

FINAL ANSWER KEY

Question Paper Code:	36/2016/OL
Category Code:	139/2015
Exam:	HSST Mathematics
Medium of Question:	English
Date of Test	18-03-2016
Alphacode	A

Question1:-Who among the following is the winner of Jnanapida award in 2015?

A:-Ragveer Chaudary

B:-Leeladhar Mandloi

C:-K.V. Chaudary

D:-S. Ramanugam

Correct Answer:- Option-A

Question2:-Who is selected as the Miss Universe in 2015?

A:-Ariyana Guetirus

B:-Olivia Gordan

C:-Pia Alonso

D:-Maria Laiguna

Correct Answer:- Option-C

Question3:-Who among the following is the winner of Ezhuthachan award in 2015?

A:-Sugathakumari

B:-K.R. Meera

C:-Puthussery Ramachandran

D:-Meloor Vasudevan

Correct Answer:- Option-C

Question4:-The French open 2015 Women Championship is won by which of the following player?

A:-Venus Williams

B:-Serina Williams

C:-Simonia Halep

D:-Maria Sharapova

Correct Answer:- Option-B

Question5:-Who among the following is the first Chairman of New Development Bank (NDB)?

A:-K.V. Kamath

B:-Nirbhay Sharma

C:-Dineshkumar Sharma

D:-Harshit Saumithra

Correct Answer:- Option-A

Question6:-The scheme "Project Arrow" is related to which among the following term?

A:-Medicine

B:-Postal Department

C:-Telephone department

D:-Infrastructure facility

Correct Answer:- Option-B

Question7:-In 2015 which among the following crop in Kerala get the "Baumasuchika" title?

A:-Pokkali Rice

B:-Vazhakulam Pinapple

C:-Wayanad Gadhakasala Rice

D:-Changalikodan

Correct Answer:- Option-D

Question8:-In 2015 which among the following film won the title "Suvarnachakoram" in Kerala International Film Festival?

A:-Shadow behind the moon

B:-Ottal

C:-Ozhivu Divasathe Kali

D:-Jalal's story

Correct Answer:- Option-B

Question9:-The American Spacecraft New Horizon is launched to study which among the following planet?

A:-Moon

- B:-Pluto
- C:-Mars
- D:-Venus

Correct Answer:- Option-B

Question10:-Which among the following Constitutional Amendment Act is related to the Land Boundary Agreement between India and Bangladesh?

- A:-100
- B:-119
- C:-110
- D:-112

Correct Answer:- Option-A

Question11:-The best teacher is one who is capable of _____.

- A:-giving a good result
- B:-inspiring the students to learn
- C:-completing the topic in time
- D:-helping the students in preparing notes

Correct Answer:- Option-B

Question12:-'Learning by Doing' principle is reflected in _____.

- A:-Realism
- B:-Idealism
- C:-Pragmatism
- D:-Naturalism

Correct Answer:- Option-C

Question13:-In inductive reasoning, one proceeds from

- A:-particular to general
- B:-general to particular
- C:-rational to empirical
- D:-none of these

Correct Answer:- Option-A

Question14:-Which of the following is a projective aid for teaching?

- A:-Still model
- B:-Working model
- C:-Charts
- D:-Slides

Correct Answer:- Option-D

Question15:-The most significant system of evaluation is _____.

- A:-Formative evaluation
- B:-Summative evaluation
- C:-Continuous and comprehensive evaluation
- D:-Continuous evaluation

Correct Answer:- Option-C

Question16:-Characteristics of descriptive research studies are

- A:-They do not involve hypothesis formulation and testing
- B:-They use logical methods of inductive-deductive reasoning to arrive at generalisations
- C:-They never employ methods of randomization in sampling
- D:-The variables and procedures are not described accurately and completely

Correct Answer:- Option-B

Question17:-Conditions or characteristics that the experimenter manipulates or controls in his or her attempt to ascertain their relationship to observed phenomena are called _____.

- A:-Independent variables
- B:-Dependent variables
- C:-Confounding variables
- D:-None of these

Correct Answer:- Option-A

Question18:-Types of experimental validity are

- A:-Content and construct validity
- B:-Statistical validity
- C:-Internal validity
- D:-Internal validity, external validity, statistical validity and construct validity

Correct Answer:- Option-D

Question19:-Qualitative research focuses on _____.

- A:-In-depth interview only
- B:-Observations only
- C:-Document analysis, in-depth interview and observations
- D:-Document analysis only

Correct Answer:- Option-C

Question20:-Probability based sampling method is _____.

