C **C1C006** **Total Pages:3**

Reg.No._____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER REGULAR MCA DEGREE EXAMINATION, DEC 2016

RLMCA 105-APPLIED PROBABILITY & STATISTICS

Max Marks: 60 Duration: 3 hours

(Statistical tables are permitted)

PART A

Answer All Questions

Each Question carries 3 marks

1. Define skewness and kurtosis.
2. State and prove addition theorem on probability for two events.
3. Obtain the probability distribution of X, the number of heads in three tosses of a coin.
4. Define poisson distribution. Derive its mean.
5. Define standard normal distribution. Write its mean and varience.
6. Define marginal probability function.
7. State central limit theorem.
8. Define confidence interval.

PART B

Answer All Questions, Each question carries 6 marks

MODULE I

9. An incomplete frequency distribution is given as follows:

Variable:	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency:	12	30	?	65	?	25	18

Given that total frequency is 229 and median value is 46, determine the missing frequencies.

OR

10. Calculate standard deviation from the following data:

Marks:	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No.of students:	5	7	14	12	9	6	2

MODULE II

11. A committee of four has to be formed from among 3 economists, 4 engineers, 2 statisticians and 1 doctor.

    i)What is the probability that each of the four professions is represented on the committee?

    ii) What is the probability that the committee consists of a doctor and atleast one economist?

OR

12. In a class of 75 students, 15 were considered to be very intelligent, 45 as medium and the rest below average. The probability that a very intelligent student fails in a viva-voice examination is 0.005; the medium student failing has a probability 0.05; and the corresponding probability for a below average student is 0.15. If a student is known to have passed the viva-voice examination, what is the probability that he is below average?

MODULE III

13. A die is tossed twice. Getting 'a number greater than 4' is considered as success. Find the mean and varience of the probability distribution of the number of success.

OR

14. Fit a binomial distribution to the following data:

X:	0	1	2	3	4
f:	28	62	46	10	4

MODULE IV

15. Derive the mean and varience of continuous uniform distribution.

OR

16. In a normal distribution 31% of the items are under 45 and 8% are over 64. Find the mean and standard deviation of the distribution?

MODULE V

17. Explain different types of sampling.

OR

18. A random sample of 700 units from a large consignment showed that 200 were damaged. Find (i) 95% and (ii) 99% confidence limits for the proportion of damaged units in the consignment.

MODULE VI

19. The mean height of 50 male students who showed above average participation in college athletics was 68.2 inches with a standard deviation of 2.5 inches; while 50 male students who showed no interest in such participation had a mean height of 67.5 inches with a standard deviation of 2.8 inches. Test the hypothesis that male students who participate in college athletics are taller than other male students.

OR

20. In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers?