

FINAL ANSWER KEY

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Question1:-Quorum of Rajyasabha

- A:-25
- B:-50
- C:-100
- D:-250

Correct Answer:- Option-A

Question2:-State which offers highest wages for unskilled workers under MGNREG Scheme

- A:-Kerala
- B:-Karnataka
- C:-West Bengal
- D:-Haryana

Correct Answer:- Option-D

Question3:-National Bank for Agriculture and Rural Development was founded in

- A:-1935
- B:-1950
- C:-1982
- D:-1991

Correct Answer:- Option-C

Question4:-Spiritual leader who inspired the Channar Rebellion

- A:-Sri Narayana Guru
- B:-Chattambi Swami
- C:-Vaikunda Swami
- D:-Ayyavu Swami

Correct Answer:- Option-C

Question5:-Social reformer who founded Kerala Kaumudi

- A:-Sahodaran Ayyappan
- B:-Dr. Palpu
- C:-Kumaran Asan
- D:-C.V. Kunhiraman

Correct Answer:- Option-D

Question6:-Vayalar Garjikkunnu is a poem by

- A:-Vayalar Ramavarma
- B:-P. Bhaskaran
- C:-T.S. Thirumunpu
- D:-O.N.V. Kurup

Correct Answer:- Option-B

Question7:-District Collector of Malabar who was murdered in connection with Mappila Rebellion

- A:-William Logan
- B:-H.V. Conolly
- C:-William Mcllyod
- D:-Thomas Warden

Correct Answer:- Option-B

Question8:-Akkamma Cheriyan was hailed "Jhansi Rani of Travancore" by

- A:-Mahatma Gandhi
- B:-Jawaharlal Nehru
- C:-G.P. Pillai
- D:-Pattam Thanu Pillai

Correct Answer:- Option-A

Question9:-Mukul Mudgal Committee looked into

- A:-IPL Spot Fixing
 - B:-2G Scam
 - C:-Coal Scam
 - D:-Common Wealth Games Scam
- Correct Answer:- Option-A

Question10:-Pradhan Mantri Jan Dhan Yojana was launched in

- A:-January 2014
- B:-April 2014
- C:-August 2014
- D:-January 2015

Correct Answer:- Option-C

Question11:-The best method of teaching is

- A:-Lecturing
- B:-Demonstrating
- C:-Discussing
- D:-All of the above

Correct Answer:- Option-D

Question12:-Classroom learning becomes lively when the teacher

- A:-Allows a short break
- B:-Entertains students
- C:-Allows discussion
- D:-None of the above

Correct Answer:- Option-C

Question13:-A teacher should be

- A:-Friendly
- B:-Humorous
- C:-Approachable
- D:-All of the above

Correct Answer:- Option-D

Question14:-Students with problems should be

- A:-Ignored
- B:-Guided
- C:-Exposed
- D:-Avoided

Correct Answer:- Option-B

Question15:-Most educational research is

- A:-Fundamental Research
- B:-Applied Research
- C:-Action Research
- D:-None of the above

Correct Answer:- Option-B

Question16:-In Experimental research, variables are controlled or manipulated so as to

- A:-ensure validity of results
- B:-arrive at sound conclusions
- C:-enable predictions
- D:-all of the above

Correct Answer:- Option-D

Question17:-Qualitative Research describes

- A:-'what was'
- B:-'what is'
- C:-'what could be'
- D:-'what will be'

Correct Answer:- Option-B

Question18:-Which is a criterion of a good Case Study?

- A:-Validity of data
- B:-Reliability of data
- C:-Objectivity of data
- D:-None of the above

Correct Answer:- Option-A

Question19:-When the investigator takes effort to preserve the dignity of the subjects during research, it implies that the researcher has

- A:-Credibility
- B:-Integrity
- C:-Ethics
- D:-All of the above

Correct Answer:- Option-C

Question20:-A publication manual that is generally adhered to in the preparation of a research report in Education is

- A:-Indian Research Publication Manual
- B:-British Publication Manual
- C:-American Psychological Association Manual
- D:-Research Publication Manual

Correct Answer:- Option-C

Question21:-The word 'Secularism' is added to the preamble of the constitution by the _____ amendment.

