	Sanjay Ghodawat University, Kolhapur Established as State Private University under Govt. of Maharashtra. Act No XL, 2017	2017-18
Year and Program : 2017, FY MBA	School of Commerce & Management	Department: MBA
Course Code: MMC 507	Course Title : Business Numerical	Semester – Odd (I)
Day and Date : ~~Saturday, 2nd~~ 5 Dec, 2017	End Semester Examination	Time: 3 hrs, Max Marks: 100

Instructions:
1) All Questions are compulsory.
2) Non-programmable calculators are Allowed .
3) Use Graph papers where ever necessary.

Marks COs

Q.1 Solve the following

a) Following are the heights and weights of workers in the factory. Obtain Pearson's correlation coefficient between heights and weights. 10 CO3

Heights (in inches)	65	62	68	70	66	65	68	69
Weights (in kgs)	68	63	69	71	68	67	70	72

b) For the married women the level of education and marriage adjustment score is as follows. Test the independence level of education and marriage adjustment score.(Table value=12.59) 10 CO5

Level of education	Marriage adjustment score			
	Very-low	Low	High	Very-high
College	24	87	72	54
High school	21	28	32	41
Middle-school	35	10	11	20

Q.2 Solve any Two

a) Define Statistics and state its scope in Managerial Decision Making. 10 CO1

b) Define the terms i) Inclusive type of classes ii) Exclusive type of classes. Draw a proper Ogive curve for the following data and obtain median from it. 10 CO1

Class:	10-15	15-20	20-25	25-30	30-35	35-40	40-45
f :	6	12	15	23	17	10	7

c) What are the main parts of a good statistical table? Prepare a suitable blank table which relates the information of factory workers by taking 10

i) Sex – Male, Female

ii) Salary (in Rs) - 5000-7000, 7000 – 9000, 9000 -11000, Above 11000

iii) Ages (in yrs) - Below 25, 25-55, Above 55

Q.3 Solve any Two

a) Define mean and median. Following distribution represents the life time of a sample of 70 IC chips. Compute mean & harmonic mean life of the chips 10

Life time (in hrs)	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of chips	3	7	12	18	14	10	6

b) What are the requirements of good measure of dispersion? The numbers of breakdowns of computers in a computer centre are given in the table. 10

No. of breakdowns	0	1	2	3	4	5	6
No. of days	4	6	8	13	9	7	3

Calculate Standard Deviation and coefficient of variation of the breakdowns

c) State merits & demerits of median and compute mode & 87^{th} percentile for the data given below. 10

Class	0-15	15-30	30-45	45-60	60-75	75-90	90-105
F	4	11	17	23	15	10	5

Q.4 Solve any Two

a) Explain scatter diagram method of obtaining correlation. Compute spearman's rank correlation coefficient for the following data. 10

X	35	40	52	48	50	46	48	51
Y	49	46	44	45	43	47	48	43

b) Explain Seasonal variations. Fit a trend line for following time series 10

Years	1961	1962	1963	1964	1965	1966	1967
Sales	22	26	24	27	29	30	33

c) Define regression. Following data shows the sales and profits of 8 companies 10

Sales (X)	20	22	21	24	23	25	26	24
Profits (Y)	8	11	12	13	11	14	15	12

Obtain regression equation of Y on X and estimate profit if sale is 27

Q.5 Solve any Two

a) State Laws of probability. Two dice are thrown at a time. Find the chance of getting 10
   i) The sum of faces equal to 6 and ii) the sum of faces is at least 10.

b) Define Index numbers. Calculate Quantity index number for 2014 by using Laspeyre's, Paasche's and Fisher's formulae. 10

	2012		2014	
Commodity	price	value	price	value
A	2	16	4	24
B	5	30	6	42
C	4	20	7	28
D	2	14	3	24

c) State the properties of Normal curve. Suppose the owner of a bakery knows that the daily demand for his whole meal bread is a random variable having normal distribution with the mean 460 loaves and the standard deviation 30 loaves. What is the probability that 10
   i) the demand for his bread will be between 400 and 430 loaves?
   ii) the demand for his bread will exceed 490 loaves?
   (Given z area between 0 & 1 is 0.3413 and between 0 & 2 is 0.4772)

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