PART–A

Instructions: Part-A consists of 50 questions. Questions No. 1 -10 (English), Questions No. 11-25 (General Knowledge and Numerical Ability) and Questions No. 26-50 (Research Methodology)

1. Find the suitable antonym of 'QUIESCENT'
   (A) Dormant (B) Weak
   (C) Active (D) Unconcerned

2. Correct the given sentence:
   He has received to other message than an urgent telegram asking him to rush his village immediately.
   (A) Asked him to rush his village (B) Asking him to have rush his village
   (C) Asking him to rush to his village (D) Asking him rushing at his village

3. Change the speech of the given sentence:
   She exclaimed with sorrow that was a very miserable plight.
   (A) She said, "What a mystery it is."
   (B) She said, "What a miserable sight it is."
   (C) She said, "What a miserable plight it is."
   (D) She said with sorrow, "What a pity it is."

4. Government by a small group of all powerful persons
   (A) Oligarchy (B) Monarchy
   (C) Democracy (D) Anarch

5. Give the synonym of 'VANGUARD'.
   (A) Officer (B) Flag bearer
   (C) Race driver (D) Pioneer

6. What does phrase "A man of straw" mean
   (A) A man of no substance (B) A very active person
   (C) A worthy fellow (D) An unreasonable person

7. Complete the given sentence:
   He led me ..... the green laws to the palatial building.
   (A) Across (B) Along
   (C) Upon (D) About

8. Select the pair which has the same relationship. SYMPHONY: COMPOSER
   (A) Fresco : painter (B) Colours : pallet
   (C) Leonardo : music (D) Art : appreciation

9. Choose the correct spelling
   (A) Amateur (B) Ameteur (C) Amatuer (D) Amature

10. Select the correct plural form of 'Elf'.
    (A) Elfs (B) Elves (C) Eles (D) None of these

11. Two taps A and B can fill a cistern in 28 minutes and 42 minutes respectively. Third tap C can empty it in 42 minutes. If all the three taps are open, the time taken to fill the cistern is
    (A) 28 minutes (B) 16.8 minutes (C) 42 minutes (D) 12 minutes

12. 9, 12, 11, 14, 13, ?, 15
    (A) 16 (B) 10 (C) 17 (D) 12

13. A student is ranked 13th from right and 8th from left. How many students are there in total?
    (A) 19 (B) 20 (C) 21 (D) 18

14. The effective annual rate of interest corresponding to a nominal rate of 6% per annum payable half-yearly is
(A) 6.07% (B) 6.08% (C) 6.09% (D) 6.06%

15. Three number are in the ratio of 3 : 4 : 5 and their L.C.M. is 2400. Their H.C.F. is
(A) 120 (B) 200 (C) 40 (D) 80

16. The Salim Ali Bird sanctuary is located at
(A) Anakkatti (B) Kalakkad
(C) Pondicherry (D) Goa

17. Who composed the song "Sare Jahan Se Achha Hindostan Hamara"?
(A) Faiz Ahmed Faiz (B) Bankim Chandra Chatterjee
(C) Mohammed Iqbal (D) Rabindranath Tagore

18. Non-stick cooking utensils are coated with
(A) Teflon (PTFE) (B) Polystyrene
(C) Black paint (D) PVC

19. Who founded the Haryank dynasty in Magadha ?
(A) Ajatashatru (B) Bimbisara
(C) Udayabhadra (D) None of Above

20. The idea of Directive Principles of state policy in the constitution of India has been borrowed from
(A) The Japanese Constitution (B) The Irish constitution
(C) The French Constitution (D) The Canadian Constitution

21. Which of the following is not an operating system?
(A) Linux (B) Windows
(C) DOS (D) Oracle

22. Identify the largest port of India
(A) Mumbai Port (B) Kandla Port
(C) Okha Port (D) Kolkata Port

23. Film and Television Institute of India is located at
(A) Perambur (Tamilnadu) (B) Pune (Maharashtra)
(C) Pimpri (Maharashtra) (D) Rajkot (Gujarat)

24. Night blindness is cause by lack of which vitamin?
(A) Vitamin C (B) Vitamin D
(C) Vitamin A (D) Vitamin B

25. Who among the following invented the smallpox vaccine?
(A) Robert Hooke (B) Louis Pasteur
(C) Robert Koch (D) Edward Jenner