- A:-42nd
- B:-24th
- C:-44th
- D:-46th

Correct Answer:- Option-A

Question22:-The freedom to form association does not include

- A:-Right to form trade union
- B:-Right to form partnership
- C:-Right to form political party
- D:-Right to strike

Correct Answer:- Option-D

Question23:-Article 43 requires the state to secure by suitable legislation, _____ to all workers.

- A:-Minimum wages
- B:-Statutory minimum wages
- C:-Fair wages
- D:-Living wages

Correct Answer:- Option-D

Question24:-Which Article of the Constitution envisages a common civil code for the citizens throughout the territory of India?

- A:-Art 42
- B:-Art 43
- C:-Art 44
- D:-Art 48

Correct Answer:- Option-C

Question25:-Indian Constitution was amended for the first time in the year

- A:-1953
- B:-1950
- C:-1951
- D:-1952

Correct Answer:- Option-C

Question26:-Which one among the following is the first of the major Environmental Protection Act promulgated in India?

- A:-Water Act
- B:-Air Act
- C:-Forest Conservation Act
- D:-Noise Pollution Rule

Correct Answer:- Option-A

Question27:-In order to be eligible for gratuity under the Payment of Gratuity Act, 1972, an employee should have a minimum continuous service of

- A:-10 years
- B:-5 years
- C:-7 years
- D:-3 years

Correct Answer:- Option-B

Question28:-Under the provisions of prevention of sexual harassment (at work place) Act, the term aggrieved woman means

- A:-a woman employee belong to govt. sector
- B:-a woman employee belong to private sector

C:-a domestic worker

D:-all of the above

Correct Answer:- Option-D

Question29:-According to Right to Information Act, within what time should the information be provided to an applicant in normal cases

A:-45 days

B:-90 days

C:-60 days

D:-30 days

Correct Answer:- Option-D

Question30:-Who is an adolescent as per Factories Act 1948?

A:-who has completed 17 years of age

B:-who is less than 18 years

C:-who has completed 15 years but less than 18 years

D:-none of the above

Correct Answer:- Option-C

Question31:-If $A_n = \{A \text{ if } n \text{ "is odd"}, B \text{ if } n \text{ "is even"}\}$

then $\liminf A_n =$

A:- $A \cup B$

B:- $A \cap B$

C:- $A \Delta B$

D:- ϕ

Correct Answer:- Option-B

Question32:-Which of the following statement(s) is/are wrong?

I : A monotone field is not a sigma field

II : A sigma field is a monotone field

A:-I alone

B:-II alone

C:-Neither I nor II

D:-Both I and II

Correct Answer:- Option-A

Question33:-If μ_1 is a measure defined on a sigma field \mathcal{A}_1 and μ_2 is a measure defined on a sigma field \mathcal{A}_2 , then $\mu_1 + \mu_2$ is a measure only when

A:- $\mathcal{A}_1 \subset \mathcal{A}_2$

B:- $\mathcal{A}_1 \supset \mathcal{A}_2$

C:- $\mathcal{A}_1 = \mathcal{A}_2$

D:- $\mathcal{A}_1 \neq \mathcal{A}_2$

Correct Answer:- Option-C

Question34:-Which of the following statement(s) is/are true?

