SET: II

B.Sc. (Part-I) (Semester-I) (CBCS (NEP2020)) Examination, March 2024
Balasaheb Desai College, Patan
STATISTICS
Sub. Code: 88183
Elementary Probability Theory (Paper – II)

Day and Date: Monday, 01/04/2024 **Total Marks: 40**
Time: 10:30 a.m. to 12:30 p.m. **Period: 2 Hours**
Total Pages: 01

Instructions: ***i) All questions are compulsory.***
ii) Figures to the right indicate full marks.

Q.1 Choose the most correct alternative: **(08)**

1) If Ω is the sample space and B be the event defined on Ω then $B \cup \Omega$ is....
a) B b) Ω c) ϕ d) B^c

2) Event A and B are said to be Exhaustive events if .....
a) $A \cap B = \phi$ b) $A \cup B = \Omega$ c) $A \cup B = \phi$ d) none of these

3) Complementation of events A means the set of points that belongs to …
a) only in A b) All in Ω but not in A c) All in Ω d) both in Ω and A

4) The odds in favor of an event C are 2:7 the P(C) = ……
a) 2/7 b) 2/9 c) 7/9 d) 7/2

5) If sample space Ω = {a, b, c}, P(a) = 0.3 and P(b) = 0.4 then P(c)=……
a) 0.7 b) 0.5 c) 0.3 d) 0.06

6) If $A \subseteq B$ then P(A|B) =….
a) P(A) b) P(B) c) P(A)/P(B) d) 1

7) If X is a discrete r.v. with mean E(X), then $E[(X-E(X)]^2$ is called…
a) Mean b) Variance c) S.D. d) Median

8) If F(x) is the distribution function of random variable X then $P(a < X \leq b)$ = ...
a) F(a) b) F(b) c) F(a) – F(b) d) F(b) – F(a)

Q. 2 Attempt any ***two*** of the following. **[16]**

1) With usual notation show that $0 \leq P(A \cap B) \leq P(A) \leq P(A \cup B) \leq P(A) + P(B)$

2) A random variable X has the following probability distribution

X	– 3	– 2	2	3
P(x)	c	3c	3c	c

Find i) k ii) E(X) iii) $E(X^2)$ iv) V(X)

3) If A and B are two independent events then show that
i) A and B^C are independent ii) A^C and B^C are independent

Q. 3 Attempt any ***Four*** of the following. **[16]**

1) If P(A) = 0.3, P(B) =0.2 and $P(A \cup B) = 0.4$ then find $P(A \cap B)$and $P(A \cap B^c)$

2) Explain the Power set with suitable example.

3) Write symbolic representation and draw the Venn diagram of the statements i) Event A occurs but not B ii) neither A nor B occurs.

4) Define with example i) Random Experiment ii) Sample space

5) Define i) Probability mass function (p.m.f.) ii) Cumulative distribution function (c.d.f.)

6) How to obtain mean and variance using probability generating function (p.g.f.)

II====****====II