Sylhet Cadet College

Fortnightly Examination - 2024
Class: VII
2nd Term
Subject: Mathematics

Time: 40 minutes **Full Marks: 20**

Answer all the questions. Figures in the right indicate full marks.

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1. Write in exponential form: $1.5 \times 2 = 3$

   (a) $6^3 \times 6^2 \times 6^5$

   (b) 36^5

2. A freelancer earns 10 taka on the first day of his work. Everyday he earns double of the previous day.

   (a) Express the process with a formula 2

   (b) How much will he earn on 7th day? 1

   (c) What is total earning after the end of 10 days? 2

3. A joint probability density function is given below:

$$f(x) = x^2 + \frac{1}{3}xy; 0 \leq x \leq 1\,, 0 \leq y \leq 2$$

   (a) Find $f(x)$ and $f(y)$ 4

   (b) Find $f(x|y)$ and $f(y|x = 1)$ 4

4. **The probability distribution of a discrete random variable X is given below:**

x	-2	-1	0	1	3	4
P(x)	0.1	k	2k	3k	4k	0.2

   (a) Find the value of k 3

   (b) Find $F(x)$ and hence $P(X \leq 0)$ and $P(X > 1)$ 4

Sylhet Cadet College

Fortnightly Examination - 2024
Class: XII
2nd Term
Subject: Statistics First Paper

Time: 40 minutes **Subject Code: 129** **Full Marks: 20**

Answer all the questions. Figures in the right indicate full marks.

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1. A neutral coin is tossed thrice. Denote the number of heads appeared as X.

   (a) Create the probability distribution of X. 3

   (b) Find the probabilities: $P(X > 2)$, there are no tails. 2

2. A joint probability density function is given below:

$$f(x) = x^2 + \frac{1}{3}xy; 0 \leq x \leq 1\,, 0 \leq y \leq 2$$

   (a) Find $f(x)$ and $f(y)$ 4

   (b) Find $f(x|y)$ and $f(y|x = 1)$ 4

3. **The probability distribution of a discrete random variable X is given below:**

x	-2	-1	0	1	3	4
P(x)	0.1	k	2k	3k	4k	0.2

   (a) Find the value of k 3

   (b) Find $F(x)$ and hence $P(X \leq 0)$ and $P(X > 1)$ 4