BBA in TM, 2nd Sem.   Date: March 11, 2024 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination   Summer Semester, A. Y. 2022-2023
Course No.   : Math 4263   Time   : 1.5 hours
Course Title : Statistics I   Full Marks   : 75

Answer **all the 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin within brackets.

1. a) Define inferential statistics. Describe different levels of measurement along with their   13   (CO1)
        characteristics, applications, and relevant examples.   (PO2)

    b) Critically evaluate the statement-"Arithmetic mean is the best measure of central tendency   12   (CO1)
        and standard deviation is the best measure of dispersion."   (PO2)

2. The marks of 42 students of a particular course offered by ABC University are given   25   (CO1)
    below: (PO2)

40	14	17	6	9	38	36	5	28	60	16	29	36	91
5	15	11	54	33	22	8	25	44	30	37	17	37	20
28	23	22	47	7	23	13	47	10	16	24	25	57	43

    Requirements:

    i.   Develop a frequency distribution from the above data and calculate the mean,
          median, and standard deviation from the frequency distribution. (12)

    ii.   Portray the frequency distribution as a cumulative frequency polygon and
          determine 60 % of the students have received how much scores. (06)

    iii. Determine whether there is any outlier in the data and find out the skewness of the
          distribution. Interpret the results. (07)

3. a) Describe various approaches to assigning probabilities along with the relevant   06   (CO1)
        examples.   (PO2)

    b) In manufacturing its iPhone, Apple buys a particular kind of microchip from 3 suppliers: 08   (CO1)
        30% from Freescale, 20% from Texas Instruments and 50% from Samsung. Apple has   (PO1)
        extensive histories on the reliability of the chips and knows that 3% of the chips from
        Freescale are defective; 5% from Texas Instruments are defective and 4% from Samsung
        are defective. In testing a newly assembled iPhone, Apple found the microchip to be
        defective. What is the probability that the defective microchip has not arrived from
        Samsung? Develop a tree diagram for the above solution.

    c) A certain basket contains 10 apples, 7 of which are red and 3 are green. If 3 different   05   (CO1)
        apples are randomly selected, what is the probability that out of those 3 , 2 will be red and   (PO1)
        1 will be green ?

d) A survey of 545 college students asked: What are your favorite winter sports? And what type of college do you attend? The results are summarized below: **06** (CO1) (PO1)

College Type	Favorite Winter Sport			Total
	Snowboarding	Skiing	Ice Skatting	
Junior College	68	41	46	155
Four-year College	84	56	70	210
Graduate School	59	74	47	180
Total	211	171	163	545

Using these 545 students as the sample, a student from this study is randomly selected.

Requirements:

i.   What is the probability of selecting a student whose favorite sport is neither skiing nor ice skatting?

ii. If the student is a four-year college student, what is the probability the student prefers ice skating or snow-barding?

iii. If the student selected prefers snowboarding, what is the probability that the student will be in junior college?

iv. If a graduate student is selected, what is the probability that the student prefers skiing or ice scatting?