- A:-Stratified sampling
- B:-Purposive sampling
- C:-Random sampling
- D:-Judgement sampling

Correct Answer:- Option-A

Question21:-The case known as 'Privy Purse Case' is

- A:-R.C. Cooper v. Union of India
- B:-Ashok Kumar Yadav v. Haryana
- C:-West Bengal v. Nripendra Nath
- D:-Madhav Rao Scindia v. UoI

Correct Answer:- Option-D

Question22:-In which of the following cases did the Supreme Court declare Salwa Judum as unconstitutional?

- A:-Kihoto Hollohan v. Zachillu
- B:-Pratap Singh v. Jharkhand
- C:-Nandini Sundar v. Chattisgarh
- D:-Pooran v. State of U.P

Correct Answer:- Option-C

Question23:-No law made by the Parliament and having extra-territorial operation will be deemed

- A:-invalid
- B:-void
- C:-constitutional
- D:-valid

Correct Answer:- Option-A

Question24:-A legislative Bill which contains only provision dealing with giving of a guarantee by the Government of India is

- A:-Financial Bill
- B:-a Money Bil
- C:-Ordinary Bill
- D:-All of the above

Correct Answer:- Option-B

Question25:-The total number of Ministers including the Prime Minister in the Council of Ministers should be not exceed _____ percent of the total members of the House of the People.

- A:-15
- B:-20
- C:-10
- D:-None of the above

Correct Answer:- Option-A

Question26:-The maximum amount of fine that can be imposed on the respondent who violates a protection order issued under the Protection of Women from Domestic Violence Act is

- A:-Ten Thousand Rupees
- B:-Fifty Thousand Rupees
- C:-Twenty Thousand Rupees
- D:-None of these

Correct Answer:- Option-C

Question27:-National Parks are notified under

- A:-Indian Forests Act
- B:-Forest Conservation Act
- C:-Environment Protection Act
- D:-Wild Life Protection Act

Correct Answer:- Option-D

Question28:-The minimum age of a donor of human organ is

- A:-20 years

B:-18 years

C:-21 years

D:-25 years

Correct Answer:- Option-B

Question29:-Under the Right to Education Act, 'elementary education' means education from first class to

A:-fourth class

B:-seventh class

C:-fifth class

D:-eighth class

Correct Answer:- Option-D

Question30:-Under the Right to Information Act, disclosure of an information on an incident concerning the economic interest of the state

A:-is not at all exempted

B:-can made 15 year after the incident

C:-is normally exempted from disclosure but can be released 20 years after the incident

D:-is normally exempted from disclosure but can be released 15 years after the incident

Correct Answer:- Option-C

Question31:-The area of a triangle is equal to that of a square whose side measures 60 m. The side of the triangle whose corresponding altitude is 90 m is

A:-60 m

B:-40 m

C:-80 m

D:-90 m

Correct Answer:- Option-C

Question32:-The height of an arc of a circle is 10 cm and its diameter is 12.5 cm. The chord of the arc is of length

A:-10 cm

B:-12 cm

C:-8 cm

D:-11 cm

Correct Answer:- Option-A

Question33:-A sphere of radius 4 cm is carved from a homogeneous sphere of radius 8 cm and mass 160 g. The mass of the smaller sphere is

A:-80 g

B:-60 g

C:-40 g

D:-20 g

Correct Answer:- Option-D

Question34:-A pendulum swings through an angle of 30° and describes an arc 8.8 cm in length. The length of the pendulum is (Use $\pi = \frac{22}{7}$)

A:-8.8 cm

B:-16.8 cm

C:-12.4 cm

D:-10.2 cm

Correct Answer:- Option-B

Question35:-A solid cube is cut into two cuboids of equal volumes. The ratio of the total surface area of the given cube to that of one of the cuboids is

A:-2 : 1

B:-3 : 2

C:-4 : 1

D:-4 : 3

Correct Answer:- Option-B

Question36:-What is the value of $\frac{1}{5 + \frac{1}{5 + \frac{1}{5 + \dots}}}$?

A:- $\frac{-5 + \sqrt{29}}{2}$

B:- $\frac{-5 - \sqrt{29}}{2}$

C:- $\frac{-5 + \sqrt{29}}{2}$

D:-7

Correct Answer:- Option-A

Question37:- $2^{1000000} \pmod{7}$ is

A:-5

B:-3

C:-2

D:-4

Correct Answer:- Option-C

Question38:-When $x^5 + x^4 + 5x^2 - 3$ is divided by $x+2$, the remainder is

A:-0

B:-1

C:-2

D:-3

Correct Answer:- Option-B

Question39:-A tree with 7 vertices has _____ edges.

