

SECTION I: This section contains 25 questions

Instructions to answer question 1 and 2: Complete the following sentences by choosing the appropriate word from the options given below.

1. A life-long vegetarian, Deepika _____ when she learned that the sauce she'd just eaten was made with mutton broth.
 - a. wavered
 - b. blanched
 - c. coalesced
 - d. stagnated
2. In inclement weather, our barn is a _____ for many animals.
 - a. Inconvertible
 - b. surreptitious
 - c. haven
 - d. subjugate

Instruction to answer question 3, 4 and 5: The sentences below have words that are missing. Choose the best option from those given below to complete the sentences.

3. Casting a _____ glance over his shoulder, the _____ slipped out the main prison gate to be swallowed up in the British fog. A _____ of escapes from supposedly secure prisons embarrassed the hapless wardens.
 - a. furtive, felon, plethora
 - b. angry, cop, multitude
 - c. quizzical, thief, excess
 - d. secret, damsel, cornucopia
4. Public opinion has an important place in a democracy. The public, often _____, is susceptible to a wide variety of influences. The most _____ of these is the mass media. The communications media—the press, radio, and television—have a _____ position in initiating, influencing, and shaping public opinion.
 - a. lethargic, prevalent, paramount
 - b. listless, tiresome, hysterical
 - c. antagonistic, indifferent, draconian
 - d. witty, comedic, risible
5. The average newspaper office receives many times the amount of foreign news than it has space to print. The editors must include or _____ items as they see fit. It is _____ that their ideas of what the readers want to know, or should know, are decisive. Because the newspaper owners do not want to endanger a _____ business, there is this constant tussle between personal opinion and the desire not to offend too many readers or advertisers.
 - a. throw, unavoidable, ameliorative
 - b. jettison, inevitable, lucrative
 - c. discard, profitable, inept
 - d. absorb, certain, hostile

Instructions to answer question 6 and 7: Select the meaning of idioms or phrases underlined from the options.

6. Get some rest. You look a bit off colour.
 - a. colourless

- b. looking sad
 - c. looking ill
 - d. confused
7. Jaqueline got her fingers burnt playing on the stock market.
- a. suffer injury
 - b. suffer losses
 - c. losing documents in fire
 - d. underwent minor burns

Instructions to answer question 8, 9 and 10: Choose the alternative so that the underlined part of the sentence is rendered correct.

8. Two disabled children, one with crutches and the other one with a wheelchair, enters the class on Monday.
- a. the other one with a wheelchair, enters
 - b. the other one a wheelchair, enter
 - c. the other with a wheelchair, enters
 - d. the other with a wheelchair, enter
9. Once there is decent mobile connectivity, expected on the next few month, UPI payments will also be made available, improving ease of payments, officials say.
- a. there is decent mobile connectivity, expected on the next few month
 - b. there is decent mobile connectivity, expected in the next few months
 - c. there is decent mobile connectivity, expected at the next few months
 - d. there are decent mobile connectivity, expected in the next few month
10. Along with Kibithoo, the adjacent village of Kaho and Meshai, all in the Anjaw district, has together been allotted ₹9.72 crore for infrastructure development, revenue generation, and human resource development.
- a. the adjacent village of Kaho and Meshai, all in the Anjaw district, has
 - b. the adjacent village of Kaho and Meshai, all in the Anjaw district, have
 - c. the adjacent villages of Kaho and Meshai, all in the Anjaw district, have
 - d. the adjacent villages of Kaho and Meshai, all in the Anjaw district, has
11. The paragraph given below has a sentence missing which is indicated by a blank. From the choices given below the paragraph, choose the sentence that seems most logically appropriate to complete the paragraph.

The democratic political process in India is broken. It is not just that the institutional machinery has been captured, but that it is becoming impossible to alter the balance of power on any issue to chart a new way forward. At its heart, the democratic political process is not about regime change or “resistance”. The purpose of democratic politics is to facilitate constructive collaboration, of which capturing power and regime change is one part. Seen thus, democratic politics is about building consensus in favour of certain paths and providing platforms for collective action.

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- a. But all traditional sites of consensus-building — public discourse, civil society, and political parties — have evolved to structurally impede dialectical cooperation.
 - b. First, many institutional news media have lost credibility due to which they are unable to establish a baseline of facts or exercise narrative control.
 - c. This tilts the balance of power heavily towards decision-makers for party tickets within the party.

- d. On the other hand, the dysfunction in our information ecosystem has powered the rise of unserious individuals to positions of influence.
12. One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.
- a. The new contract prohibits the transportation union from striking.
 - b. The new contract forbids the transportation union to strike.
 - c. The new contract forbids a strike by the transportation union.
 - d. The new contract prohibits the transportation union to strike.
13. One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.
- a. As Jane was riding in the sports car, the world whizzed by rapidly.
 - b. After declining for months, Jean tried a new tactic to increase her ROI (Return on Investment).
 - c. Walking toward the forest, I watched as the sun began to set.
 - d. Even after he wrote the paper, the thesis remained unsupported.
14. One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.
- a. As she watched the sailboat, the wind suddenly got up, filling the sails.
 - b. Before publishing her recipe book, Liz personally tested them all.
 - c. Before publishing her recipe book, Liz personally tested all the recipes.
 - d. Before publishing her recipes, Liz personally tested them all.
15. It took her a while to _____, but now she is confident and we feel that we can count on her to manage her client portfolio effectively.
- a. learn the curve
 - b. learn the ropes
 - c. lean in the air
 - d. learn the book
16. Everyone hopes to _____ when they start a new job.
- a. get the ball of the foot rolling
 - b. get down to the foot
 - c. show the best foot
 - d. get off on the right foot
17. I told the new manager not to _____ before she gets to know her team.
- a. shake the boat
 - b. rock the boat
 - c. anchor the boat
 - d. tie the boat
18. Companies benefit from staff who _____
- a. go the extra mile.
 - b. ride an extra mile.
 - c. go extra kilometres.
 - d. ride extra miles.
19. Choose the most logical order of sentences among the given choices to construct a coherent paragraph.
- A) Both opposition to it and support for it have drowned a key aspect of this case.
 - B) This law has been challenged before the Supreme Court on the grounds that it violates Article 14 of the Constitution.