A : Every subsets of \mathbb{R} are Borel sets

B : Every Borel set is measurable

A:-A alone

B:-B alone

C:-Neither A nor B

D:-Both A and B

Correct Answer:- Option-B

Question35:-Let $\mathcal{B} = (0, 1)$, \mathcal{B} be the Borel field of subsets of \mathcal{B} and μ is the Lebesgue measure on

\mathcal{B} . For $n = 1, 2, \dots$, if $A_n = (0, 1/n)$, $\mu(\limsup A_n) =$

A:-0

B:-0.5

C:-1

D:- $1/n$

Correct Answer:- Option-A

Question36:-Let W be the subspace of \mathbb{R}^4 generated by the vectors $(1, -2, 5, -3)$, $(2, 3, 1, -4)$ and $(3, 8, -3, -5)$. Then the dimension of W is

- A:-4
- B:-3
- C:-2
- D:-1

Correct Answer:- Option-C

Question37:-For any arbitrary matrices A and B , the sum of ranks of A and B is always

- A:-less than rank $(A+B)$
- B:-less than or equal to rank $(A+B)$
- C:-greater than rank $(A+B)$
- D:-greater than or equal to rank $(A+B)$

Correct Answer:- Option-D

Question38:-Let A and B are $n \times n$ square matrices. Then the eigen values of AB are same as the eigen values of

- A:- $A+B$
- B:- $A-B$
- C:- $B-A$
- D:- BA

Correct Answer:- Option-D

Question39:-The quadratic polynomial corresponds to the matrix $A = \begin{pmatrix} 1 & 0 & 1/2 \\ 0 & 0 & -1 \\ 1/2 & -1 & 0 \end{pmatrix}$ is

- A:- $x^2 + 1/2xz - xy$
- B:- $x^2 - 2yz + xz$
- C:- $x^2 + 1/2yz - xy$
- D:- $x^2 + yz - 2xz$

Correct Answer:- Option-B

Question40:-Let P be an $m \times m$ orthogonal matrix, Q be an $n \times n$ orthogonal matrix and A any $m \times n$ matrix. If A^T denote the transpose of A and A^{-} denote the generalized inverse of A , then the generalized inverse of PAQ is

- A:- $P^T A^{-} Q$
- B:- $Q^T A^{-} P$
- C:- $PA^{-} Q$
- D:- $QA^{-} P$

Correct Answer:- Option-B

Question41:-If $\{A_n\}$ is a sequence of events on a probability space (Ω, \mathcal{A}, P) such that $A_n \rightarrow A$ as $n \rightarrow \infty$, then what is the value of $\lim_{n \rightarrow \infty} P(A_n)$?

- A:-zero
- B:-one
- C:- $P(A)$
- D:-need not exist

Correct Answer:- Option-C

Question42:-If A and B are mutually exclusive events, each with positive probabilities, then they are

- A:-independent events
- B:-dependent events
- C:-equally likely events
- D:-exhaustive events

Correct Answer:- Option-B

Question43:-If $\{A_n\}$ is a sequence of events such that $\sum_{k=1}^{\infty} P(A_k) < \infty$, then $P(\limsup A_n) = 1$ provided events are

- A:-equally likely
- B:-Mutually exclusive
- C:-independent
- D:-pair-wise mutually exclusive

Correct Answer:- Option-C

Question44:-Let $\{A_n\}$ be a sequence of events such that $B_1 = A_1$ and $B_k = A_k \cap A_{k-1}^c \cap \dots \cap A_1^c$ for $k \geq 2$, in which A^c is the complement of A . Then the sequence of events $\{B_n\}$ are

- A:-Pair-wise independent
- B:-Mutually independent
- C:-Mutually dependent
- D:-Pair-wise mutually exclusive

Correct Answer:- Option-D

Question45:-If X is a random variable with finite expectation, then the value of $\lim_{x \rightarrow -\infty} P(X < -x)$ as $x \rightarrow \infty$ is
 A:-infinity
 B:-unity
 C:-zero
 D:-indeterminate
 Correct Answer:- Option-C

Question46:-If X is a symmetric random variable with distribution function F and real valued characteristic function ϕ , then for any x in \mathbb{R} , $F(x) =$
 A:- $F(-x)$
 B:- $F(-x-0)$
 C:- $F(-x-0)-1$
 D:- $1-F(-x-0)$
 Correct Answer:- Option-D