A:-8

B:-7

C:-5

D:-6

Correct Answer:- Option-D

Question40:-The number of distinct spanning trees of K_4 is

A:-16

B:-12

C:-32

D:-8

Correct Answer:- Option-A

Question41:-If the identity element e in S exists in a semigroup $(S, *)$, then it is a

A:-Group

B:-Groupoid

C:-Monoid

D:-None of the above

Correct Answer:- Option-C

Question42:-The number of generators of $(\mathbb{Z}_{24}, +)$ is

A:-2

B:-6

C:-8

D:-10

Correct Answer:- Option-C

Question43:-A Sylow 3-subgroup of a group of order 12 has order

A:-2

B:-3

C:-1

D:-12

Correct Answer:- Option-B

Question44:-Consider \mathbb{Z}_5 and \mathbb{Z}_{20} as rings modulo 5 and 20 respectively. Then the number of homomorphism $\phi: \mathbb{Z}_5 \rightarrow \mathbb{Z}_{20}$ is

A:-1

B:-4

C:-5

D:-2

Correct Answer:- Option-D

Question45:-Let \mathbb{Q} be the field of rational numbers and \mathbb{Z}_2 is a field modulo 2. Then the polynomial $f(x) = x^3 - 9x^2 + 9x + 3$ is

A:-irreducible over \mathbb{Q} but reducible over \mathbb{Z}_2

B:-irreducible over both \mathbb{Q} and \mathbb{Z}_2

C:-reducible over \mathbb{Q} but irreducible over \mathbb{Z}_2

D:-reducible over both \mathbb{Q} and \mathbb{Z}_2

Correct Answer:- Option-A

Question46:-Let $A = \begin{bmatrix} 3 & 1 & -1 \\ 2 & 2 & -1 \\ 2 & 2 & 0 \end{bmatrix}$. The characteristic polynomial of A is

A:- $x^3 + 5x^2 + 8x + 4$

B:- $x^2 + 5x$

C:- $x^3 - 5x^2 + 8x - 4$

D:- $x^3 + 8x + 4$

Correct Answer:- Option-C

Question47:-The eigen values of the matrix $\begin{bmatrix} 4 & -2 \\ -2 & 1 \end{bmatrix}$ are

- A:-1, 4
 - B::-1, 2
 - C:-0, 5
 - D:-Cannot be determined
- Correct Answer:- Option-C

Question48:-Let V be a finite dimensional vector space, I be the identity transformation on V , then the null space of I is

- A:- $\{0\}$
 - B:- ϕ
 - C:- V
 - D:-None of the above
- Correct Answer:- Option-A

Question49:-If V is a vector space with $\dim V = n$, then the dimension of the hyperspace of V is

- A:- n
 - B:- $n-1$
 - C:- $n+1$
 - D:-0
- Correct Answer:- Option-B

Question50:-Let V be a vector space of all 2×2 matrices over \mathbb{R} . Let T be the linear mapping $T: V \rightarrow V$ such that $T(A) = AB - BA$ where $B = \begin{bmatrix} 2 & 1 \\ 0 & 3 \end{bmatrix}$. Then the nullity of T is

- A:-1
 - B:-2
 - C:-3
 - D:-4
- Correct Answer:- Option-A

Question51:-Banach space is a

- A:-Complete normed vector space
 - B:-Normed vector space
 - C:-Complete vector space
 - D:-None of the above
- Correct Answer:- Option-A

Question52:-Which of the following is true?

- A:-All normed spaces are inner product spaces
 - B:-All inner product spaces are normed spaces
 - C:-All inner product spaces are Banach spaces
 - D:-All inner product spaces are Hilbert spaces
- Correct Answer:- Option-B

Question53:-Banach space is a Hilbert space if

- A:-Pythagorean theorem holds
 - B:-Projection theorem holds
 - C:-Parallelogram law holds
 - D:-None of the above
- Correct Answer:- Option-C

Question54:-If T is a bounded linear operator on a Hilbert space H , which of the following is not true?