26. Which of the following is correct
(A) Research is scientific and systematic approach to formulate a problem and find its solution
(B) Research is not just collection of information on a specific subject, but to analyse it
(C) Research is not just writing a report on a well-known subject
(D) All the above

27. A research which involves obtaining non-numerical data through open ended questions and conversational communication is
(A) Quantitative research (B) Qualitative research
(C) Analytical research (D) Semi-quantitative research

28. Post positivism is a stance where
(A) A theory of a researcher can influence the observation
(B) Researcher and researched object/event/person are independent
(C) The information derived from sensory experience is interpreted through reason and logic is an exclusive source of all certain knowledge
(D) Realty is evidence based and can be mathematically interpreted

29. Experimental research is used where
(A) There is time priority in a causal relationship
(B) There is consistency in a causal relationship
(C) The magnitude of correlation is high
(D) All the above

30. In research, moving from broader generalizations and theories to specific observations can be achieved by
(A) Deducting reasoning
(B) Inductive reasoning
(C) Observations
(D) Experience

31. In empirical approach a decision is made by
(A) Direct observation and experimentation
(B) Feelings, hunches and instinct
(C) Opinions of experienced people
(D) Speculation based on some information

32. Which of the following statements collecting the data by survey is false?
(A) Personal interview have the flexibility of restructuring the questionnaire
(B) Data collection by personal interview can have controlled samples
(C) In personal interview the interviewer can collect additional information about the environment of the person interviewed
(D) Personal interview method is always cheap method and the respondents always give unbiased information

33. In an experimental research, the dependent variable is
(A) A measure of the effect of the independent variable
(B) A factor that is controlled and manipulated by the researcher
(C) A variable which can take only specific values in the range of values
(D) A variable which is always dependent on the researcher himself

34. Rating something as “helpful” and “not helpful” is an example of
(A) Quantitative variable
(B) Continuous variable
(C) Discontinuous variable
(D) Categorical variable

35. Participant bias can be controlled by
(A) The double blind technique
(B) Blind technique
(C) Partial blind technique
(D) All the above

36. A sample is theoretically the most representative of the total population when we use
(A) Random selection
(B) Specific selection
(C) Sample of convenience
(D) Sample of interest

37. Temperature measured in °C (degree Celsius) is
(A) Ratio scale
(B) Nominal scale
(C) Interval scale
(D) Ordinal scale

38. Which of the tests are necessary to confirm a good measurement?
(A) Test of validity
(B) Test of reliability
(C) Test of practicality
(D) All the above

39. Which of the analysis is appropriate for a researcher if he has only one dependent variable that cannot be measured but can be classified into different categories?
(A) Multiple regression analysis
(B) Multiple discriminant analysis
(C) Canonical analysis
(D) Multivariate analysis of variance

40. Which of the following is used for organizing and manipulating the data
(A) MS Power Point
(B) Google Scholar
(C) Google Sheets
(D) LaTex

41. A doctoral thesis must have
(A) Selective references
(B) Exhaustive references
(C) No references
(D) Quotations

42. I.I.Sc. stands for
(A) Indian Institute of Science
(B) Indian Institute of Statistics
(C) Institute for Indian Science
(D) International Institute for Science

43. As per UGC regulations on prevention of plagiarism, the percentage similarities for which the student registration for a programme will be cancelled is
(A) 15 %
(B) 30 %
(C) 45 %
(D) 60 %

44. Research misconduct include
(A) Honest error
(B) Difference of opinion
(C) Fabrication of data
(D) Citing relevant sources of knowledge/information

45. DOI stands for
(A) Digitized Objects in Internet
(B) Digital Object Identifier
(C) Digital Online-resource Identifier
(D) Digitization of Object for Identification

46. Experiments involving animals is not acceptable if
(A) Animal suffering is minimum in all experiments
(B) Human benefits are gained which could not be obtained by using other methods
(C) Human benefits are gained which otherwise could only be gained by other expensive methods
(D) If one can be sure about the usefulness of the research outcome

47. Literature review helps in
(A) Knowing the state-of-the-art in a specific subject
(B) Avoiding incidental plagiarism
(C) Sharpen the research focus
(D) All the above

48. Shodhganga is
(A) A reservoir of Indian theses
(B) A reservoir of e-journals
(C) A repository of international theses
(D) None of the above

