

**SOF INTERNATIONAL
MATHEMATICS OLYMPIAD
2024-25**

Total Questions : 50 | Time : 1 hr.

Guidelines for the Candidate

- You will get additional ten minutes to fill up information about yourself on the OMR Sheet, before the start of the exam.
- Write your **Name, School Code, Class, Section, Roll No.** and **Mobile Number** clearly on the **OMR Sheet** and do not forget to sign it. We will share your marks / result and other information related to SOF exams on your mobile number.
- The Question Paper comprises four sections :
Section - 1: **Logical Reasoning** (15 Questions)
Section - 2 : **Mathematical Reasoning** (20 Questions) or **Applied Mathematics** (20 Questions)
Section - 3 : **Everyday Mathematics** (10 Questions)
Section - 4 : **Achievers Section** (5 Questions)
- Section-1, 3 and 4 are compulsory for all.** In Section-2 opt for Mathematical Reasoning OR Applied Mathematics and mark the same on the OMR Sheet.
Each question in Achievers Section carries 3 marks, whereas all other questions carry one mark each.
- All questions are compulsory. There is no negative marking. Use of calculator is not permitted.
- There is only ONE correct answer. Choose only ONE option for an answer.
- To mark your choice of answers by darkening the circles on the OMR Sheet, use **HB Pencil** or **Blue / Black ball point pen** only. E.g.
Q. 16: Navya purchased a hand bag for ₹ 345.50, a pair of shoes for ₹ 480.25 and a cap for ₹ 75.50. How much money did she spend in all?
A. ₹ 901.25 B. ₹ 785.50 C. ₹ 895.75 D. ₹ 920.25
As the correct answer is option A, you must darken the circle corresponding to option A on the OMR Sheet.
- Rough work should be done in the blank space provided in the booklet.
- Return the OMR Sheet to the invigilator at the end of the exam.
- Please fill in your personal details in the space provided before attempting the paper.

16. ● (B) (C) (D)

Name:

SOF Olympiad Roll No.: Contact No.:



LOGICAL REASONING

1. Select the correct water image of the given combination of letters and symbols.

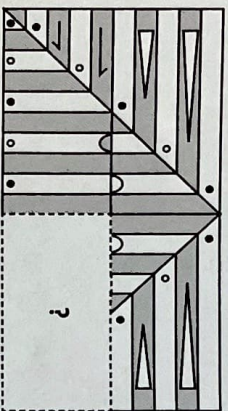
p r l φ r i # λ @ & + U D λ

- A. $b_l \phi l i \# \gamma @ \& + \cup D \gamma$
 B. $b_l \phi l i \# \gamma @ \& + \cup D \gamma$
 C. $b_l \phi l i \# \gamma @ \& + \cup D \gamma$
 D. $b_l \phi l i \# \gamma @ \& + \cup D \gamma$

2. In a row at a bus stop, A is 7th from the left end and B is 9th from the right end. They both interchange their positions. Now, A becomes 11th from the left end. How many people are there in the row?

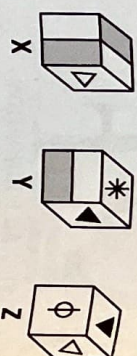
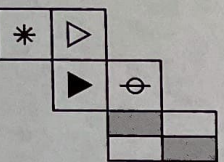
- A. 10
 B. 20
 C. 19
 D. 18

3. Which of the following options will complete the given figure pattern?



- A.
- B.
- C.
- D.

4. Select the box(es) that is/are similar to the box formed when the given sheet of paper is folded to form a cube.



- A. Only Y and Z
 B. X only
 C. Z only
 D. X, Y and Z

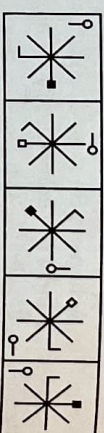
5. Study the given information carefully and answer the following question.

- (i) 'A + B' means 'A is the father of B'.
 (ii) 'A - B' means 'A is the mother of B'.
 (iii) 'A ÷ B' means 'A is the husband of B'.
 (iv) 'A x B' means 'A is the daughter of B'.
 How is H related to K in $J + K \div M \times P - H$?

- A. Brother
 B. Brother-in-law
 C. Sister-in-law
 D. Either B or C

6. Select a figure from the options which will continue the same series as established by the Problem Figures.

Problem Figures



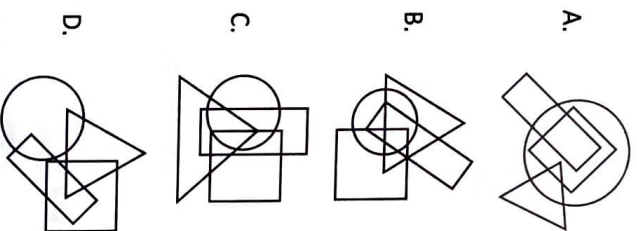
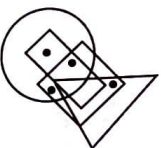
- A.
- B.
- C.
- D.

7. How many such composite numbers are there in the given sequence each of which is immediately followed by a prime number but not immediately preceded by an even prime number?

7 1 3 5 2 6 4 6 6 3 5 3 2 9 7 2 3 7 4 1

- A. None
 B. One
 C. Two
 D. More than two

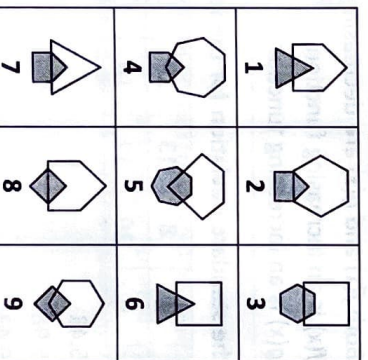
8. Which of the following options satisfies the same conditions of placement of the dots as in the given figure?



9. Point Q is in the East of point P, which is in the North of point S. Point V is in the South-West of point Q and East of point S. Point U is in the South of point R. Point T is in the South of point S. Point V is in the West of Point R, which is in the South of point Q. Point U is in which direction with respect to point P?

- A. South-East
B. North-East
C. West
D. North-West

10. Group the given figures into three classes on the basis of their identical properties using each figure only once.



- A. 1, 3, 9; 2, 6, 8; 4, 5, 7

- B. 1, 3, 9; 2, 4, 8; 5, 6, 7
C. 1, 4, 9; 2, 6, 8; 3, 5, 7
D. 1, 4, 9; 2, 3, 6; 5, 7, 8

11. In a certain code language, if 'cloud and rain' is written as 'ra as pa', 'wet in the rain' is written as 'pf no ra tu', 'wet cloud in sky' is written as 'tu de no as' and 'sky wet stars' is written as 'tu de le'. How will 'in' be coded in the same code language?

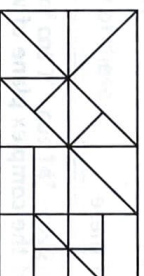
- A. tu
B. no
C. de
D. le

12. There is a certain relationship between the pair of terms on the either side of ::. Identify the relationship of the given pair and find the missing term.

SM : 10648 :: MJ : ?

- A. 49791
B. 29791
C. 25000
D. 42971

13. Count the number of triangles and squares formed respectively in the given figure.



- A. 20, 1
B. 18, 11
C. 22, 9
D. None of these

14. The given question consists of three statements followed of three conclusions numbered I, II and III. Read all the conclusions and find which of the given conclusion logically follows from the given statements, if all statements are to be true.

Statements :

- (i) All trucks are cars.
(ii) Some cars are aeroplanes.
(iii) All bikes are trucks.

Conclusions :

- (I) Some aeroplanes are trucks.
(II) Some cars are bikes.
(III) All bikes are cars.

- A. Only I and II follows
B. Only I and III follows
C. Only II and III follows
D. I, II and III follows

15. A word and number arrangement machine when given an input line of words and numbers, rearranges them following a particular rule in each step. The following is an illustration of input and steps of rearrangement.
- Input : 23 knock 45 19 on the 62 door
- Step I : 62 23 knock 45 19 on the door
- Step II : 62 door 23 knock 45 19 on the
- Step III : 62 door 45 23 knock 19 on the
- Step IV : 62 door 45 knock 23 19 on the

- Step V : 62 door 45 knock 23 on 19 the
- Step V is the last step of the given input. As per the rule followed in above steps, which of the following will be the step III for the following input?
- Input : 81 pink 93 blue 49 orange red 56
- 93 blue 81 orange pink 49 red 56
 - 93 blue 81 pink 49 orange red 56
 - 93 blue 81 orange 56 pink 49 red
 - 93 81 pink blue 49 orange red 56

MATHEMATICAL REASONING

16. Find the matrix A satisfying the matrix equation

$$\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix} A \begin{bmatrix} -3 & 2 \\ 5 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

- $\begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}$
- $\begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$
- $\begin{bmatrix} 4 & 3 \\ -1 & -1 \end{bmatrix}$
- None of these

17. The region of the complex plane of which $\left| \frac{z-a}{z+\bar{a}} \right| = 1$

($\text{Re}(a) \neq 0$), is

- x-axis
- y-axis
- The straight line $x = a$
- None of these

18. If $y = \ln \left(\frac{x}{a+bx} \right)^x$, then $x^3 \frac{d^2y}{dx^2}$ is equal to

- $\left(\frac{dy}{dx} + x \right)^2$
- $\left(\frac{dy}{dx} - y \right)^2$
- $\left(x \frac{dy}{dx} + y \right)^2$
- $\left(x \frac{dy}{dx} - y \right)^2$

19. Evaluate : $\lim_{x \rightarrow 0} \frac{(1 - \cos x \sqrt{\cos 2x})}{x^2}$

- $\frac{1}{2}$

20. The solution of the differential equation

$$\frac{dy}{dx} \cos^2 x = \tan x - y \text{ is}$$

- $y = \tan x - 1 + c e^{-\tan x}$, $\cos x \neq 0$
- $y = 1 + \tan^{-1} x$, $\cos x \neq 0$
- $y = e^{\tan^{-1} x} + 2$, $\cos x \neq 0$
- $y = 2e^{-2x} + e^x$, $\cos x \neq 0$

21. The number of different permutations of all the letters of the word 'PERMUTATION' such that any two consecutive letters in the arrangement are neither both vowels nor both identical is

- $63 \times 6! \times 5!$
- $57 \times 5! \times 5!$
- $33 \times 6! \times 5!$
- None of these

22. If $f(x) = \frac{x}{\sin x}$ and $g(x) = \frac{x}{\tan x}$, where $0 < x \leq 1$, then in this interval

- Both $f(x)$ and $g(x)$ are increasing functions.
- Both $f(x)$ and $g(x)$ are decreasing functions.
- $f(x)$ is an increasing function.
- $g(x)$ is an increasing function.

23. Find the standard deviation for the following data:

x_i	3	8	13	18	23
f_i	6	10	14	10	10

- 5.41
- 5.98
- 6.43
- 6.87

24. Evaluate : $\int \frac{e^{m \tan^{-1} x}}{(1+x^2)^{3/2}} dx$

- A. $\frac{e^{m \tan^{-1} x}}{(m^2+1)\sqrt{x^2+1}} + c$
 B. $\frac{e^{m \tan^{-1} x} (m+x)}{(m^2+1)\sqrt{x^2+1}} + c$
 C. $\frac{m+x}{(m^2+1)\sqrt{x^2+1}} + c$
 D. $\frac{e^{m \tan^{-1} x} (m+x)}{\sqrt{x^2-1}(m^2-1)} + c$

25. Number of geometric progressions containing 27, 8 and 12 as three of its terms is

- A. 0
 B. 1
 C. 2
 D. Infinite

26. The minimum value of $z = 3x + 5y$ subject to $x + 2y \geq 10, x + y \geq 6, 3x + y \geq 8, x, y \geq 0$, is

- A. 24
 B. 26
 C. 30
 D. 40

27. Three cards are drawn successively, without replacement from a pack of 52 well shuffled cards, then the probability that first two cards are kings and the third card drawn is an ace, is

- A. $\frac{1}{5525}$
 B. $\frac{2}{5525}$
 C. $\frac{2}{5527}$
 D. $\frac{1}{5527}$

28. A line L is perpendicular to the line $5x - y = 1$ and the area of the triangle formed by the line L and coordinate axes is 5. The equation of the line L is

- A. $x + 5y = 5$
 B. $x + 5y = \pm 5\sqrt{2}$

- C. $x - 5y = 5$
 D. $x - 5y = 5\sqrt{2}$

29. Let $f : R \rightarrow R$ where $f(x) = \frac{px^2 + 3x - 4}{p + 3x - 4x^2}$. If f is onto function, then $p \in$

- A. $[-1, 1]$
 B. $[-1, 7]$
 C. $R - [-1, 1]$
 D. None of these

30. Coefficient of x in the expansion of $(1 - 2x^3 + 3x^5) \times \left(1 + \frac{1}{x}\right)^8$ is

- A. 154
 B. 164
 C. 146
 D. 156

31. Domain of $\cos^{-1}[x]$ (where $[\cdot]$ denotes G.I.F.) is

- A. $[-1, 2]$
 B. $[-1, 2]$
 C. $[-1, 2]$
 D. None of these

32. The value of $\cos 7^\circ \cdot \cos 14^\circ \cdot \cos 28^\circ \cdot \cos 56^\circ$ is equal to

- A. $\frac{1}{2} \sin 68^\circ$
 B. $\frac{1}{2} \sin 83^\circ$
 C. $\frac{1}{8} \sin 68^\circ$
 D. $\frac{1}{16} \sin 68^\circ$

33. The points $A(1, 2, 3), B(-1, -2, -1)$ and $C(2, 3, 2)$ are three vertices of a parallelogram $ABCD$. Find the equation of CD .

- A. $\frac{x}{1} = \frac{y}{2} = \frac{z}{2}$
 B. $\frac{x+2}{1} = \frac{y+3}{2} = \frac{z-2}{2}$
 C. $\frac{x}{2} = \frac{y}{3} = \frac{z}{2}$
 D. $\frac{x-2}{1} = \frac{y-3}{2} = \frac{z-2}{2}$

34. The area bounded by the curve $x = 2 - y - y^2$ and y -axis is

- A. $\frac{3}{2}$ sq. units B. $\frac{5}{2}$ sq. units
C. $\frac{9}{2}$ sq. units D. None of these

35. Let $\vec{a}, \vec{b}, \vec{c}$ be vectors of equal magnitude such that the angle between $\vec{a}$ and $\vec{b}$ is α , $\vec{b}$ and $\vec{c}$ is β and

OR

APPLIED MATHEMATICS

16. Find the equation of the straight line trend from the following data.

Year	Sales ('000 units)
2010	125
2011	128
2012	133
2013	135
2014	140
2015	141
2016	143

- A. $135 + 12.42x$
B. $945 + 3.107x$
C. $135 + 3.107x$
D. $945 + 12.42x$

17. Find the present value of an annuity due of ₹ 11250 per year to continue for 5 years at 5% p.a. compound interest. $[(1.05)^{-5} = 0.784]$

- A. ₹ 52150
B. ₹ 51030
C. ₹ 52005
D. ₹ 50905

18. Mr. Mohit bought a car worth ₹ 16.95 lakhs. He made a down payment of ₹ 5 lakhs and took loan for the rest of amount from bank for 3 years. If bank charges 12% p.a. compounded monthly, then find EMI.

[Given $(1.01)^{36} = 1.43]$

- A. ₹ 35017
B. ₹ 36172
C. ₹ 35517
D. ₹ 39741

$\vec{c}$ and $\vec{a}$ is γ . Then, the minimum value of $\cos \alpha + \cos \beta + \cos \gamma$, is

- A. $\frac{1}{2}$
B. $-\frac{1}{2}$
C. $\frac{3}{2}$
D. $-\frac{3}{2}$

19. Let A and B be two sets. The $(A \cup B)' \cup (A' \cap B) =$

- A. A
B. A'
C. B'
D. None of these

20. For a distribution Karl Pearson's coefficient of skewness is 0.52, S.D = 15 and mean is 57.8. Find median.

- A. 55.2
B. 51.28
C. 54.15
D. 50

21. A machine is expected to have a useful life of 8 years and a final scrap value of ₹ 42000. If the annual depreciation of the machine is ₹ 7000, then find the original cost of the machine.

- A. ₹ 56000
B. ₹ 98000
C. ₹ 89000
D. ₹ 65000

22. If $2(x^2 + y^2) + 4\lambda x + \lambda^2 = 0$ represents a circle of meaningful radius, then the range of real values of λ is

- A. $(-\infty, 0)$
B. $(0, +\infty)$
C. R
D. None of these

23. If $\int \frac{x^{\frac{3}{2}} dx}{x^4 + x^2} = a \ln(1 + x^2) + c$, then $ab =$

- A. $-\frac{2}{3}$

B. $-\frac{3}{2}$

C. 1

D. $\frac{3}{2}$

24. Calculate Spearman's rank correlation coefficient between advertisement cost and sales from the following data.

Advertisement cost ('000' ₹)	42	67	62	92	83	75	25	97	36	77
Sales (Lakhs ₹)	45	53	58	85	62	68	60	93	51	82

- A. 0.71
B. 0.82
C. 0.76
D. 0.86

25. The cost of producing x widgets is given by the following cost function : $C(x) = 3x^2 + 100\sqrt{x} + 150$
Determine the marginal cost at $x = 100$ widgets.

- A. ₹ 310
B. ₹ 610
C. ₹ 305
D. ₹ 605

26. The first 12 letters of the English alphabet are to be written at random so that there are exactly 4 letters between A and B. The number of ways this can be done is

- A. $7 \times 10!$
B. $14 \times 10!$
C. $21 \times 10!$
D. None of these

27. How many minimum times must a man toss a fair coin so that the probability of having at least one head is more than 65%?

- A. 3 times
B. 2 times
C. 1 times
D. Can't be determined

28. The annual income of Mr. Omprakash Verma, who is a senior citizen (age 65 years) is ₹ 9,70,000 (excluding HRA). He contributes ₹ 50,000 as annual premium to LIC, invests ₹ 1,00,000 in NSCs and pays ₹ 20,000 as annual premium to medical claim policy. He also donates ₹ 25,000 to National Disaster Fund, eligible for 100% exemption and ₹ 10,000 to a charitable trust, eligible for 50% exemption. Calculate income tax payable by Mr. Verma, during the financial year as per the old tax regime.

Tax rates for senior citizens who are between 60 years and 80 years old. (FY 2021-22)

Annual Taxable Income	Tax Rates
(i) Up to ₹ 3,00,000	Nil
(ii) ₹ 3,00,001 to ₹ 5,00,000	5% of total income exceeding ₹ 3,00,000
(iii) ₹ 5,00,001 to ₹ 10,00,000	₹ 10,000 + 20% of total income exceeding ₹ 5,00,000
(iv) Above ₹ 10,00,000	₹ 1,10,000 + 30% of total income exceeding ₹ 10,00,000

An additional 4% Wealth, Health and Education cess will be applicable on the tax amount calculated as above.

- A. ₹ 54000
B. ₹ 56160
C. ₹ 58150
D. None of these

29. $Z = 4x_1 + 5x_2$, subject to $2x_1 + x_2 \geq 7$, $2x_1 + 3x_2 \leq 15$, $x_2 \leq 3$, $x_1, x_2 \geq 0$. The minimum value of Z occurs at

- A. (2, 3)
B. (3, 3)
C. (7.5, 0)
D. (3.5, 0)

30. Mean of a poisson distribution is 5.0625. Find its standard deviation.

- A. 2.25
B. 1.125
C. 22.5
D. 11.25

31. If $f(x) = xe^{x(1-x)}$, then $f'(x)$

- A. Increase on $\left(-\frac{1}{2}, 1\right)$
B. Decrease on R
C. Increase on R
D. Decrease on $\left(-\frac{1}{2}, 1\right)$

32. In which sample is so drawn that each and every unit in the population has an equal and independent chance of being included in the Sample is called

- A. Mixed Sampling
B. Purposive Sampling
C. Judgement Sampling
D. Simple Random Sampling

33. Let a_n be n^{th} term of the G.P. of positive numbers. Let $\sum_{n=1}^{100} a_{2n} = \alpha$ and $\sum_{n=1}^{100} a_{2n-1} = \beta$, such that $\alpha \neq \beta$, then the common ratio is

- A. $\sqrt{\frac{\beta}{\alpha}}$
 B. $\frac{\beta}{\alpha}$
 C. $\sqrt{\frac{\alpha}{\beta}}$
 D. $\frac{\alpha}{\beta}$

34. Mrs. Riya have set up a sinking fund in order to have ₹ 20,00,000 in 20 years for her son's higher education. What amount she has to set aside at the end of

every month into the fund paying 6% per annum compounded monthly? [Given : $(1.005)^{240} = 3.31$]

- A. ₹ 6125
 B. ₹ 5249
 C. ₹ 4329
 D. ₹ 4936

35. If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ a & b & -1 \end{bmatrix}$ and I is the unit matrix of order 3,

then $A^2 + 2A^4 + 4A^6$ is equal to

- A. $6I$
 B. $7A^7$
 C. $8I$
 D. $7A^8$

EVERYDAY MATHEMATICS

36. Fifteen persons, among whom are A and B, sit down at random at a round table. The probability that there are 4 persons between A and B is

- A. $\frac{9!}{14!}$
 B. $\frac{10!}{14!}$
 C. $\frac{9!}{15!}$
 D. None of these

37. $\frac{2}{5}$ of the voters promise to vote for P and the rest

promised to vote for Q. Of these, on the last day 15% of the voters went back on their promise to vote for P and 25% of voters went back on their promise to vote for Q and P lost by 2 votes. Then, the total number of voters is

- A. 100
 B. 110
 C. 90
 D. 95

38. A shopkeeper sells three varieties of perfumes and he has a large number of bottles of the same size of each variety in his stock. There are 5 places in a row in his showcase. The number of different ways of displaying the three varieties of perfumes in the showcase is

- A. 6
 B. 50

- C. 150
 D. None of these

39. A fruit seller buys some oranges at the rate of 4 for ₹ 10 and an equal number more at 5 for ₹ 10. He sells the whole lot at 9 for ₹ 20. What is his loss or gain percent?

- A. Loss, $1\frac{19}{81}\%$
 B. Gain, $1\frac{19}{81}\%$
 C. Loss, 2%
 D. No loss or no profit

40. Gas is being pumped into a spherical balloon at the rate of $30 \text{ cm}^3/\text{min}$. Then the rate at which the radius increases when it reaches the value 15 cm, is

- A. $\frac{1}{30\pi} \text{ cm/min}$
 B. $\frac{1}{15\pi} \text{ cm/min}$
 C. $\frac{1}{20} \text{ cm/min}$
 D. $\frac{1}{25} \text{ cm/min}$

41. An engineer undertook a project to build 15 km long road in 300 days and employed 45 men in the starting, after 100 days, he find that only 2.5 km of the road has been completed, how many more men need to employed so that work to be completed 50 days before?

