

TIME: 40 minutes

MAXIMUM MARKS: 30

SEM	SET	PAPER CODE	TITLE OF THE PAPER
II	2014	14PCA2113	PROBABILITY AND STATISTICS

**SECTION - A****Answer all the questions:** **$30 \times 1 = 30$** **Choose the correct answer:**

- Getting a head in tossing a coin is
  - Trial
  - Event
  - Sample space
  - None
- The probability of drawing a white ball from a bag containing 3 red, 6 white and 7 blue ball is
  - $\frac{3}{8}$
  - $\frac{3}{16}$
  - $\frac{7}{16}$
  - $\frac{7}{8}$
- The probability of an impossible event is
  - 0
  - 1
  - $\frac{1}{2}$
  - $\frac{1}{4}$
- If  $P(A)$  is  $\frac{1}{7}$  then  $P(\bar{A})$  is
  - $\frac{1}{7}$
  - $\frac{6}{7}$
  - $\frac{5}{7}$
  - $\frac{4}{7}$
- The axiom of certainty for probability is
  - $P(S) \geq 0$
  - $P(S) = 0$
  - $0 \leq P(S) \leq 1$
  - $P(S) \leq 1$

6. If A and B are independent events, then
- a)  $P(A|B) = P(A)$                       b)  $P(A|B) = P(B)$   
c)  $P(B|A) = P(A)$                       d) None
7. If  $f(x) = kx(1-x)$ ,  $0 \leq x \leq 1$ , is the pdf of a continuous random variable x, the value of k is
- a) 2    b) 4  
c) 6    d) 8
8. If the random variable x assumes the values 0, 1 with probabilities  $P(x=0) = \frac{1}{2} = P(x=1)$ , then  $E(x)$  is
- a) 0    b) 1  
c)  $\frac{3}{2}$     d)  $\frac{1}{2}$
9. The expectation of the number on a die when thrown is
- a)  $\frac{5}{2}$     b)  $\frac{3}{2}$   
c)  $\frac{7}{2}$     d)  $\frac{9}{2}$
10. If  $f(x,y) = e^{-(x+y)}$ ,  $x \geq 0$ ,  $y \geq 0$ , is the joint probability density function of random variable x and y, the marginal probability density function of x is
- a)  $e^x$     b)  $e^{-x}$   
c)  $e^y$     d)  $e^{-y}$
11. If X and Y are independent, then  $f(x,y)$  is
- a)  $f_1(x)f_2(y)$                                       b)  $f_1(x)/f_2(y)$   
c)  $f_1(x)+f_2(y)$                                       d)  $f_1(x)-f_2(y)$
12. By Chebyshev's inequality,  $P\{|x-\mu| \geq 8\sigma\} \leq$ \_\_\_\_\_.
- a)  $\frac{1}{8}$     b)  $\frac{1}{16}$   
c)  $\frac{1}{4}$     d)  $\frac{1}{64}$
13. If x is  $B(12, \frac{1}{2})$  the mean of x is
- a) 3                      b) 4                      c) 6                      d) 2
14. The probability mass function of Poisson distribution is
- a)  $\frac{e^\lambda \lambda^x}{x!}$                       b)  $\frac{e^{-\lambda} \lambda^x}{x!}$                       c)  $\frac{e^\lambda \lambda^{-x}}{x!}$                       d)  $\frac{e^{-\lambda} \lambda^{-x}}{x!}$

15. If the pdf of a random variable  $X$  is constant over the entire range  $(a, b)$  of  $X$ , then  $X$  is a
- a) Normal variate
  - b) Uniform variate
  - c) Binomial variate
  - d) Poisson variate
16. The normal probability curve is
- a) Parabola
  - b) Bell shaped
  - c) Ellipse
  - d) Circle
17. Correlation coefficient  $r$  satisfies
- a)  $r \leq 1$
  - b)  $-1 \leq r \leq 1$
  - c)  $r \geq -1$
  - d)  $r \geq 1$
18. Correlation coefficient is the \_\_\_\_\_ between the regression coefficients
- a) Arithmetic mean
  - b) Geometric mean
  - c) Harmonic mean
  - d) None
19. Null hypothesis tests for possible \_\_\_\_\_ under the assumption that it is true
- a) Rejection
  - b) Acceptance
  - c) Error
  - d) None
20. Type I error is
- a) Reject  $H_0$  when it is true
  - b) Reject  $H_0$  when its wrong
  - c) Accept  $H_0$  when it is true
  - d) Accept  $H_0$  when it is wrong
21. The range of chi-square variate is
- a) 0 to 1
  - b)  $-\infty$  to 0
  - c)  $-\infty$  to  $\infty$
  - d) 0 to  $\infty$
22. Chi-square distribution is
- a) Continuous
  - b) Multimodal
  - c) Symmetrical
  - d) None
23. In students t-test, the parent population from which the sample is drawn is
- a) Normal
  - b) Uniform
  - c) Binomial
  - d) Poisson

24. Calculate value of  $\chi^2$  is compared with the tabulated value of  $\chi^2$  for \_\_\_\_\_ degrees of freedom.  
a)  $n+1$     b)  $n$     c)  $n^2$     d)  $n-1$
25. In one way classification, treatment is the variation.  
a) Between the classes                      b) Within the classes  
c) Outside the classes                      d) None
26. The variation within the classes is due to  
a) Chance causes                              b) Assignable cause  
c) Fixed causes                              d) Sudden cause
27. A device to get an answer to the problem under consideration is  
a) Block    b) Experiment  
c) Treatment                                      d) Yield
28. The execution of an experiment more than once is  
a) Repetition                                      b) Regression  
c) Replication                                      d) None
29. If the treatment are applied at random to relatively homogeneous units within each block and replicated over all the blocks, the design is a  
a) Complete design                              b) Completely randomized design  
c) Randomized design                              d) Randomized block design
30. In Latin square design, the number of replications is equal to the number of  
a) Experiments                                      b) Treatments  
c) Blocks    d) Squares

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