49. Machine learning is the
(A) Scientific study of algorithms and statistical models used to effectively perform a specific task using patterns and inferences
(B) Understanding the working principle of machines
(C) Making machines for learning aid applications
(D) None of the above

50. Modeling and Simulations will help in
(A) Avoiding costly and time consuming experiments
(B) Understanding a mathematical model in more realistic environments
(C) Exploring the behaviour of the system in an articulated way which may not be possible in real world
(D) All the above

PART–B

51. Limit of $\left(1+\frac{n+1}{(n-1)(1-n)}\right)^n$ as n tends to infinity is

(A) 1 (B) e
(C) e^{-1} (D) Do not exist

52. Consider following linear equations
$x + 3y = 7$, $2x + by = 14$, $3x + y = 5$
This system of equations is consistent when b is
(A) 1 (B) 0
(C) 6 (D) 10

53. Consider the function $f(x)=e^{-\frac{1}{2}(x-2)^2}$, $0 \le x \le 3$. The maximum and the minimum values of the function are respectively

(A) 1 and $e^{-\frac{1}{2}}$ (B) 1 and 1
(C) $e^{\frac{1}{2}}$ and 1 (D) 1 and e^{-2}

54. The value of the integral $\int_0^\infty e^{-\frac{x^2}{2}}dx$ is

(A) $\sqrt{2}$ (B) $\sqrt{\pi}$
(C) $\sqrt{\frac{2}{\pi}}$ (D) $\sqrt{\frac{\pi}{2}}$

55. The maximum value of $x + y$ when $x^2 + y^2 \le 1$
(A) 1 (B) $\sqrt{2}$
(C) 2 (D) 4

56. If A, B and C are three equally likely, pair wise independent events with $P(ABC) = 0$. Then the maximum value of $P(A)$ is
(A) 1 (B) 1/2
(C) 1/3 (D) 0

57. A random variable Z has the following distribution

z	–1	0	1
$P(Z=z)$	a	0.2	b

Given that $E(Z) = 0.2$ the values of constant a & b are respectively
(A) (0.4, 0.4) (B) (0.2, 0.6)
(C) (0.3, 0.5) (D) (0.25, 0.55)

58. X and Y are iid discrete Uniform rv's taking values {–1, 0, 1} then $P\{X \le Y\}$ is
(A) 1/2 (B) 1/4
(C) 2/3 (D) 0

59. Each one of the urns A, B and C contain 10 identical balls numbered {1,2,3, ...,10}, {6,7,….,15} and {2,4,6,…,20} respectively. An urn is selected at random and from the selected urn a ball is drawn at random. If the ball drawn bears the number 9, then the probability that the selected urn was B is
(A) 1/3 (B) 1/2
(C) 1/10 (D) 9/10

60. Let X_1 and X_2 be iid with common d.f. $F(x)$. Let $H(u, v)$ be the joint df of $(\min\{X_1,X_2\}, \max\{X_1,X_2\})$. Then H(1, 2) is given by

(A) $2F(1)F(2)-F^2(1)$.
(B) $\{F(2)-F(1)\}^2$
(C) $\{F(2)\}^2-\{F(1)\}^2$
(D) $1-F(1)F(2)$

61. Let $X \sim N(0,25)$ then $V(X^2+2)$ is

(A) 625
(B) 25
(C) 1250
(D) 125

62. $\underline{X}$ ~ multinomial (3, 0.2, 0.5, 0.3) then covariance between X_1+X_2 and X_3

(A) –0.63
(B) 0.21
(C) 3
(D) 0.9

63. Let $\varphi(t) = 1$, $\omega(t) = e^{\frac{t^2}{2}}$ Then

(A) Both are characteristic functions.
(B) Only φ is a characteristic function.
(C) Only ω is a characteristic function.
(D) Both are not characteristic functions

64. If X and Y are two independent normal variates with common mean μ and common variance σ^2 then median of $\frac{X+Y}{X-Y}$ is

(A) 0
(B) $2\mu\sigma$
(C) 2μ
(D) $2\mu/\sigma$

65. Let $X_1, X_2,..., X_n,.....$be i.i.d. Binomial (4, 0.4) random variables. Then $P\{\overline{X} < 0.4\}$ tends to which value as n tends to infinity?

