

PARUL UNIVERSITY
FACULTY OF ARTS
B.A, Winter 2017 – 18 Examination

Semester: 3
Subject Code: 15101202
Subject Name: Statistical Methods In Economics

Date: 06/12/2017
Time: 10:30 am to 1:00 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A Choose the correct answer.**(08)**

1. For the following data, frequency of 5 is _____.
 2,3,2,3,4,3,4,5,4,5,6,5,6,7,5,8,9,10,5
 (a) 5 (b) 3 (c) 4 (d) 2
2. Class length of the class 20 – 35 is _____.
 (a) 20 (b) 15 (c) 7.5 (d) 35
3. Mid-point of the class 0 – 15 is _____.
 (a) 00 (b) 15 (c) 7.5 (d) 30
4. Mode of the following data is _____.
 10,12,15,12,18,19,18,20,12,17,18,14,12,16,12
 (a) 15 (b) 18 (c) 14 (d) 12
5. If $p(A) = 0.5$ then $p(A') =$ _____.
 (a) 0.5 (b) 1.5 (c) 0 (d) 1
6. $p(\emptyset) =$ _____.
 (a) 1 (b) 0 (c) -1 (d) 0.5
7. $p(A \cup B) = p(A) + p(B) -$ _____.
 (a) $p(A')$ (b) $p(A \cup B)'$ (c) $p(A \cap B)$ (d) $p(B')$
8. If $n(S) = 3, n(A) = 2$ then $p(A) =$ _____.
 (a) $\frac{3}{2}$ (b) $\frac{1}{6}$ (c) 6 (d) $\frac{2}{3}$
9. For a binomial distribution, ____ and ____ are parameters.
 (a) n, p (b) n, q (c) p, q (d) np, q
10. For a normal distribution, $P(Z < 0) =$ _____.
 (a) 0 (b) 0.5 (c) 1 (d) -1
11. For a normal distribution, $z =$ _____.
 (a) $\frac{x-\sigma}{\mu}$ (b) $x - \frac{\sigma}{\mu}$ (c) $\frac{x-\mu}{\sigma}$ (d) $x - \frac{\mu}{\sigma}$
12. Binomial distribution is a distribution for _____ variable.
 (a) no (b) continuous (c) any (d) discrete
13. The correlation coefficient lies between _____.
 (a) -1 and 1 (b) -1 and 0 (c) 0 and 1 (d) $-\infty$ and ∞
14. Which of the following is the correct relation between r, b_{xx} and b_{yx} ?
 (a) $r = b_{xy}b_{yx}$ (b) $r^2 = b_{xy}b_{yx}$ (c) $r = \frac{b_{yx}}{b_{xy}}$ (d) $r = \frac{b_{xy}}{b_{yx}}$
15. Equation of line of regression of y on x is _____.
 (a) $y = ax + b_{xy}$ (b) $y = a + (b_{xy})x$ (c) $y = a + (b_{yx})x$ (d) $y = ax + b_{yx}$
16. If $r > 0$ then the correlation is known as _____.
 (a) no correlation (b) negative correlation
 (c) zero correlation (d) positive correlation

Q.1.B. Answer the following.

(07)

1. Average of the following data is _____.
1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
2. If mode of the following data is 50 then what is the missing entry?
10,20,30,40,50,?,70,80
3. If A and B are mutually exclusive events with $p(A) = 0.5 = p(B)$ then $p(A \cup B) = ?$
4. If A and B are independent events with $p(A) = 0.5 = p(B)$ then $p(A \cap B) = ?$
5. For binomial distribution with $n = 2, p = \frac{1}{2}$ find $P(X = 1)$.
6. For normal distribution with $\mu = 12, \sigma = 2$ find $p(X > 12)$.
7. If for a data given $b_{xy} = \frac{1}{8}, b_{yx} = \frac{1}{2}$ then $r =$ _____.

Q.2.A. Consider the following frequency distribution.