Question47:-If the characteristic function ϕ of distribution function F is absolutely integrable on \mathbb{R} , then for any x in \mathbb{R} , $f' = \{dF(x)\}/dx$ is
 A:-bounded
 B:-uniformly continuous
 C:-both (1) and (2)
 D:-Neither (1) nor (2)
 Correct Answer:- Option-C

Question48:-Let X and X_n be independent standard normal variables on a probability space (Ω, \mathcal{F}, P) , for $n \geq 1$. Then which of the following is not true?
 A:- $X \stackrel{rel}{\sim} P(-)X$
 B:- $X \stackrel{rel}{\sim} d(-)X$
 C:- $E(X_n - X) = 0$
 D:- $Var(X_n - X) = 2$
 Correct Answer:- Option-A

Question49:-The sequence $\{X_n\}$ of independent random variables, each with finite second moment, obeys SLLN if
 A:- $\sum_{k=1}^{\infty} Var(X_k) < \infty$
 B:- $\sum_{k=1}^{\infty} \{Var(X_k)\}/k < \infty$
 C:- $\sum_{k=1}^{\infty} \{Var(X_k)\}/\sqrt{k} < \infty$
 D:- $\sum_{k=1}^{\infty} \{Var(X_k)\}/k^2 < \infty$
 Correct Answer:- Option-D

Question50:-Let $\{X_n\}$ sequence of independent random variables with $P(X_k = +k) = 1/2k^{-\lambda}$ and $P(X_k = 0) = 1 - k^{-\lambda}$, for $k \geq 1$. Then the sequence does not obey CLT if
 A:- $\lambda = 0$
 B:- $\lambda = 1$
 C:- $\lambda \in (0, 1/2)$
 D:- $\lambda \in (1/2, 1)$
 Correct Answer:- Option-B

Question51:-Let X be a random variable with probability mass function
 $p(x) = \left\{ \left(\frac{6}{\pi^2} x^{-2} \right) \text{ for } x = 1, -2, 3, -4, \dots, (0 \text{ elsewhere}) \right\}$

Then
 A:- $E(X) = \infty$
 B:- $E(X)$ exists
 C:- $E(X) < \infty$ and $E(X)$ exists
 D:- $E(X) < \infty$, but $E(X)$ does not exist
 Correct Answer:- Option-D

Question52:-Let (X, Y) has joint density $f(x, y) = \left\{ \frac{1}{8}(6-x-y) \text{ for } 0 \leq x < 2; 2 \leq y < 4, (0 \text{ "elsewhere"}) \right\}$. Then $P(X+Y < 3) =$

A:- $\frac{5}{24}$

B:- $\frac{5}{8}$

C:- $\frac{3}{8}$

D:-None of these

Correct Answer:- Option-A

Question53:-If X and Y are two random variables having finite expectations, then the value of $E[\min\{X,Y\} + \max\{X,Y\}]$ is

A:-less than $E(XY)$

B:-less than $E(X+Y)$

C:-equal to $E(XY)$

D:-equal to $E(X+Y)$

Correct Answer:- Option-D

Question54:-The Poisson distribution $P(\lambda)$ is unimodal when

A:- λ is not an integer

B:- λ is an integer

C:-Both (1) and (2)

D:-Neither (1) nor (2)

Correct Answer:- Option-A

Question55:-Which of the following distribution is not a member of power series family of distributions?