(A) 1/2
(B) 1
(C) 0.4
(D) 0

66. If $X_1, X_2,...,X_n$ are i.i.d. with characteristic function $\phi(t)$ then the characteristic function of their mean is

(A) $\phi(t/n)$
(B) $\phi(nt)\ \varphi(nt)$
(C) $(\phi(t/n))^{1/n}$
(D) $(\phi(t/n))^n$

67. Let X be a non negative random variable with mean 1 and $\theta = E(\log X)$ Then

(A) $\theta = 1$
(B) $\theta \geq 1$
(C) $\theta \leq 0$
(D) $\theta = 0$

68. Let X have Poisson distribution with mean 10 and the conditional distribution of Y given $X=x$ is uniform on {0, 1,..., x} . Then $E(XY)$ is

(A) 55
(B) 50
(C) 5
(D) 100

69. Which of the following is not a characteristic function?

(A) $\phi(t) = e^{it},\ t \in \Re$
(B) $\phi(t) = e^{-it},\ t \in \Re$
(C) $\phi(t) = \sin(t),\ t \in \Re$
(D) $\phi(t) = \frac{\sin(t)}{t},\ t \in \Re$

70. Given that random variable X has Uniform distribution over the interval (0; 1); which of the following is not true?

(A) $P\left(X^2 > \frac{1}{4}\right) \leq \frac{1}{2}$
(B) $P\left(X^2 < \frac{1}{4}\right) \leq \frac{1}{2}$
(C) $P\left(X^2 > \frac{1}{4}\right) \leq \frac{1}{4}$
(D) $P\left(X^2 > \frac{1}{4}\right) \leq \frac{3}{4}$

71. Given that the sequence of independent and identically distributed random variables satisfies the Kolmogorov's Strong Law of Large Numbers, which of the following is not true?

(A) $E(|X_1|) < \infty$

(B) $E(X_1^+) < \infty$ and $E(X_1^-) < \infty$, where $X_1^+ = \max\{0, X_1\}$ and $X_1^- = \max\{0, -X_1\}$

(C) $E(X_1)$ exist

(D) $E(X_1)$ need not exist.

72. If $\xrightarrow{d}$ denotes convergence in distribution and $\xrightarrow{p}$ denotes convergence in probability, which of the following is not true?

(A) $\xrightarrow{d}$ implies $\xrightarrow{p}$

(B) $\xrightarrow{p}$ implies $\xrightarrow{d}$

(C) $\xrightarrow{d}$ implies $\xrightarrow{p}$ whenever the limit random variable is degenerate.

(D) $\xrightarrow{d}$ is equivalent to $\xrightarrow{p}$ whenever the limit random variable is degenerate.

73. Given that $\{X_n, n \geq 1\}$ is a sequence of independent and identically distributed random variables with finite second moments, which of the following is true?

(A) $\{X_n, n \geq 1\}$ satisfies a Weak Law of Large Numbers and the Central Limit Theorem.

(B) $\{X_n, n \geq 1\}$ does not satisfy any Weak Law of Large Numbers but satisfies the Central Limit Theorem.

(C) $\{X_n, n \geq 1\}$ satisfies a Weak Law of Large Numbers but does not satisfy the Central Limit Theorem

(D) $\{X_n, n \geq 1\}$ neither satisfies any Weak Law of Large Numbers not satisfies the Central Limit Theorem.

74. Let the one–step transition probability matrix of a Markov chain on {1, 2, 3, 4} be given by

$$\boldsymbol{P} = \begin{pmatrix} 1/3 & 1/3 & 0 & 1/3 \\ 0 & 0 & 1 & 0 \\ 0 & 1/2 & 0 & 1/2 \\ 1 & 0 & 0 & 0 \end{pmatrix}$$

Then, the probability that the first visit to the state 4 occurs after 4th transition given that the initial state of Markov chain is 2 is given by

(A) 0 (B) 1/4

(C) 1/3 (D) 1/2

75. Let $\{X_n\}$ be a Markov Chain with three states $\{S_1, S_2, S_3\}$ and transition probability matrix

$$\boldsymbol{P} = \begin{pmatrix} 0.3 & 0.4 & 0.3 \\ 1 & 0 & 0 \\ 0.0 & 0.3 & 0.7 \end{pmatrix}$$

What is $P(X_2 = s_1 \mid X_1 = s_2, X_0 = s_3)$?

