

GANPAT UNIVERSITY
BBA Examination April 2012
BBA(G/FS/RM), Semester 2 (CBCS)
IIA04BUS Business Statistics

Time: 3 Hours

Total Marks: 70

Instructions:

1. Use separate answer books for Section I and Section II.
2. Q1 in Section I and Q4 in Section II are compulsory.
3. Figures to the right indicate marks of the question.

SECTION -- I

- Q1 (A)** A bag contains 7 red, 12 white and 4 green balls. What is the probability that : (04)
 (1) 3 balls are drawn are all white (2) 3 balls are drawn are one of each colour
- Q1 (B)** One card is drawn from a pack of 52 cards. What is the probability that it is either a jack or black card? (04)
- Q1 (C)** There are 100 tickets in a lottery of Rs. 1 each. There are 2 tickets in the lottery bearing a prize of Rs. 70. A person purchases 1 ticket. Find his expectation. (03)
- Q2 (A)** If $P(A)=0.3$, $P(B)=0.2$ and $P(C)=0.1$ and A,B,C are independent events, find the probability of occurrence of at least one of the three events A,B and C. (04)
- Q2 (B)** For a Poisson variate x, $P(x=1) = P(x=2)$ find $P(x=0)$ (04)
- Q2 (C)** Define: mutually exclusive events (02)
- Q2 (D)** Write any 4 properties of Normal distribution (02)

OR

- Q2 (A)** There are 5 red and 4 black balls in a bag. 2 draws of 2 balls are made from it. Find the probabilities that the first drawing gives 2 red balls and the second drawing gives 2 black balls if the balls are not replaced. (04)
- Q2 (B)** For a Binomial variate $n=6$ and $P(3) : P(4) = 8 : 3$ find the value of p. (04)
- Q2 (C)** Define: sample space (02)
- Q2 (D)** Write any 4 properties of Binomial distribution (02)
- Q3 (A)** 8 coins are thrown simultaneously. Find the probability of obtaining at least 6 heads. (04)
- Q3 (B)** The mean height of the 1,000 workers in a Steel Plant is 67 inches with a standard deviation of 5 inches. How many workers are expected to be above 72 inches in that plant? (04)
- Q3 (C)** A random variable x has the following probability distribution: (04)
 Find mean and variance of a random variable x.

X	3	4	5	6
P(x)	0.2	0.4	0.3	0.1

OR

- Q3 (A)** If 5% of the electric bulbs manufactured by a company are defective. Find the probability that in a sample of 100 bulbs none is defective, 4 bulbs are defective. (04)
 $[e^{-5} = 0.007]$
- Q3 (B)** Assuming that the height distribution of men is normal, find the mean and standard deviation given that 84% of the men have heights less than 65.2 inches and 68% have heights between 65.2 and 62.8 inches. (04)
- Q3 (C)** There are 4 black and 2 white balls in a box and 2 balls are taken at random from it .if a person receives Rs. 4 for each white ball and loses Rs. 2 for each black ball, find the mathematical expectation of the amount received by him. (04)

SECTION – II

Q4 (A) Draw \bar{x} -bar and R charts for the following data and state your conclusion. (06)

[for $n=5, A_2 = 0.577, D_3 = 0, D_4 = 2.115$]

Sample no.	1	2	3	4	5	6	7	8	9	10
\bar{x} -bar	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
R	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

Q4 (B) For studying a characteristic the observations of the population are 10, 12, 20, 22. How many random samples of size 2 without replacement can be taken from it? verify the following results: (1) $E(\bar{y}) = \bar{Y}$ (2) $E(s^2) = S^2$ (05)

Q5 (A) Write short note on 'Theory of Run' (06)

Q5 (B) Write short note on 'Simple Random Sampling' (06)

OR

Q5 (A) 1000 units of a population are divided into 3 strata. The information regarding them is as follows. If a sample of 80 observations is drawn from the population with proportional allocation find $V(\bar{y}_{st})$. (06)

Stratum	Number of units in stratum	Variance of stratum
1	200	96
2	500	120
3	300	72

Q5 (B) The following table gives the number of defective items found in 20 successive samples of 100 items each: construct a suitable chart and state your conclusion. (06)

2, 6, 2, 4, 4, 18, 0, 9, 10, 18, 2, 4, 8, 0, 2, 2, 4, 0, 6, 4

Q6 (A) (1) p and np charts are based on _____ distribution. (02)

(2) The inventor of statistical quality control was _____.

Q6 (B) In a sample of 1000 men from one city 750 were found to be smokers. In another sample of 1200 men from another city 1000 men were found to be smokers. Do the data indicate that the two cities are significantly different with respect to the prevalence of smoking habit at 5% level of significance among men? (05)

Q6 (C) A coin was tossed 400 times and head was obtained for 160 times can the coin be regarded as biased at 5% level of significance? (05)

OR

Q6 (A) (1) c chart is based on _____ distribution. (02)

(2) upper and lower limit of c chart are _____ and _____

Q6 (B) The information regarding marks of boys and girls in a college is given below. Test whether the difference in standard deviations is significant at 5% level of significance. (05)

Sample	Mean	S.D.	Sample size
Boys	83	10	121
Girls	81	12	81

Q6 (C) The information is about the height of boys of two colleges is given below. Test whether the difference in the means is significant at 5% level of significance. (05)

Sample	Mean(inches)	S.D.(inches)	Sample size
College (vmcms)	67.42	2.58	1000
College (ampics)	67.25	2.50	1200

- x -