

ANSWER KEY  
PART-A (10x2=20 marks)

1. A proportion is an equality of two ratios.
2.  $A : B : C = 8 : 12 : 15$
3. (i) ordinary Annuity (ii) Annuity due  
(iii) Deferred Annuity (iv) Perpetuity.
4. Banker's discount =  $A \times n \times d$
5. Range = Highest value - Smallest value.
6. Mean is obtained by dividing the sum of all observations by the number of observations.
7. Correlation is a statistical measure that shows the degree and direction of relationship between two variables.
8. Regression is a statistical method used to study the relationship between two or more variables and to predict the value.
9. (i) Trend (ii) Seasonal variation (iii) cyclical variation  
(iv) Irregular variation.
10. Index number are devices for measuring differences in the magnitude of a group of related variables.

Section-B (5x5=25 marks)

11. using componendo and dividendo, we get

$$\frac{2\sqrt{a}}{-2\sqrt{b}} = \frac{3}{-1} \Rightarrow \sqrt{a} = 3\sqrt{b}$$

$$a = 9b$$

$$\frac{a^2 + ab + b^2}{a^2 - ab + b^2} = \frac{91}{73}$$

12. Amount due at the end of 3 years =  $5000 \left(1 + \frac{8}{100}\right)^3$  ②  
 = Rs. 6298.56  
 Interest = Rs. 1298.56

13.  $\sum f = N = 60$ ,  $\sum (f/x) = 4.436$

H.M = 13.525

14.  $\sum dx^2 = 242$ ,  $\sum dy^2 = 318$ ,  $\sum dxdy = 70$ ,  $N = 6$ ,  $\sum dx = 6$ ,  
 $\sum dy = 0$

$r = 0.256$

15. 

3-yearly moving average	}	-	22	23.33	24	23.67	23.67	24.33	26	26.33	-
Short-term fluctuations	}	-	0	-0.33	1	0.33	-1.67	0.67	0	0.67	-

16. No. of days between item = 100 days

Banker's discount =  $A \times n \times d = \text{Rs. } 100$

The amount for which the bill was discounted = Rs. 3550

17.  $Q_1 = \text{size of } 8^{\text{th}} \text{ item} = 62$

$Q_3 = \text{size of } 24^{\text{th}} \text{ item} = 65$

$Q.D = \frac{Q_3 - Q_1}{2} = 1.5$

18. Cost of living index =  $\frac{\sum IW}{\sum W} = \frac{75330}{100}$   
 = 753.3

Section - C (2x15 = 30 marks)

19. Mean = 46.33  
Median = 44.63  
Mode = 40.67

20. (i)  $\bar{x} = 13, \bar{y} = 17$   
(ii)  $b_{xy} = 1.25, b_{yx} = 2.22$   
 $r = 0.6$

(iii)  $\sigma_y = r \frac{\sigma_x}{b_{xy}} = 4$   
Variance of  $y = 16$

21. (a) Laspeyres = 125  
(b) Paasche's = 126.21  
(c) Bowley's = 125.6  
(d) Fisher's ideal = 125.6  
(e) Marshall-Edgeworth = 125.5