(A) 0.3 (B) 0.4

(D) 1.0 (D) 0.0

76. Let X_n be a Markov Chain with State space {0,1,2} with t.p.m. $\begin{pmatrix} 0.2 & 0.5 & 0.3 \\ 0.3 & 0.4 & 0.3 \\ 0.5 & 0.1 & 0.4 \end{pmatrix}$ then $\boldsymbol{P}\left(\lim_{n \to \infty} \boldsymbol{X_n} = 0\right)$

(A) 1/2 (B) 1/4

(C) 1/3 (D) 1,0

77. Consider a three–state Markov Chain with transition probability matrix $P = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{pmatrix}$. This chain is

(A) A periodic
(B) Periodic with period 2
(C) Periodic with period 3
(D) Periodic with period 4

78. You are given $E(X|Y = y) = 3y$ and $V(X|Y = y) = 2$, where Y has an exponential distribution with a mean of 1/3. Find $Var(X)$.

(A) 1/3
(B) 1
(C) 3/2
(D) 3

79. Let X and Y be independent standard normal random variables. Then the distribution of $U = \left(\frac{X-Y}{X+Y}\right)^2$

(A) Chi–square with 2 degrees of freedom
(B) Chi–square with 1 degree of freedom
(C) F with (2,2) degrees of freedom
(D) F with (1,1) degrees of freedom

80. Let $X_1, X_2, \ldots X_n$ be a random sample from the pdf. $f(x,\theta) = \frac{e^{-\theta}\theta^x}{x!} x = 0,1,2...$ The lower bound for variance of an unbiased estimator of θ^2 is

(A) $\frac{4\theta^3}{n}$
(B) $\frac{4\theta^2}{n}$
(C) $\frac{\theta^2}{4n}$
(D) $\frac{\theta^3}{n}$

81. Let $H_0 : X \sim$ Bernoulli with p =1/2 against $H_1 : X$ has pmf $p(x) = \left(\frac{1}{3}\right)\left(\frac{2}{3}\right)^x$, x= 0,1,2,…

A test for H_0 against H_1 is given by : Reject H_0 if X ≥ 1. Then size and the power of the test are

(A) (2/3, 2/3)
(B) (0,1)
(C) (1/2, 2/3)
(D) (1/4, 1)

82. Let $X_1, X_{2,\ldots}, X_n$ be a random sample from the exponential distribution with mean θ. Let U,V and W denote the mean, maximum and minimum of the sample respectively. Then an unbiased estimator of θ is

(A) nU
(B) nV
(C) nW
(D) $n(V+W)$

83. Let $X_1, X_2, \ldots, X_n$ be a random sample from a symmetric distribution with median m. For testing $H_0 : m = 0$ against $H_1 : m > 0$, a Wilcoxon signed rank test W^+ is considered, where $W^+ = \sum_{i=1}^{n} R_i^+ Z_i$, R_i^+ is the rank of $|X_i|$ and $Zi = 1$ *if* $Xi > 0$ and = 0 otherwise. Then when n=4, $E_{H_0}(W^+)$ is equal to

(A) 5
(B) 4
(C) 6
(D) 3

84. Let (X_1, Y_1), (X_2, Y_2), ..., (X_n, Y_n) be a sample from a bivariate population and R be the Spearman's rank correlation coefficient defined by $R = 1 - \frac{6\sum_{i-1}^{n} D_i^2}{n(n^2-1)}$ where $D_i = R_i - S_i$, $R_i = rank(X_i)$ and $S_i = rank(Y_i)$.

Under independence of the populations, $E(R)$ is equal to

(A) $n(n+1)/2$
(B) Zero
(C) $n(n+1)/4$
(D) $n/2$

85. Let $X \sim Binomial(n, p)$, $0 < p < 1$ and prior distribution $\pi(p)$ of p be $Beta(\alpha, \beta)$ given by $\pi(p) = p^{\alpha-1}(1-p)^{\beta-1}(Beta(\alpha,\beta))^{-1}$, Then, the posterior distribution of p given X is

(A) $Beta\ (\alpha, \beta + x)$
(B) $Beta\ (\alpha + x, \beta)$
(C) $Gamma\ (\alpha + x, \beta + n - x)$
(D) $Beta\ (\alpha + x, \beta + x)$

86. Given that a Gauss–Markov model has rank 3 and 5 parameters, which of the following is true?

(A) Dimension of its estimation space is 3 and dimension of its error space is 2.
(B) Dimension of its estimation space is 2 and dimension of its error space is 3.
(C) Rank of its design matrix is 2 and dimension of its estimation space is 2.
(D) Rank of its design matrix is 2 and dimension of its error space is 2.

87. Which of the following is a full rank Gauss–Markov model?

(A) One way analysis of variance model.
(B) Randomized block design model.
(C) Balanced incomplete block design model.
(D) Simple linear regression model.

88. Let $E(X_1, X_2, X_3)' = (0,0,0,)'$ and the variance–covariance matrix of (X_1, X_2, X_3) be

$$\sum = \begin{pmatrix} 0.5 & 0.0 & 0.3 \\ 0.0 & 0.5 & 0.2 \\ 0.3 & 0.2 & 0.5 \end{pmatrix}$$

Then, the best linear predictor of X_1 based on X_2 and X_3 is

(A) $\frac{1}{2}X_2 + \frac{13}{21}X_3$
(B) $\frac{1}{21}X_2 + \frac{13}{21}X_3$
(C) $-\frac{2}{7}X_2 + \frac{5}{7}X_3$
(D) $-X_2 + 13X_3$

89. Which of the following techniques is used to group multivariate data into homogeneous subgroups?

(A) Descriminant analysis
(B) Principal component analysis
(C) Cluster analysis
(D) Canonical correlation analysis

90. The following are the characteristic root yielding the principal components of a multivariate random vector $\underset{\sim}{X}_{5\times1}$

$\lambda_1 = 10$, $=\lambda_2 = 7$, $\lambda_3 = 5$, $\lambda_4 = 2$, $\lambda_5 = 1$

Hence the proportion of total variance explained by the third principal component is

(A) 0.10
(B) 0.12
(C) 0.20
(D) 0.88

91. Suppose X is a random variables taking values −1; 0 and 1 with probabilities p, 1 − 2p and p respectively. Let P_1 be a population with p = 0.2 and P_2 be another population with p = 0.3. Then the maximum likelihood discriminant rule will allocate X to

(A) Population P_1 when X= –1 *or* 1
(B) Population P_1 when X= *0*
(C) Population P_1 when X= *0 or* 1
(D) Population P_1 when X= –1 *or 0*

92. A sample of size n = 2 is drawn from a population of size 5 using probability proportional to size (pps) without replacement. Let π_i be the probability of inclusion of *i–th* unit in the sample and suppose $\pi_1 = \pi_1$ = 0.45, $\pi_3 = \pi_4$ = 0.4. Then π_5 is equal to

(A) 0.05
(B) 0.1
(C) 0.2
(D) 0.3

93. A box contains 5 balls which are numbered 1, 2, 3, 4, 5. Suppose 3 balls are randomly drawn without replacement from the box and arranged in the increasing order of the numbers on the balls. The probability that the ball with number 3 is at second place is

(A) 0
(B) 1/15
(C) 2/5
(D) 1

94. Which of the following is not satisfied by an arbitrary balanced incomplete block design?

(A) Connectedness.
(B) Variance balancedness
(C) Orthogonality
(D) Equireplicate.

95. Given that the principal block of a confounded 2^3–factorial experiment with factors A, B, C, contains the treatment combinations (1), ab, c, abc; which of the following is the confounded factorial effect?

(A) A
(B) AB
(C) AC
(D) BC

96. If p is the reliability of each one of the units, then the reliability of a two–out–of–three system is

(A) 3p/2
(B) $1- p^3$
(C) $1- (1-p)^3$
(D) $(1-p)^3$

97. Which one of the following is not a hazard function

(A) $h(t)$ is 0 or 1 according as $0 \le t \le 1$ or $t > 1$
(B) $h(t)$ is 1 or 0 according as $0 \le t \le 1$ or $t > 1$
(C) $h(t) = t$ for all $t \ge 0$
(D) $h(t) = e^t$ for all $t \ge 0$

98. Let random variables have exponential distribution with mean θ. In censored experiment observed values are 4, 6^+, where + indicates censored observation. The MLE of θ is

(A) 5
(B) 6
(C) 10
(D) 4

99. The minimum value of (x –y) subject to the conditions x $\ge$ 8, y $\le$ 3 is

(A) 3
(B) 8
(C) 11
(D) 5

100. In an M/M/1 queuing system with arrival rate 2 and service rate 3, the probability of at least one arrival during service period of a particular customer is

(A) 1
(B) 3/5
(C) 2/5
(D) 1.5