A:-Binomial

B:-Poisson

C:-Geometric

D:-Hypergeometric

Correct Answer:- Option-D

Question56:-If X follows normal $N(\mu, \sigma^2)$, then the approximate value of $E\{|X-\mu|\}$ is

A:-Zero

B:- σ

C:- $\frac{4}{5}\sigma$

D:- $\sqrt{4/\pi}\sigma$

Correct Answer:- Option-C

Question57:-If X is uniformly distributed with mean unity and variance 0.75, then $P(X>1) =$

A:-0.25

B:-0.5

C:-0.75

D:-1

Correct Answer:- Option-B

Question58:-If X follows normal $N(\mu, \sigma^2)$, then $Y = e^X$ follows

A:-Log-normal distribution

B:-Exponential distribution

C:-Logistic distribution

D:-Pareto distribution

Correct Answer:- Option-A

Question59:-If X_j follows exponential $E(\theta_j)$ distribution, for $j=1,2,\dots,n$, then the distribution of $\min\{X_1, X_2, \dots, X_n\}$

A:- $E(\theta_j)$

B:- $E(\prod_{j=1}^n \theta_j)$

C:- $E(\sum_{j=1}^n \theta_j)$

D:- $E[\min\{\theta_1, \theta_2, \dots, \theta_n\}]$

Correct Answer:- Option-C

Question60:-The mode of F -distribution is

A:-always less than unity

B:-sometimes less than unity

C:-always greater than unity

D:-sometimes equal to unity

Correct Answer:- Option-A

Question61:-"Simple random sampling" is the technique of drawing a sample in such a way that each unit of the population has

A:-distinct and dependent chance of being included in the sample

B:-distinct but independent chance of being included in the sample

C:-an equal but dependent chance of being included in the sample

D:-an equal and independent chance of being included in the sample

Correct Answer:- Option-D

Question62:-In SRSWR with usual notations, the standard error of the sample mean \bar{y} is

A:- $\sqrt{\frac{N-n}{Nn}}$

B:- $\sqrt{\frac{N-1}{Nn}}$

C:- $\sqrt{1-\frac{n}{N}}$

D:- $\sqrt{\frac{n}{N(1-\frac{1}{N})}}$

Correct Answer:- Option-B

Question63:-The formulae for optimum allocation in various strata in stratified sampling were first derived by

A:-Tschuprov

B:-Cochran

C:-Lahiri

D:-Neymann

Correct Answer:- Option-A

Question64:-The ratio estimator of population mean is unbiased if sampling is done according to

A:-PPSWR

B:-PPSWOR

C:-SRSWR

D:-SRSWOR

Correct Answer:- Option-A

Question65:-The cluster sampling is more efficient when

A:-the variation within clusters is more

B:-the variation between clusters is less

C:-both (1) and (2)

D:-neither (1) nor (2)

Correct Answer:- Option-C

Question66:-Local control is a device to maintain

A:-homogeneity within blocks

B:-homogeneity among blocks

C:-both (1) and (2)

D:-neither (1) nor (2)

Correct Answer:- Option-A

Question67:-In a linear model $Y_{ij} = \alpha_i + e_{ij}$, $j=1,2,\dots,n_i$; $i=1,2,\dots,k$, consider

(i) $\alpha_1 - 3\alpha_2 + \alpha_3 + \alpha_4$

(ii) $\alpha_1 + 3\alpha_2 - \alpha_3 - \alpha_4$

(iii) $\alpha_1 + 3\alpha_2 - 2\alpha_3 - 2\alpha_4$

Then which of the following is correct?

A:-(i) and (ii) are linear contrasts

B:-(i) and (iii) are linear contrasts

C:-(ii) and (iii) are linear contrasts

D:-(i), (ii) and (iii) are linear contrasts

Correct Answer:- Option-B

Question68:-While analyzing the data of a $k \times k$ Latin Square Design, the degrees of freedom in the ANOVA is

A:- $k^2 - 1$

B:- $k - 1$

C:- $k^2 - 2k + 1$

D:- $(k-1)(k-2)$

Correct Answer:- Option-D

Question69:-In a split plot design with factor A at 3 levels in main plots, factor B at 3 levels in sub-plots and 3 replications, the degrees of freedom for sub-plot error is

A:-27

B:-12

C:-8

D:-4

Correct Answer:- Option-B

Question70:-If the interactions AB and BC are confounded with incomplete blocks in a 2^n factorial experiment, then automatically confounded effect is

- A:- $\frac{1}{4}A$
- B:- $\frac{1}{4}C$
- C:- $\frac{1}{4}AC$
- D:- $\frac{1}{4}ABC$

Correct Answer:- Option-C

Question71:-Which among the following is a consistent estimator of the population mean when samples are from the Cauchy population?