- A:- T is normal if T is self-adjoint
 - B:- T is normal if T is unitary
 - C:- T is self-adjoint if T is normal
 - D:-None of the above
- Correct Answer:- Option-C

Question55:-The equation of the normal at the point $(a \sec \theta, b \tan \theta)$ on the hyperbola $(x^2)/(a^2) - (y^2)/(b^2) = 1$ is

- A:- $(x)/(a \sec \theta) - (y)/(b \tan \theta) = 1$
 - B:- $(x)/(a \sec \theta) + (y)/(b \tan \theta) = 1$
 - C:- $(ax)/(\sec \theta) - (by)/(\tan \theta) = a^2 + b^2$
 - D:- $(ax)/(\sec \theta) + (by)/(\tan \theta) = a^2 + b^2$
- Correct Answer:- Option-D

Question56:- $\lim_{x \rightarrow \infty} (\log x)/(x^n)$ is

- A:- ∞
- B:- $-\infty$

C:-1

D:-0

Correct Answer:- Option-D

Question57:- $(x * y) + (x' + y')$ is equal to

A:- $x * y$

B:- $x' + y'$

C:-0

D:-1

Correct Answer:- Option-D

Question58:-Let a be any element in a Boolean algebra B . If $a+x=1$ and $ax=0$, then

A:- $x=1$

B:- $x=0$

C:- $x=a$

D:- $x=a'$

Correct Answer:- Option-D

Question59:-Which of the following is reflexive?

A:- I^2

B:- I^1

C:- $L^1 [a,b]$

D:- I^{∞}

Correct Answer:- Option-A

Question60:-If $1 < p < \infty$ and q is conjugate of p , then

A:- $I^p \{p\} = I^q$

B:- $I^p \{p\} = I^p$

C:- $I^p \{p\} < I^q$

D:- $I^p \{p\} > I^q$

Correct Answer:- Option-A

Question61:-If S is a non-empty set of real numbers, then

A:- $\text{Inf } S = \text{Sup } S$

B:- $\text{Inf } S = -\text{Sup } (-S)$

C:- $\text{Inf } S = \text{Sup } (-S)$

D:- $\text{Inf } S = -\text{Sup } S$

Correct Answer:- Option-B

Question62:-Every infinite set has

A:-an uncountable subset

B:-a countable subset

C:-both countable and uncountable subsets

D:-none of the above

Correct Answer:- Option-B

Question63:-A real valued function f has discontinuity of the second kind at $x=a$ if

A:- $f(a+)$ exist only

B:- $f(a-)$ exist only

C:-Neither $f(a+)$ nor $f(a-)$ exist

D:-Both $f(a+)$ and $f(a-)$ exist

Correct Answer:- Option-C

Question64:-For the sequence $\{x_n\}$, where $x_n = (-1)^n n$, the $\lim x_n$ is

A:-1

B:-0

C:- $+\infty$

D:- $-\infty$

Correct Answer:- Option-D

Question65:-Every open set of real numbers is the union of

A:-countable collection of disjoint closed intervals

B:-uncountable collection of disjoint closed intervals

C:-countable collection of disjoint open intervals

D:-uncountable collection of disjoint open intervals

Correct Answer:- Option-C

Question66:-A set E is nowhere dense if

A:-closure of E contains non-empty open sets

B:-closure of E contains no non-empty open sets

C:-closure of E contains empty open set

D:-none of the above

Correct Answer:- Option-B

Question67:-If f_1 and f_2 are two real-valued bounded functions defined on $[a,b]$ then for every partition P on $[a,b]$

A:- $U(P, f_1+f_2) = U(P, f_1) + U(P, f_2)$

B:- $U(P, f_1+f_2) \leq U(P, f_1) + U(P, f_2)$

C:- $U(P, f_1+f_2) \geq U(P, f_1) + U(P, f_2)$

D:-None of the above

Correct Answer:- Option-B

Question68:-If $f: [a,b] \rightarrow \mathbb{R}$ is continuous and monotonic function then

A:- f is Riemann integrable on $[a,b]$

B:- f is not Riemann integrable on $[a,b]$

C:- f is Riemann integrable on \mathbb{R}

D:-None of the above

Correct Answer:- Option-A

Question69:-Which of the following is true?

A:-The set $[0,1]$ is not countable

B:-If E_1 and E_2 are Lebesgue measurable, then $E_1 \cup E_2$ is Lebesgue measurable

C:-The family \mathcal{M} of Lebesgue measurable sets is an algebra of sets

D:-All of the above

Correct Answer:- Option-D

Question70:-Given $\int_0^1 \frac{\sin\{1/x\}}{\sqrt{x}} dx$, then

A:-Integral is divergent

B:-Integral is absolutely convergent

C:-Integral is not absolutely convergent

D:-None of the above

Correct Answer:- Option-B

Question71:-If f satisfies the conditions of Lagrange's mean value theorem and if $f'(x) = 0 \forall x$ in $[a,b]$, then which of the following is true?

