

# Questions

For CRT - 19

By O.P. GUPTA

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Max. Marks : 40

Time : 60 Minutes

Topics : Probability

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**Q01.** \*\*Two cards are drawn successively with replacement from a well shuffled pack of 52 cards. Find the probability distribution of the number of kings. Also find the mean, variance and standard deviation of the number of kings.

**Q02.** A random variable X has the following probability distribution :

X	0	1	2	3	4	5	6	7
P(X)	0	k	2k	2k	3k	$k^2$	$2k^2$	$7k^2+k$

Determine the followings :

(a) k (b)  $P(X < 3)$  (c)  $P(X > 6)$ .

**OR** Let A can hit a target 4 times in 5 shots, B can hit 3 times in 4 shots and C can hit 2 times in 3 shots. Find the probability that

(a) A, B, C all will hit (b) B, C will hit and A will lose  
(c) Any two of A, B and C will hit (d) None of them will hit.

**Q03.** (a) A red and a black dice are rolled once. Determine the probability of getting a sum greater than 9, given that the black die resulted in a 5.

(b) Two integers are selected at random from the integers one to eleven. If their sum is even, what is the probability that both the numbers are even?

**Q04.** Let E and F be the independent events. The probability of their simultaneous occurrence is  $\frac{1}{8}$  and the probability that neither occurs is  $\frac{3}{8}$ . Find  $P(E)$  and  $P(F)$ .

**Q05.** (a) Show that  $\bar{E}$  and  $\bar{F}$  are independent events, if it is known that E and F are independent events.

(b) If E and F are two independent events then, show that the probability of occurrence of at least one of E and F is given by  $1 - P(\bar{E})P(\bar{F})$ .

**Q06.** By examining the chest X-ray, the probability that T.B. is detected when a person is actually suffering is 0.99. The probability that the doctor diagnosis incorrectly that a person has T.B. on the basis of X-ray is 0.001. In a certain city, 1 in 1000 suffers from T.B. A person is selected at random and is diagnosed to have T.B. What is the probability that he actually has T.B.?

**Q07.** Two cards from a pack of 52 playing cards are lost. From the remaining cards of the pack, one card is drawn and is found to be heart. Find the probability of the lost cards were both hearts.

**OR** A card from a pack of 52 cards is lost. From the remaining cards of the pack, two cards are drawn and are found to be both clubs. Find the probability of the lost card being a club.

**Q08.** If a machine is set up properly, it produces 90% good items. If it is not set up properly, it produces only 40% good items. Past experience reveals that 80% of the set ups are correctly done. If after a certain set up, the machine produces 2 acceptable items, find the probability that machine was not set up properly.

**Q09.** A bag contains  $(2n + 1)$  coins. It is known that  $(n - 1)$  of these coins have a head on the both sides, whereas the rest of the coins are fair. A coin is picked up at random from the bag and is tossed. If the probability that the toss results in a head is  $\frac{31}{42}$ , determine the value of n.

**Q10.** Urn A contains six red and four black balls and urn B has four red and six black balls. One ball is drawn at random from urn A and placed in urn B. Then one ball is transferred at random from urn B to urn A. If one ball is now drawn at random from urn A, find the probability that it is red.

[4×10 = 40

# Offline Test held @ THE O.P. GUPTA CLASSES in 2019-20. Sharing again, for the benefit of students in 2020-21.

# The Questions/topics which are deleted by CBSE have been marked with \*. If any error is noticed, pls inform us via WhatsApp.

## Hints & Answers

# Dear students, this time we are not providing Answers/ Hints/ Solutions for the Sums of this test. It is to ensure that you do **Practice from the books - Mathematicia by O.P. Gupta.**

\*\* Be informed that, “finding Probability distribution” is in the syllabus.  
But, ‘finding the mean and variance’ is not in the syllabus.

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