- A:-Sample mean
- B:-Sample median
- C:-Sample variance
- D:-None of these

Correct Answer:- Option-B

Question72:-If the regularity conditions of the CR inequality are violated then the least attainable variance will be

- A:-equal to the CR bound
- B:-greater than the CR bound
- C:-less than the CR bound
- D:-zero

Correct Answer:- Option-C

Question73:-A method to obtain the UMVUE is by using

- A:-Rao-Blackwell Theorem
- B:-Baye's Theorem
- C:-Neymann-Pearson Theorem
- D:-Lehmann-Scheffe Theorem

Correct Answer:- Option-D

Question74:-A complete-sufficient statistic for p in the Bernoulli distribution

$$f(x, p) = p^x (1-p)^{1-x}; x=0, 1.$$

$= 0$ "otherwise" is

- A:-The first order statistic $X_{(1)}$
- B:-The n^{th} order statistic $X_{(n)}$
- C:- $\sum_{i=1}^n X_i$
- D:- $X_{(n)} - X_{(1)}$

Correct Answer:- Option-C

Question75:-The least square estimators are

- A:-Unbiased
- B:-BLUE
- C:-UMVUE
- D:-All these

Correct Answer:- Option-D

Question76:-A 95% confidence interval for λ , when a large sample is taken from a Poisson population with parameter λ is

- A:- $\bar{x} \pm 1.65 \sqrt{(\bar{x}/n)}$
- B:- $\lambda \pm 1.65 \sqrt{(\lambda/n)}$
- C:- $\bar{x} \pm 1.96 \sqrt{(\bar{x}/n)}$
- D:- $\lambda \pm 1.96 \sqrt{(\lambda/n)}$

Correct Answer:- Option-C

Question77:-The minimum Chi-squared estimators are not necessarily

- A:-Unbiased
- B:-Consistent
- C:-Efficient
- D:-Asymptotically normal

Correct Answer:- Option-A

Question78:-Which one of the following statements is true?

- A:-Even if the UMP test does not exist, a UMPU test may exist
- B:-Even if the UMPU test does not exist, a UMP test may exist
- C:-A UMP test exists only if a UMPU test exists
- D:-A UMPU test exists only if a UMP test exists

Correct Answer:- Option-A

Question79:-In paired t test the two random variables should be

- A:-Paired and uncorrelated
- B:-Unpaired and correlated
- C:-Both paired and correlated

D:-Neither paired nor correlated

Correct Answer:- Option-C

Question80:-With usual notations, the criterion for acceptance in SPRT is

A:- $\lambda_m \leq ((1-\beta))/(\alpha)$

B:- $\lambda_m \geq ((1-\beta))/(\alpha)$

C:- $\lambda_m \leq (\beta)/((1-\alpha))$

D:- $\lambda_m \geq (\beta)/((1-\alpha))$

Correct Answer:- Option-C

Question81:-The Poisson process with parameter λ is a renewal counting process for which the unit lifetimes have _____ distribution with common parameter λ .