A:- f is constant on $[a,b]$

B:- f is strictly increasing in $[a,b]$

C:- f is strictly decreasing in $[a,b]$

D:-None of the above

Correct Answer:- Option-A

Question72:- $\lim_{z \rightarrow 0} \frac{\text{bar}z}{z}$ is

A:-0

B:-1

C:- $\frac{1}{2}$

D:-Does not exist

Correct Answer:- Option-D

Question73:-The radius of convergence of the power series $\sum_{n=0}^{\infty} \frac{(2n)!}{(n!)^2} (2-3i)^n$ is

A:-1

B:-0

C:- $\frac{1}{2}$

D:- $\frac{1}{4}$

Correct Answer:- Option-D

Question74:-A function is said to be harmonic if

A:- $(\text{del}^2 u)/(\text{del}^2) + (\text{del}^2 v)/(\text{del}^2) = 0$

B:- $(\text{del}^2 u)/(\text{del}^2) + (\text{del}^2 u)/(\text{del}^2) = 0$

C:- $(\text{del} u)/(\text{del} x) + (\text{del} u)/(\text{del} y) = 0$

D:- $(\text{del} v)/(\text{del} x) + (\text{del} v)/(\text{del} y) = 0$

Correct Answer:- Option-B

Question75:-The value of $\int_c \log z dz$ where c is the unit circle is

A:- πi

B:- $2\pi i$

C:- $4\pi i$

D:-0

Correct Answer:- Option-B

Question76:-The image of the unit circle $|z| = 1$ under the transformation $w = 2z + z^2$ is

A:-Circle

B:-Straight line

C:-Parabola

D:-Cardioid

Correct Answer:- Option-D

Question77:-If X is any set, T is a collection of all subsets of X then (X, T) is

A:-Discrete topology

B:-Indiscrete topology

C:-Trivial topology

D:-None of the above

Correct Answer:- Option-A

Question78:-Let X and Y are topological spaces. The function f is a homeomorphism if

A:- $f : X \rightarrow Y$ is a bijective function

B:- f is continuous

C:- $f^{-1} : Y \rightarrow X$ is continuous

D:-All of the above

Correct Answer:- Option-D

Question79:-Every compact subset of a Hausdorff space is

A:-Closed set

B:-Open set

C:-Null set

D:-None of the above

Correct Answer:- Option-A

Question80:-The order and degree of the differential equation $\frac{d}{dx} \left(\frac{d^2y}{dx^2} \right)^4 = 0$ is

A:-1, 4

B:-2, 4

C:-3, 1

D:-3, 4

Correct Answer:- Option-C

Question81:-The value of Wronskian $W(x, x^2, x^3)$ is

A:- $2x^2$

B:- $2x^4$

C:- $2x^3$

D:- x^2

Correct Answer:- Option-C

Question82:-The general solution of $(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}) = 0$ is of the form

A:- $u = f(x + iy) - g(x - iy)$

B:- $u = f(x - iy) - g(x + iy)$

C:- $u = f(x + iy) + g(x - iy)$

D:- $u = f(x - iy) + g(x + iy)$

Correct Answer:- Option-C

Question83:-The partial differential equation formed by eliminating the arbitrary function from $z = f\left(\frac{y}{x}\right)$ is

A:- $x \frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = 0$

B:- $\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = 0$

C:- $\frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} = 0$

D:- $x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} = 0$

Correct Answer:- Option-D

Question84:-The orthogonal trajectory of the family of curves $x^2 - y^2 = k$ is given by

A:- $x^2 + y^2 = c$

B:- $xy = c$

C:- $y = c$

D:- $x = 0$

Correct Answer:- Option-B

Question85:-The general solution of the wave equation $\frac{\partial^2 y}{\partial t^2} = c^2 \frac{\partial^2 y}{\partial x^2}$ is

A:- $y(x, t) = \Phi(x + ct) + \Psi(x - ct)$

B:- $y(x, t) = f(x + ct)$

C:- $y(x, t) = f(x - ct)$

D:-No general solution exists

Correct Answer:- Option-A

Question86:-Stirling's formula is the _____ of Gauss' forward and backward formulae.