42. Swati can row her boat at a speed of 5 km/hr in still water. If it takes her 1 hour more to row the boat 5.25 km upstream than to return downstream, then find the speed of the stream.
- A. 225
B. 200
C. 175
D. None of these

- A. 2 km/hr
B. 5 km/hr
C. 7 km/hr
D. 8 km/hr

43. Mr. AM, the magnanimous cashier at XYZ Ltd., while distributing salary, adds whatever money is needed to make the sum a multiple of 50. He adds ₹ 10 and ₹ 40 to A's and B's salary respectively and then he realises that the salaries of A, B and C are now in the ratio 4 : 5 : 7. The salary of C could be
- A. ₹ 2300
B. ₹ 2150

ACHIEVERS SECTION

46. Read the given statements carefully and select the correct option.

Statement-I : Given that $A = \begin{bmatrix} 1 & 2 & 1 \\ 0 & 1 & -1 \\ 3 & -1 & 1 \end{bmatrix}$. If

$A^3 + kA^2 + lA + mI = 0$, then the value of $k + l + m$ is 5.

Statement-II : If $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$, then

$|\text{adj}(\text{adj } A)| + |\text{adj } A|$ is 3.

- A. Statement-I is true but Statement-II is false.
B. Statement-I is false but Statement-II is true.
C. Both Statement-I and Statement-II are true.
D. Both Statement-I and Statement-II are false.

47. Solve the following and select the correct option.

(i) If $f(x) = x^3 + 4x^2 + \lambda x + 1$, is a monotonically decreasing function of x in the largest possible interval $\left(-2, -\frac{2}{3}\right)$, then $\lambda =$

(ii) If the volume of a right circular cone is given, then its curved surface area is minimum

- C. ₹ 1800
D. ₹ 2100

44. The batting average of 40 innings of a cricket player is 50 runs. His highest score exceeds his lowest score by 172 runs. If these two innings are excluded, then the average of the remaining 38 innings is 48. His highest score was

- A. 172
B. 173
C. 174
D. 176

45. The inventor of the chessboard suggested a reward of one grain of wheat for the first square; 2 grains for the second; 4 grains for the third, and so on, doubling the number of grains for subsequent squares. How many grains would have to be given to the inventor?

- A. $2^{32} + 1$
B. $2^{64} - 1$
C. $2^{32} - 1$
D. $2^{128} + 1$

when the ratio of its height to its base radius is

- (i) 1 : 1
(ii) $\sqrt{3} : 2$
A. 1
B. 2
C. $-\frac{1}{2}$
D. 4

48. Which of the following statements is incorrect?

A. The order and degree of the differential equation

$$\rho = \frac{1 + \left(\frac{dy}{dx}\right)^2}{\frac{d^2y}{dx^2}} \quad \text{are 2 and 2 respectively.}$$

B. The differential equation $\frac{dy}{dx} = \frac{\sqrt{1-y^2}}{y}$ determines a family of circle with radius 1 and centre on the x-axis.

C. If $\frac{dy}{dx} = (e^y - x)^{-1}$, where $y(0) = 0$, then y is $\log_e(x + \sqrt{1+x^2})$.

D. None of these

49. A coin is tossed until a head appears or the tail appears 4 times in succession. Find the probability distribution of the number of tosses.

A.

X	1	2	3	4
P(X)	1/2	1/3	1/3	1/16

B.

X	1	2	3	4
P(X)	1/2	1/4	1/8	1/16

C.

X	1	2	3	4
P(X)	1/4	1/3	1/4	1/8

D.

X	1	2	3	4
P(X)	1/2	1/4	1/8	1/8

50. Select the correct option.

(i) The value of the integral $\int (x^2 + x)(x^{-8} + 2x^{-9})^{1/10} dx$ is

(iii) $\int (1 + x - x^{-1})e^{x+x^{-1}} dx =$

(ii)

A. $\frac{5}{11}(x^2 + 2x)^{11/10} + C$ $xe^{x+x^{-1}} + C$

B. $\frac{5}{6}(x+1)^{11/10} + C$ $e^{x+x^{-1}} + C$

C. $\frac{6}{7}(x+1)^{11/10} + C$ $xe^{x-x^{-1}} + C$

D. $\frac{7}{8}(x^2 + 1)^{11/10} + C$ $x^2e^{x-x^{-1}} + C$

SPACE FOR ROUGH WORK