A:-Poisson

B:-Exponential

C:-Uniform

D:-Geometric

Correct Answer:- Option-B

Question82:-Let $\{X_n, n = 0, 1, 2, \dots\}$ be a Branching process and the corresponding offspring distribution has a pgf $P(s) = \frac{2}{3} + \frac{s + s^2}{6}$. Find the probability of extinction of the process

A:-0

B:-0.25

C:-0.66

D:-1

Correct Answer:- Option-D

Question83:-Let $\{X_n\}$ be a renewal process with $\mu = E(X_1) < \infty$ and if $M(t)$ is the renewal function, then $\lim_{t \rightarrow \infty} (M(t))/t = \dots$

A:- $1/(\mu)$

B:- μ

C:- $t/(\mu)$

D:- $(\mu)/t$

Correct Answer:- Option-A

Question84:-If X_i 's are independent Poisson variates with respective parameters λ_i , for $i = 1, 2, \dots, k$, then the conditional distribution of X_1, X_2, \dots, X_k given their sum $\sum_{i=1}^k X_i = n$ is a _____ distribution with parameters _____ and _____.

A:-Binomial with parameters n and $(1)/k$

B:-Binomial with parameters k and $(1)/n$

C:-Multinomial with parameters n and $(1)/k$

D:-Multinomial with parameters k and $(1)/n$

Correct Answer:- Option-C

Question85:-If (X_1, X_2) is a Bivariate normal random vector with parameters $(\mu_{X1}, \mu_{X2}, \sigma^2_{X1}, \sigma^2_{X2}, \rho)$, when $\sigma^2_{X1} = \sigma^2_{X2}$ and $\rho = 0$, the density function is called

A:-Elliptical Normal

B:-Circular Normal

C:-Symmetrical Normal

D:-Uniform Normal

Correct Answer:- Option-B

Question86:-If the random vector X follows Multivariate Normal distribution with mean vector 0 and dispersion matrix I and $Q_i = X^T A_i X$ are quadratic forms of rank r_i such that $\sum_{i=1}^k A_i = I_p$, then a necessary and sufficient condition for Q_i 's to be distributed as independent chi-square random variables with r_i d.f is that

A:- $\sum_{i=1}^k r_i = k$

B:- $\sum_{i=1}^k r_i = p$

C:- $\sum_{i=1}^k r_i = 0$

D:- $\sum_{i=1}^k r_i = kp$

Correct Answer:- Option-B

Question87:-The relationship between partial correlation coefficients $r_{ij.k}$, multiple correlation coefficients $R_{i.jk}$ and simple correlation coefficients r_{ij} is

A:- $R^2_{1.23} = 1 + (1-r^2_{12})(1-r^2_{13.2})$

B:- $R^2_{1.23} = 1 - (1-r^2_{12})(1-r^2_{13.2})$

C:- $R^2_{1.23} = 1 + (1-r^2_{12})/(1-r^2_{13.2})$

D:- $R^2_{1.23} = 1 - (1-r^2_{12})/(1-r^2_{13.2})$

Correct Answer:- Option-B

Question88:-Hotelling's T^2 statistic and Mahalanobis D^2 statistic are connected by the relationship

- A: $D^2 = ((N_1 N_2))/((N_1+N_2)) T^2$
 B: $D^2 = ((N_1 N_2))/((N_1-N_2)) T^2$
 C: $D^2 = ((N_1-N_2))/((N_1 N_2)) T^2$
 D: $D^2 = ((N_1 + N_2))/((N_1 N_2)) T^2$
 Correct Answer:- Option-D

Question89:-In principal component analysis the variances of the Principal Components are the _____ of the covariance matrix.

- A:-diagonal elements
 B:-eigen values
 C:-normalized elements
 D:-non-zero elements
 Correct Answer:- Option-B

Question90:-For discriminating between two populations R.A. Fisher suggested the linear discriminant function 'X' for which

- A: $(\text{"mean difference"})^2/(\text{"variance"})$
 B: $(\text{"mean difference"})^2/(\text{"A.M."})$
 C: $(\text{"mean difference"})/(\text{"median"})$
 D: $(\text{"variance"})/(\text{"mean difference"})$
 Correct Answer:- Option-A

Question91:-Assume that the time to failure 'T' for a certain bulb has an exponential distribution $f(t) = (\lambda e^{-\lambda t})$ with parameter $\lambda > 0$ with the prior pdf $g(\lambda) = \lambda e^{-\lambda}$ of λ is an exponential distribution with parameter 2. Then the posterior pdf of λ given $T = t$ is

