AEEE SAMPLE PAPER 2025

SUBJECT: Mathematics

Question 1 : The universal set for the sets
A = {x : x^2 – 5x + 6 = 0} and
B = {x : x^2 – 3x + 2 = 0} having least number of elements is

(A) {1, 2}

(B) {1, 3}

(C) {1, 2, 3}

(D) {0, 1, 2, 3}

Question 2 : If A = {1, 2, 3}, B = {x € R : x2 – 2x + 1 = 0},
C = {1, 2, 2, 3} and
D = {x € R : x3 - 6x2 + 11x - 6 = 0}, then the equal sets are

(A) A and B

(B) A and C

(C) A, B and C

(D) A, C and D

Question 3 : Let R = {(3, 3), (6, 6), (9, 9), (12, 12), (6, 12), (3, 9), (3, 12), (3, 6)} be a relation on the set A ={3, 6, 9, 12}
The relation is

(A) an equivalence reation

(B) reflexive symmetric

(C) reflexive and trasitive

(D) Only reflexive

Question 4 : Let A = {5, 6, 7} be a set and define a relation R = {(5, 6), (6, 5)}. Then, R is

(A) reflexive and transitive

(B) symmetric only

(C) reflexive and symmetric

(D) equivalence relation

Question 5 : Let z, w be complex numbers such that $\bar{z} + i\bar{w} = 0$ and arg(zw) = π. Then, arg(z) is equal to

(A) $\frac{\pi}{4}$

(B) $\frac{\pi}{2}$

(C) $\frac{3\pi}{4}$

(D) $\frac{5\pi}{4}$

Question 6 : nth term of the series $1+\frac{4}{5}+\frac{7}{5^2}+\frac{10}{5^3}+\ldots\ldots$ will be

(A) $\frac{3n+1}{5^{n-1}}$

(B) $\frac{3n-1}{5^n}$

(C) $\frac{3n-2}{5^{n-1}}$

(D) $\frac{3n+2}{5^{n-1}}$

Question 7 : n(n + 1)(n + 5) is a multiple of

(A) 5

(B) 6

(C) 7

(D) None of these

Question 8 : The simplest form of $\frac{1095}{1168}$ is

(A) $\frac{17}{26}$

(B) $\frac{25}{26}$

(C) $\frac{13}{16}$

(D) $\frac{15}{16}$

Question 9 : Let f: {1, 2, 3, 4, 5} ? {1, 2, 3, 4, 5} that are onto and f(x) ≠ i is equal to

(A) 9

(B) 44

(C) 16

(D) None of these

Question 10 : The greatest term in the expansin of $\sqrt{3}\left(1+\frac{1}{\sqrt{3}}\right)^{20}$ â€‹is

(A) $\frac{26840}{9}$

(B) $\frac{24840}{9}$

(C) $\frac{25840}{9}$

(D) None of these

Question 11 : If the roots of the given equation $(\cos p - 1)x^2 + (\cos p)x + \sin p = 0$ are real, then

(A) $p \in (-\pi, 0)$

(B) $p \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

(C) $p \in (0, \pi)$

(D) $p \in (0, 2\pi)$

Question 12 : If one root of equation $x^2 + ax + 12 = 0$ is 4 while the equation $x^2 + ax + b = 0$ has equal roots, then the value of b is

(A) $\frac{4}{49}$

(B) $\frac{49}{4}$

(C) $\frac{7}{4}$

(D) $\frac{4}{7}$

Question 13 : The region represented by 2x + y > 6 is

(A) bounded

(B) unbounded

(C) does not exist

(D) None of these

Question 14 : The graphical solution -3x + 2y > -6 is represented by shade the

(A) half plane II including the points on the line -3x + 2y = -6

(B) half plane II excluding the points on the line -3x + 2y = -6

(C) half plane I including the points on the line -3x + 2y = -6

(D) half plane I excluding the points on the line -3x + 2y = -6

Question 15 : Matrix $A = \begin{bmatrix} 1 & 0 & k \\ 2 & 1 & 3 \\ k & 0 & 1 \end{bmatrix}$ is invertible for

(A) k = 1

(B) k = -1

(C) k = R – {1, -1}

(D) None of these

Question 16 : $\begin{vmatrix} x+4 & 2x & 2x \\ 2x & x+4 & 2x \\ 2x & 2x & x+4 \end{vmatrix}$ is equal to â€‹

(A) $(5x - 4)(4 + x)^2$

(B) $(5x + 4)(4 - x)^2$

(C) $(5x - 4)^2(4 + x)$

(D) $(5x + 4)^2(4 - x)$

Question 17 : The roots ot the equatoin $\begin{vmatrix} x & \alpha & 1 \\ \beta & x & 1 \\ \beta & \gamma & 1 \end{vmatrix} = 0$ are independent of â€‹

(A) α

(B) β

(C) λ

(D) α, β and λ

Question 18 : If A + B = 45º, then (cot A - 1) (cot B - 1) is equal to

(A) 3

(B) $\frac{1}{2}$

(C) – 1

(D) 2

Question 19 : The principal value of $\sin^{-1}\left[\sin\left(\frac{2\pi}{3}\right)\right]$ is

(A) $\frac{-2\pi}{3}$

(B) $\frac{2\pi}{3}$

(C) $\frac{4\pi}{2}$

(D) None of these

Question 20 : Let $f(x)=\begin{cases}1+x, 0\le x\le 2\\ 3-x, 2<x\le 3\end{cases}$ then the points of discontinuity of g(x) = f[f(x)] is/are

(A) only at x = 1

(B) x = 2, 3

(C) only at x = 3

(D) x = 1, 2

Question 21 : If f(x) = sin(cosx), then f ' (x) is

(A) cos(cosx)

(B) sin(-sinx)

(C) -sin(cosx)

(D) -sinx cos(cosx)

Question 22 : If $f(x) = \sin^2 x^2$, then what is the value of f '(x)?

(A) $4x \sin(x^2) \cos(x^2)$

(B) $2 \sin(x^2) \cos(x^2)$

(C) $4 \sin(x^2) \sin^2 x$

(D) $2x \cos^2 x^2$

Question 23 : Let f be the differentiable for all x. If f(1) = –2 and $f'(x) \ge 2$ for all $x \in [1, 6]$, then the minimum value of â€‹

(A) 4

(B) 2

(C) 8

(D) None of these

Question 24 : The speed v of a particle moving along a straight line is given by $a + bv^2 = x^2$ (where x is its distance from the origin). The acceleration of the particle is

(A) bx

(B) x/a

(C) x/b

(D) x/ab

Question 25 : $\int \frac{dx}{a^2 \sin^2 x + b^2 \cos^2 x}$ is equal to

(A) $\frac{1}{ab}\tan^{-1}\left(\frac{a\tan x}{b}\right)+C$

(B) $\frac{a}{b}\tan^{-1}\left(\frac{a\tan x}{b}\right)+C$

(C) $\frac{b}{a}\tan^{-1}\left(\frac{b\tan x}{a}\right)+C$

(D) None of the above

Question 26 : The solution of $\frac{dy}{dx}+\frac{y}{x}=\log x$ is

(A) yx = logx + C

(B) $yx=\frac{x^2}{2}(\log x)-\frac{x^2}{4}+C$ â€‹

(C) x^2y^2 = logx + C

(D) None of the above

Question 27 : If a line with y-intercept 2, is perpendicular to the line 3x - 2y = 6, then its r-intercept is

(A) 1

(B) 2

(C) -4

(D) 3

Question 28 : The circles $x^2 + y^2 - 10x + 16 = 0$ and $x^2 + y^2 = r^2$ intersect each other at two distinct points, if

(A) r < 2

(B) r > 8

(C) 2 < r < 8

(D) $2 \le r \le 8$

Question 29 : The angle between the circles
S: $x^2 + y^2 - 4x + 6y + 11 = 0$ and
â€‹S': $x^2 + y^2 - 2x + 8y + 13 = 0$ is

(A) 45º

(B) 90º

(C) 60º

(D) None of these

Question 30 : The equation of the line touching two parabolas $y^2 = 4x$ and $x^2 = -32y$, is

(A) 2y - x = 4

(B) 2x - y = 4

(C) 2y + x = 4

(D) x + 2y = 4

Question 31 : What is the value of λ for which $(\lambda\hat{i}+\hat{j}-\hat{k})\times(3\hat{i}-2\hat{j}+4\hat{k}) = (2\hat{i}-11\hat{j}-7\hat{k})$?

(A) 2

(B) -2

(C) 1

(D) 7

Question 32 : The area of the parallelogram whose adjacent sides are $\hat{i}+\hat{k}$ and $2\hat{i}+\hat{j}+\hat{k}$, is

(A) 3

(B) $\sqrt{2}$

(C) 4

(D) $\sqrt{3}$

Question 33 : If a plane meets the coordinate axes at A, B and C such that the centroid of the triangle is (1, 2, 4), then the equation of the plane is

(A) x + 2y + 4z = 12

(B) 4x + 2y + z = 12

(C) x + 2y + 4z = 3

(D) 4x + 2y + z =3

Question 34 : The average of the squares of the numbers 0, 1, 2, 3, 4,., n is

(A) $\frac{1}{2}n(n+1)$

(B) $\frac{1}{6}n(2n+1)$

(C) $\frac{1}{6}(n+1)(2n+1)$

(D) $\frac{1}{6}n(n+1)$

Question 35 : The mode of the Binomial distribution for which mean and standard deviation are 10 and $\sqrt{5}$ respectively, is

(A) 7

(B) 8

(C) 9

(D) 10

Question 36 : f the mean and standard deviation of a Binomial variate X are 4 and $\sqrt{3}$, respectively, then P(X ≥ 1) is equal to

(A) $1-\left(\frac{1}{4}\right)^{16}$

(B) $1-\left(\frac{3}{4}\right)^{16}$

(C) $1-\left(\frac{2}{3}\right)^{16}$

(D) $1-\left(\frac{1}{3}\right)^{16}$

Question 37 : Which of the following functions T from R into R are linear transformation.

(i) T ab = (1 + a, b) (ii) T a, b = (b, a)

â€‹(iii) T(a, b) = (a + b, a)

(A) (i) and (ii)

(B) (ii) and (iii)

(C) (i) and (iii)

(D) None of these

Question 38 : Consider the linear transformation, $T : R^4 \to R^4$ given by $T(x, y, z, u) = (x, y, 0, 0), \forall (x, y, z, u) \in R^4$. Then, which one of the following is corret?

(A) Rank of T > Nullity of T

(B) Nullity of T > Rank of T

(C) Rank of T = Nullity of T = 3

(D) Rank of T = Nullity of T = 2

Question 39 : The integral $\int_0^\infty \sin x \, dx$

(A) exists

(B) exists and equal to zero

(C) exists and equal to1

(D) does not exist

Consider the improper integral

$$I_1 = \int_1^\infty \frac{dx}{x\sqrt{x^2+1}} \text{ and } I_2 = \int_0^\infty e^{-x^2} dx$$

Question 40 : Then

(A) I_1 is convergent but I_2 is divergent

(B) I_2 is divergent but I_2 is convergent

(C) Both I_1 and I_2 are convergent

(D) Neither I_1 nor I_2 is convergent

SUBJECT: English

Question 41 : Read sentence to find out whether there is any grammatical error in it. The sentences are In three separate parts and each one is labelled (a), (b), (c) and (d). In that case, letter (d) will signify a 'No error' response.

(A) I shall never

(B) forget a good

(C) deed you did to me, when I was in crisis

(D) No error

Question 42 : Read sentence to find out whether there is any grammatical error in it. The sentences are In three separate parts and each one is labelled (a), (b), (c) and (d). In that case, letter (d) will signify a 'No error' response.

(A) Wisdom of Vikramaditya

(B) solved many riddles

(C) that people brought to him for solution

(D) No error

Question 43 : Spot the error part of the following sentences.

(A) Repeat again

(B) what you

(C) have said

(D) No error

Question 44 : Spot the error part of the following sentences.

(A) It is an established fact that the transcendental American poets and philosophers

(B) who lived in the latter half of the 19^{th} century,

(C) were more influenced by Indian philosophy, in particular by Upanishadic Philosophy

(D) No error

Question 45 : Find out the error part of the following sentences.

(A) My brother has

(B) returned from

(C) training two months back

(D) No error

SUBJECT: Physics

Question 46 : The dimensions of magnetic moment are

(A) $[L^2A^1]$

(B) $[L^2A^{-1}]$

(C) $[L^2/A^3]$

(D) $[LA^2]$

Question 47 : The dimensions of Wien's constant are

(A) $[ML^0TK]$

(B) $[M^0LT^0K]$

(C) $[M^0L^0TK]$

(D) [MLTK]

Question 48 : The dimensional formula of wave number is

(A) $[M^0L^0T^{-1}]$

(B) $[M^0L^{-1}T^0]$

(C) $[M^{-1}\ L^{-1}\ T^0]$

(D) $[M^0\ L^0\ T^0]$

Question 49 : The initial velocity of a body is 15 m/s. If it having an acceleration of 10 m/s², then the velocity of body after 10 seconds from start-

(A) 110 m/s

(B) 105 m/s

(C) 120 m/s

(D) 115 m/s

Question 50 : Which of the following can be zero, when a particle is in motion for some time ?

(A) Distance

(B) Displacement

(C) Speed

(D) None of these

Question 51 : The numerical ratio of average velocity to average speed is.

(A) always less than one

(B) always equal to one

(C) always more than one

(D) equal to or less than one

Question 52 : A passenger in a moving train tosses a coin. If the coin falls behind him, the train must be moving with.

(A) an acceleration

(B) a deceleration

(C) a uniform speed

(D) any of the above

Question 53 : A man getting down a running bus, falls forward because.

(A) due to inertia of rest, road is left behind and man reaches forward

(B) due to inertia of motion upper part of body continues to be in motion in forward direction while feet come to rest as soon as they touch the road

(C) he leans forward as a matter of habit

(D) of the combined effect of all the three factors started in (a), (b) and (c)

Question 54 : A force 10N acts on a body of mass 20 kg for 10 sec. Change in its momentum is.

(A) 5 kg m/s

(B) 100 kg m/s

(C) 200 kg m/s

(D) 1000 kg m/s

Question 55 : The proper care and maintenance of machines require.

(A) to make them good rooking

(B) for preserving them for future

(C) for their efficient and longer use

(D) None of these

Question 56 : A shell following a parabolic path explodes somewhere in its flight. The centre of mass of fragements will continue to move in

(A) vertical direction

(B) any direction

(C) horizontal direction

(D) same parabolic path

Question 57 : Two particles of mass m_1 and m_2 ($m_1 > m_2$) attract each other with a force inversely proportional to the square of the distance between them. If the particles are initially held at rest and then released, the centre of mass will

(A) move towards m_1

(B) move towards m_2

(C) remains at rest

(D) None of these

Question 58 : Kepler's laws governing the motion of planets are :

(A) The orbit of a planet is an eclipse with the Sun at one of the foci

(B) The line joining the planet and the Sun sweep equal areas in equal intervals of time

(C) The cube of the mean distance of a planet (r) from the Sun is proportional to the square of its orbital period (T)

(D) All of these

Question 59 : According to kepler, force acting on an orbiting planet is given by

(A) F = mg

(B) F O < v^2 / r

(C) F = m g h

(D) None of these

Question 60 : Young's modulus is defined as

(A) the ratio of linear strain to the normal stress

(B) the ratio of normal stress to strain

(C) product of linear strain and normal stress

(D) square of the ratio of normal stress to linear strain

Question 61 : Which of the following substance has the highest elasticity ?

(A) Steel

(B) Copper

(C) Rubber

(D) Sponge

Question 62 : Human ears can sense sound waves travelling in air having wavelength of

(A) 10^{-3} m

(B) 10^{-2} m

(C) 1 m

(D) 10^2 m

Question 63 : Which of the following statements is wrong ?

