

BACHELOR OF ARTS EXAMINATION, 2025**ECONOMICS****1st Year, 2nd Semester****Subject Code : ARTS/ECON/UG/CVAC/TH/12/102****INTRODUCTION TO DIGITAL DATA SOURCES AND ANALYSIS****Time : Two Hours****Full Marks : 30****Answer all the questions :**

1. (a) One-hundred customers were randomly selected for an experiment measuring the effect of music on the amount of money people spend in a supermarket. One half of the customers shopped on day when no background music was played. The other half shopped on days accompanied by music and advertisements. Each customer was assigned to one of three groups – high, moderate, or low– based on how much he or she has spent.

Initially 100 persons were surveyed. The survey results for 100 observations are given below with some missing information. The relative frequency is $f(x = 2|y = 3) = 0.5$ and the absolute frequency is $h(y = 1) = 35$.

Based on this information, fill in the missing cells below.

	High amount spent ($y = 1$)	Moderate amount spent ($y = 2$)	Low amount spent ($y = 3$)	Sum (X)
With music ($x = 1$)	30			
Without music ($x = 2$)		20		
SUM(Y)			40	

- (b) In the second round total 300 customers are surveyed. Given the following contingency table fill in the marginal frequencies and the expected counts under statistical independence. In the parentheses provide the expected counts given the actual number of observations. Determine the chi-square Value and Cramers' V.

		High amount spent (y = 1)	Moderate amount spent (y = 2)	Low amount spent (y = 3)	Sum (X)
With music (x = 1)	Count (Expected count)	130 (___)	30 (___)	50 (___)	
Without music (x = 2)	Count (Expected count)	40 (___)	20 (___)	130 (___)	
SUM(Y)	Count				

4 + 6 = 10 [CO2]

2. (a) Differentiate between General Fertility rate and Total Fertility rate.
 (b) What are the measures of Mortality? 2 + 3 = 5 [CO1]
3. (a) Explain the concept of Activity status followed in Employment and Unemployment survey by NSSO.
 (b) What are the four broad categories of Workers as per NSSO? Briefly define them. 2 + 3 = 5 [CO1]
4. (a) Write a note on following : Index of Industrial Production. 5

Or

- (b) What are the different stages of Artificial Intelligence? What are the uses of Dijkstra’s algorithm? Mention it’s limitation. 2+3=5 [CO3]
5. Calculate the path that takes the shortest time to travel from the Begin node to the End node, using the A* algorithm. Show your working. Heuristic costs are mentioned at the top of the node and actual costs between the nodes. 5 [CO4]