- A: $2/(t+2)$
 B: $(\lambda)/(e^{\lambda} (t+2))$
 C: $(\lambda e^{\lambda} (t+2))/((t+2)^2)$
 D: $(\lambda (t+2)^2)/(e^{\lambda} (t+2))$
 Correct Answer:- Option-D

Question92:-The basic elements of statistical decision theory is

- A:-a space $\Omega = \{\theta\}$ of all possible states of nature
 B:-an action space $A = \{a\}$ of all possible courses of action
 C:-a loss function $L(\theta, a)$ giving the incurred loss when action 'a' is taken and the state is θ
 D:-all these
 Correct Answer:- Option-D

Question93:-When there is no censoring for the life length 'T', the general formula of a survival function is

- A: $\hat{S}(t) = (\text{"# of individuals with } T \geq t)/(\text{"total sample size"})$
 B: $\hat{S}(t) = (\text{"# of individuals with } T \leq t)/(\text{"total sample size"})$
 C: $\hat{S}(t) = (\text{"# of individuals with } T = t)/(\text{"total sample size"})$
 D: $\hat{S}(t) = (\text{"# of individuals with } T = 0)/(\text{"total sample size"})$
 Correct Answer:- Option-A

Question94:-The Cox's Proportional Hazard Model (Cox's PH Model) with explanatory variables $X = (X_1, X_2, \dots, X_p)$, β_i their regression coefficients and $h_0(t)$ a base line hazard, is $h(t, X) =$

- A: $e^{h_0(t) \sum_{i=1}^p \beta_i X_i}$
 B: $\log h_0(t) + \sum_{i=1}^p \beta_i X_i$
 C: $h_0(t) e^{\sum_{i=1}^p \beta_i X_i}$
 D: $e^{(h_0(t) \sum_{i=1}^p \beta_i X_i)}$
 Correct Answer:- Option-C

Question95:-When an inspection lot contains no defectives the OC function 'L(p)' is

- A: $L(p) = 1$
 B: $L(p) = \infty$
 C: $L(p) = 0$
 D:-None of these
 Correct Answer:- Option-A

Question96:-In a Time series data, the two main components which cause lack of stationarity are

- A:-Seasonal and irregular variations
 B:-Cyclic and irregular variations
 C:-Trend and cyclic variations
 D:-Trend and seasonal variations
 Correct Answer:- Option-D

Question97:-In the ARMA (1, 1) model $Z_t = \phi Z_{t-1} + \epsilon_t - \theta \epsilon_{t-1}$ the condition for stationarity and invertibility are respectively

A:- $|\phi| \leq 1$ and $|\theta| < 1$ with $\phi \neq \theta$

B:- $|\phi| \leq 1$ and $|\theta| < 1$ with $\phi = \theta$

C:- $|\phi| > 1$ and $|\theta| > 1$ with $\phi \neq \theta$

D:- $|\phi| > 1$ and $|\theta| > 1$ with $\phi = \theta$

Correct Answer:- Option-A

Question98:-In a Linear programming Problem with $n + m$ variables and m constraints the number of basic solutions is

A:- $\binom{n+m}{m}$

B:- $\binom{n}{m}$

C:- $\binom{m}{n}$

D:- $\binom{n+m}{n-m}$

Correct Answer:- Option-A

Question99:-If the demand curve is of the form $p = ae^{-bx}$, where p is the price and x is the demand, then the price elasticity of demand is

A:- $\eta_p = bx$

B:- $\eta_p = -bx$

C:- $\eta_p = 1/bx$

D:- $\eta_p = -1/bx$

Correct Answer:- Option-C

Question100:-The Engel's curves for constant prices and those for constant incomes are respectively

A:-Concave and Convex

B:-Convex and Concave

C:-Both Concave

D:-Both Convex

Correct Answer:- Option-B