Mode (4 Marks)
- c) Median (4 Marks)
- d) variation (3 Marks)
- e) Standard deviation (3 Marks)
- f) Coefficient of skewness (3 Marks)

**QUESTION FIVE**

**(20 MARKS)**

- a) A company manufacturing a product known as 257 uses five components in its assembly. The quantities and prices of the components used to produce a unit of K257 in 1982, 1983 and 1984 are tabulated as follows:

COMPONENT	1982		1983		1984	
	Quantity	Prices	Quantity	Prices	Quantity	Prices
A	10	3.12	12	3.17	14	3.20
B	6	11.49	7	11.58	5	11.67
C	5	1.40	8	1.35	9	1.31
D	9	2.15	9	2.14	10	2.63
E	50	0.32	53	0.32	57	0.32

**Required:**

- i) Calculate Laspyere’s type price index number for the cost of one unit of K257 for 1983 and 1984 based on 1982. (6 marks)
- ii) Calculate Paasche type price index numbers for the cost of one unit of K257 for 1983 and 1984 based on 1982. (6 marks)
- iii) Compare and contrast the Laspeyre and Paasche price-index numbers you have obtained in (i) and (ii) (3 marks)
- iv) Explain the usefulness of an index of Industrial Production and an index of retail prices to both sides in a series of pay negotiations. (5 marks)

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