(A) Sound travels in straight line

(B) Sound is form of energy

(C) Sound travels in the forms of waves

(D) Sound travels faster in vacuum than in air

Question 64 : The fastest mode of transfer of heat is

(A) conduction

(B) convection

(C) radiation

(D) None of these

Question 65 : The coefficient of thermal conductivity depends upon

(A) temperature difference between the two surfaces
(B) area of the plate
(C) material of the plate
(D) All of these

Question 66 : Good absorbers of heat are
(A) poor emitters
(B) non-emitters
(C) good emitters
(D) highly polished

Question 67 : Which of the following is not close to a black body ?
(A) Black board paint
(B) Green leaves
(C) Black holes
(D) Red roses

Question 68 : Appliances : Parallel
Fuse : .....
(A) Series
(B) Parallel
(C) Series in appliances always
(D) Parallel in fuse always

Question 69 : The magnitude of the force expeirenced by a current carrying conductor when placed in a magnetic field will be
(A) maximum if the directions of current and magnetic field are perpendicular to each other
(B) minimum if the directions of current and magneti field are perpendicular to each other
(C) maximum if the directions of current and magnetic field are opposite to each other
(D) maximum if the directions of current and magnetic field are same

Question 70 : The reciprocal of the combined resistance of any number of resistances connected in parallel is equal to
(A) The sum of reciprocals of individiual resistances
(B) reciprocal of the product of individiual resistances
(C) reciprocal of sum of all the resistances
(D) None of the above

Question 71 : An object placed at 2F of a convex lens will produce an image
(A) at 2F
(B) same size
(C) real and inverted
(D) All of these

Question 72 : An object placed between F and 2F of a convex lens will produce an image
(A) beyond 2F
(B) enlarged
(C) real and inverted
(D) All of these

Question 73 : In solar water heater, a copper pipe with its outer surface painted in black is fixed in the form of a coil in a box .
(A) The only purpose of bending copper pipe is to increase the capacity of water storage
(B) Bending copper pipe as a coil helps to increase the surface area for heating
(C) Both (a) and (b) are true
(D) Both (a) and (b) are false

Question 74 : A photon will have less energy, if its
(A) amplitude is higher

(B) frequency is higher
(C) wavelength is longer
(D) wavelength is shorter

Question 75 : A photoelectric cell converts
(A) light energy into heat energy
(B) light energy to sound energy
(C) light energy into electric energy
(D) electric energy into light energy

SUBJECT: Chemistry

Question 76 : Flint glass is obtained from which of the following ?
(A) Zinc and barium borosilicate
(B) Sand, red lead and potassium carbonate
(C) Sodium aluminium borosilicate
(D) Pure silica and zinc oxide

Question 77 : Which one of the following correctly defines the state of glass ?
(A) Crystalline solid
(B) Super cooled liquid
(C) Condensed gas
(D) Liquid crystal

Question 78 : Which one among the following is not a mixture ?
(A) Graphite
(B) Glass
(C) Brass
(D) Steel

Question 79 : The latest discovered state of matter is.
(A) Solid
(B) Bose-Einstein condensation
(C) Plasma
(D) liquid

Question 80 : Which one of the following is not a mixture ?
(A) Toothpaste
(B) Toilet soap
(C) Baking soda
(D) Vinegar

Question 81 : Which one of the following is a heterogenous mixure ?
(A) Hydrochloric acid
(B) Vinegar
(C) Milk
(D) Soda water

Question 82 : Which one among the following is used as a moderator in nuclear reactors ?
(A) Ozone
(B) Heavy hydrogen
(C) Heavy water
(D) Hydrogen peroxide

Question 83 : Avogadro's law states that equal volumes of all gases under similar conditions of temperature and pressure contain equal number of-
(A) Molecules
(B) Atoms

(C) Valency

(D) Isotopes

Question 84 : Combination of one volume of nitrogen with three volumes of hydrogen produces

(A) one volume of ammonia

(B) two volumes of ammonia

(C) three volumes of ammonia

(D) one and a half volumes of ammonia

Question 85 : Ammonia (NH_3) obtained from different sources always has same proportion of Nitrogen and Hydrogen. It proves the validity of law of .