(04)

Marks	No. of students
0 – 10	5
10 – 20	7
20 – 30	12
30 – 40	10
40 – 50	6

- (i) How many students got marks less than 40?
- (ii) How many students got marks more than 20?
- (iii) How many students got marks between 20 to 40?
- (iv) If getting marks more than 20 is the passing criteria then how many students failed the test?

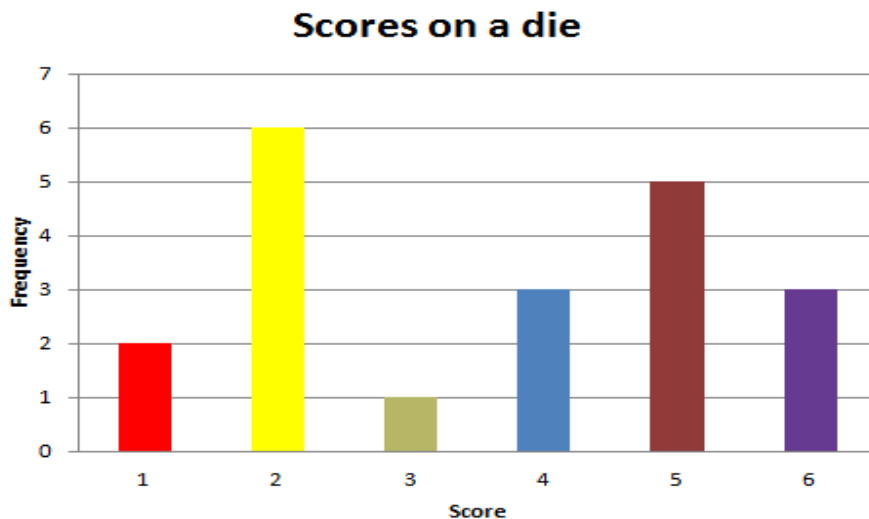
Q.2.B. Find correlation coefficient for the price and demand of the commodity.

(04)

Price (Rs)	60	65	70	75	80	85	90	95	100
Demand (qty)	35	30	25	25	23	21	20	20	18

Q.2.C. The following bar graph shows the results when a die was thrown a number of times.

(04)



- (i) How many times 1 was thrown?
- (ii) How many times 5 was obtained?
- (iii) Which number was obtained the least times?
- (iv) Which number was obtained the most?

OR

Q.2.C. Find the rank correlation coefficient for following data:

(04)

x	12	10	17	14	13
y	110	210	108	135	160

Q.3.A. Let $p(A) = 0.5, p(B) = 0.3$ and $p(A \cap B) = 0.17$. (05)
 Find (i) $p(A \cup B)$ (ii) $p(A')$ (iii) $p(B')$ (iv) $p(A' \cap B)$ (v) $p(A \cap B')$

Q.3B. An unbiased coin is tossed 6 times. Find the probability of getting (i) exactly 4 heads (ii) at least 4 heads (iii) at most 2 heads (05)

Q.3C. Find the mean of the following data: (05)

Class	0-10	10-20	20-30	30-40	40-50
f_i	5	8	15	16	6

OR

Q.3C. Find the Karl Pearson coefficient of correlation between the weight of the father and the son from the following data: (05)

<i>Wt of father</i>	55	56	57	58	59	60	61
<i>Wt of son</i>	57	56	59	62	60	60	59

Q.4.A. If $p(A) = p(B) = p(C) = 0.3, p(D/A) = 0.4, p(D/B) = 0.5$ and $p(D/C) = 0.2$. (06)
 Find (i) $p(A/D)$ (ii) $p(B/D)$

Q.4.B. In a normal distribution mean $\mu = 21.5$ and s.d. $\sigma = 2.5$. find the following values: (06)
 (i) $P(x \leq 18)$ (ii) $P(x \leq 22)$ (iii) $P(18 \leq x \leq 22)$ (iv) $P(x \geq 22)$

Q.4.C. Find the regression coefficients b_{yx} and b_{xy} for the following data: (06)

x	4	2	3	4	2
y	2	3	2	4	4

OR

Q.4.C. Find the median of the following data: (06)

x_i	0	1	2	3	4
f_i	4	1	6	11	3