A:-Arithmetic mean

B:-Geometric mean

C:-Harmonic mean

D:-None of the above

Correct Answer:- Option-A

Question87:-The interpolating polynomial of the highest degree which corresponds the functional values $f(-1) = 9$, $f(0)=5$, $f(2) = 3$, $f(5) = 15$ is

A:- x^3+x^2+2x+5

B:- x^2-3x+5

C:- $x^4+4x^3 +5x^2+5$

D:- $x+5$

Correct Answer:- Option-B

Question88:-The solution of the integral equation $\phi(x) = x + \int_0^x (x-x)\phi(x) dx$ is

A:- $\cos x$

B:- $\tan x$

C:- $\sin x$

D:- $\sec x$

Correct Answer:- Option-C

Question89:-The minimizing curve must satisfy a differential equation called

A:-Lagrange's equation

B:-Euler-Lagrange equation

C:-Gauss equation

D:-None of the above

Correct Answer:- Option-B

Question90:-A solid figure of revolution, for a given surface area, has maximum volume is in the case of

A:-a circle

B:-a sphere

C:-an ellipse

D:-a parabola

Correct Answer:- Option-B

Question91:-A rigid body moving in space with one point fixed has degree of freedom

A:-3

B:-1

C:-6

D:-9

Correct Answer:- Option-A

Question92:-A particle of unit mass is moving under gravitational field, along the cycloid $x = \phi - \sin \phi$, $y = 1 + \cos \phi$. Then the Lagrangian for motion is

A:- $\phi^2 (1+\cos \phi) - g (1 - \cos \phi)$

B:- $\phi^2 (1-\cos \phi) + g (1 + \cos \phi)$

C:- $\phi^2 (1-\cos \phi) - g (1 + \cos \phi)$

D:- $2\phi^2 (1-\cos \phi) - g (1 + \cos \phi)$

Correct Answer:- Option-C

Question93:- $L^{-1} [(1)/(s^2+a^2)]$ is

A:- $(1)/(a^2) (1 - \cos at)$

B:- $(2 \sin at)/(t)$

C:- $(1)/(a^2) (e^{at} - 1)$

D:- $(1)/(a^2) \sin at$

Correct Answer:- Option-A

Question94:- $\int_0^{\infty} e^{-x^2} dx$ is

A:- $(1)/(2)$

B:- $(\pi)/(2)$

C:- $(\sqrt{\pi})/(2)$

D:- $-\sqrt{\pi}$

Correct Answer:- Option-C

Question95:-Using Fourier series, representing x in the interval $[-\pi, \pi]$, the sum of the series $1-(1)/(3) + (1)/(5) - (1)/(7) + \dots$ is

A:-0

B:-1

C:- $(\pi)/(2)$

D:- $(\pi)/(4)$

Correct Answer:- Option-D

Question96:-The only idempotent t-conorm is

A:-algebraic sum

B:-drastic union

C:-standard fuzzy union

D:-bounded sum

Correct Answer:- Option-C

Question97:-Using fuzzy arithmetic operations on intervals $[4,10]/[1,2]$ is

A:- $[4,5]$

B:- $[2,10]$

C:- $[2,8]$

D:- $[4,20]$

Correct Answer:- Option-B

Question98:-The language generated by the grammar $\langle G = (\{S\}, \{a,b\}, S, P) \rangle$ where $\langle P \rangle$ is given by $S \rightarrow aSb, S \rightarrow \lambda$ is

A:- $\{a^n b^n : n \geq 0\}$

B:- $\{a^n b^{n+1} : n \geq 0\}$

C:- $\{a^{n+1} b^n : n \geq 0\}$

D:- $\{a^{n+2} b^n : n \geq 1\}$

Correct Answer:- Option-A

Question99:-Which of the following is not true in the derivative of a smooth vector field $\langle X \rangle$?

A:- $\text{grad}_v (X+Y) = \text{grad}_v X + \text{grad}_v Y$

B:- $\text{grad}_v (fX) = (\text{grad}_v f) X(p) + f(p) (\text{grad}_v X)$

C:- $\text{grad}_v (X * Y) = (\text{grad}_v X) * Y(p) + X(p) * (\text{grad}_v Y)$

D:- $\text{grad}_v (fX) = f(\text{grad}_v X)$

Correct Answer:- Option-D

Question100:-Let $\langle X \rangle$ be a non-empty compact Hausdorff space. If every point of $\langle X \rangle$ is a limit point of $\langle X \rangle$, then

A:- $\langle X \rangle$ is disjoint

B:- $\langle X \rangle$ is countable

C:- $\langle X \rangle$ is uncountable

D:-None of the above

Correct Answer:- Option-C