(A) Reciprocal proportion

(B) Constant proportion

(C) Multiple proportions

(D) None of the above

Question 86 : Element having atomic no. of 56 belongs to which of the following block of periodic table ?

(A) p-block

(B) d-block

(C) f-block

(D) s-block

Question 87 : Bromine is a

(A) Colourless gas

(B) Brown solid

(C) Highly inflammable gas

(D) Red liquid

Question 88 : Bright light is found to emit from photoggrapher's flashgun. This brightness is due to the presence of which one of the following noble gases ?

(A) Argon

(B) Xenon

(C) Neon

(D) Helium

Question 89 : Newlands could classify elements only upto

(A) copper

(B) chlorine

(C) calcium

(D) chromium

Question 90 : The equation
$Cu + xHNO_3$?$Cu(NO_3)_2 + yNO_2 + 2H_2O$
The values of x and y are

(A) 3 and 5

(B) 8 and 6

(C) 4 and 2

(D) 7 and 2

Question 91 : Fe2O3 + 2Al?Al2O3 + 2Fe
â€‹The above reaction is an example of a

(A) Combination reaction

(B) double displacement reaction

(C) decomposition reaction

(D) displacement reaction

Question 92 : Oxygen has an oxidation state of +2 in

(A) H_2O_2
(B) H_2O
(C) OF_2
(D) SO_2

Question 93 : Which of the following reaction is used in white washing walls ?
(A) $2Ca + O_2$?$2CaO$
(B) $Ca(OH)_2 \xrightarrow{Heat} CaO + H_2O$
(C) $Ca(OH)_2 + CO_2$? $CaCO_3 + H_2O$
(D) $CaO + H_2O$? $Ca(OH)_2$

Question 94 : Which one among the following is the correct order of strength of acids ?
(A) $H_2SO_4 > H_3PO_3 > CH_3COOH$
(B) $H_3PO_3 > H_2SO_4 > CH_3COOH$
(C) $CH_3COOH > H_3PO_3 > H_2SO_4$
(D) $CH_3COOH > H_2SO_4 > H_3PO_3$

Question 95 : Zinc is
(A) non – metalleable
(B) Brittle
(C) ductile
(D) (a) and (b)

Question 96 : The only non-metal that has luster is
(A) Sulphur
(B) Phosphorus
(C) Silicon
(D) Iodine

Question 97 : Which of the following is a liquid metal ?
(A) Mercury
(B) Bromine
(C) Water
(D) Sodium

Question 98 : Which pair of isomerism is not possible together ?
(A) Ring-chain and functional
(B) Geometrical and optical
(C) Metamerism and functional
(D) Metamerism and chain

Question 99 : Purification of petroleum is carried out by
(A) fractional distillation
(B) steam distillation
(C) vacuum distillation
(D) simple distillation

Question 100 : Distillation under reduced pressure is employed for
(A) C_6H_6
(B) petrol
(C) $CH_2OHCHOHCH_2OH$
(D) organic compounds used in medicine

ANSWER KEY

1. C
2. D
3. B
4. B
5. C
6. C
7. B
8. D
9. A
10. C
11. C
12. B
13. B
14. C
15. C
16. B
17. A
18. B
19. D
20. D
21. D
22. A
23. C
24. C
25. A
26. B
27. D
28. C
29. C
30. A
31. A
32. D
33. B
34. B
35. 10
36. D
37. B
38. B
39. D
40. A
41. B
42. B
43. A
44. A
45. C
46. A
47. A
48. B
49. B
50. D
51. B
52. D
53. A
54. B
55. B
56. C
57. D
58. C
59. D
60. A

61. B
62. A
63. C
64. D
65. C
66. C
67. C
68. A
69. A
70. A
71. A
72. C
73. C
74. B
75. C
76. C
77. B
78. B
79. A
80. C
81. C
82. C
83. C
84. A
85. B
86. B
87. D
88. D
89. B
90. C
91. C
92. D
93. C
94. C
95. A
96. D
97. D
98. C
99. A
100. C