

**University of the Punjab**  
**Part I 2016 2<sup>nd</sup> Annual Examination ADC/BCOM**  
**Subject: Business Statistics & Mathematics**  
**Paper: BC: 301**

**Time Allowed: 3 Hours      Maximum Marks: 100**

**Composed by Iftikhar Ali Lecturer Statistics, Finance & Accounting**

*NOTE: Attempt any FIVE questions using proper method. All questions carry equal marks. Attempt at least TWO questions from each section.*

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**Section I**

**Q.1:** Find the line of regression of Y on X and X on Y and draw regression line of Y on X from the given data.

<b>X</b>	18	19	20	21	22	23	24	25	26	27
<b>Y</b>	17	17	18	18	18	19	19	20	21	22

**Q.2:** Calculate co-efficient of mean deviation about mean and co-efficient of mean Deviation about median.

<b>Classes</b>	20—24	25—29	30—34	35—39	40—44	45—49
<b>f</b>	13	31	49	78	102	110

**Q.3:** Draw all possible samples of size 3 from the population 0, 3, 6, 9, 12, 15 without replacement. Make sampling distribution and show that:

(i)  $\mu_{\bar{x}} = \mu$

(ii)  $\sigma_{\bar{x}}^2 = \frac{\sigma^2}{n} \left[ \frac{N-n}{N-1} \right]$

**Q.4:** Calculate Price Index Numbers using Laspeyre's, Paasche's, Fisher's and Marshall's formulae for 2003 taking 2002 as base.

Year	A		B		C		D	
	Price	Quantity	Price	Quantity	Price	Quantity	Price	Quantity
2002	9	10	6	80	3	17	9	20
2003	11	5	9	100	2	20	7	15

## Section II

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**Q.6 a)** Mr. Ahmad want to open account paying 16.2% compounded monthly for his son's college education. How much Mr. Ahmad has to deposit (principle amount) if ordinary annuity payments of Rs.3000 are to be drawn out of account for 6 years.

**b)** How long will it take for money to double at 16% p.a. compounded semi-annually?

**Q.5:** If  $A = \begin{bmatrix} 1 & -1 & 2 \\ 0 & 3 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & 3 & 0 \\ 1 & 2 & -1 \end{bmatrix}$  show that:

a)  $A+B$

b)  $B - A$

c) Whether  $AB = BA$

**Q.6 a)** Mr. Ahmad want to open an account paying 16.2% compounded monthly for his son's college education. How much Mr. Ahmad has to deposit (principle amount) if ordinary annuity payments of Rs.3000 are to be drawn out of account for 6 years.

**b)** How long will it take for money to double at 16% p.a. compounded semi-annually?

**Q.7: a)** Find first term and sum up to 10<sup>th</sup> term of the geometric progression whose 6<sup>th</sup> & 7<sup>th</sup> terms are 64 and 128.

**b)** A laptop company produces 7000 laptops in its 4<sup>th</sup> year of existence and 10,000 laptops in 6<sup>th</sup> year. What is the production of the company in the first year?

**Q.8: a)** Solve the following simultaneous equations.

$$6x - 5y + 70 = 0$$

$$4x = 3y - 44$$

**b)** Solve the following equation by factorization:

$$3x^2 - x = 8$$