- C) This is an opportunity for the Court to fundamentally reshape not just the citizenship law, but also the way in which it judges alleged violations of the constitutional guarantee of equality.
- D) The rules of the Citizenship (Amendment) Act (CAA), 2019, were recently notified.

a. DCBA
b. CDBA
c. CDAB
d. DBAC

20. Choose the most logical order of sentences among the given choices to construct a coherent paragraph.

- A) It may be too early to see India's UNGA vote as a reversal of its earlier position and a reversion to its original position in the conflict, where it has traditionally called for peace.
- B) Two months after Israel's bombardment of Gaza residents in retaliation for the October 7 terror attacks by Hamas began, India joined its voice to the global call to stop the bombing, voting in favour of a resolution at the UN General Assembly (UNGA) along with 152 other nations.
- C) Much will depend on the role India chooses for itself in ensuring the ceasefire is effected and holds, given that Israel has already rejected the UNGA resolution.
- D) Having proven its credentials as a friend to Israel following the terror attacks, as well as the odium of enabling the civilian deaths, the Modi government must be more vocal in helping the Netanyahu government out of the strategic cul de sac it has bombarded its way into, one which could cause regional instability and insecurity for decades.

a. ABCD
b. BADC
c. BACD
d. BCAD

Instructions to answer questions 21, 22, 23, 24 and 25: Read the passage given below and answer the questions that follow.

This passage is adapted from Virginia Woolf, *Three Guineas*. Here, Woolf considers the situation of women in English society.

Close at hand is a bridge over the River Thames, an admirable vantage ground for us to make a survey. The river flows beneath; barges pass, laden with timber, bursting with corn; there on one side are the domes and spires of the city; on the other, Westminster and the Houses of Parliament. It is a place to stand on by the hour, dreaming. But not now. Now we are pressed for time. Now we are here to consider facts; now we must fix our eyes upon the procession—the procession of the sons of educated men.

There they go, our brothers who have been educated at public schools and universities, mounting those steps, passing in and out of those doors, ascending those pulpits, preaching, teaching, administering justice, practising medicine, transacting business, making money. It is a solemn sight always—a procession, like a caravanserai crossing a desert... But now, for the past twenty years or so, it is no longer a sight merely, a photograph, or fresco scrawled upon the walls of time, at which we can look with merely an esthetic appreciation. For there, trapesing along at the tail end of the procession, we go ourselves. And that makes a difference.

We who have looked so long at the pageant in books, or from a curtained window watched educated men leaving the house at about nine-thirty to go to an office, returning to the house at about six-thirty from an office, need look passively no longer. We too can leave the house, can mount those steps, pass in and out of those doors, ... make money, administer justice... We who now agitate these humble

pens may in another century or two speak from a pulpit. Nobody will dare contradict us then; we shall be the mouthpieces of the divine spirit—a solemn thought, is it not? Who can say whether, as time goes on, we may not dress in military uniform, with gold lace on our breasts, swords at our sides, and something like the old family coal-scuttle on our heads, save that that venerable object was never decorated with plumes of white horsehair. You laugh—indeed the shadow of the private house still makes those dresses look a little queer. We have worn private clothes so long...But we have not come here to laugh, or to talk of fashions—men’s and women’s.

We are here, on the bridge, to ask ourselves certain questions. And they are very important questions; and we have very little time in which to answer them. The questions that we have to ask and to answer about that procession during this moment of transition are so important that they may well change the lives of all men and women for ever. For we have to ask ourselves, here and now, do we wish to join that procession, or don’t we? On what terms shall we join that procession? Above all, where is it leading us, the procession of educated men?

The moment is short; it may last five years; ten years, or perhaps only a matter of a few months longer.... But, you will object, you have no time to think; you have your battles to fight, your rent to pay, your bazaars to organize. That excuse shall not serve you, Madam. As you know from your own experience, and there are facts that prove it, the daughters of educated men have always done their thinking from hand to mouth; not under green lamps at study tables in the cloisters of secluded colleges. They have thought while they stirred the pot, while they rocked the cradle. It was thus that they won us the right to our brand-new sixpence.

It falls to us now to go on thinking; how are we to spend that sixpence? Think we must. Let us think in offices; in omnibuses; while we are standing in the crowd watching Coronations and Lord Mayor’s Shows; let us think . . . in the gallery of the House of Commons; in the Law Courts; let us think at baptisms and marriages and funerals. Let us never cease from thinking—what is this “civilization” in which we find ourselves? What are these ceremonies and why should we take part in them? What are these professions and why should we make money out of them? Where in short is it leading us, the procession of the sons of educated men?

21. The main purpose of the passage is to
 - a. emphasize the value of a tradition.
 - b. stress the urgency of an issue.
 - c. highlight the severity of social divisions.
 - d. question the feasibility of an undertaking.
22. The central claim of the passage is that
 - a. educated women face a decision about how to engage with existing institutions.
 - b. women can have positions of influence in English society only if they give up some of their traditional roles.
 - c. the male monopoly on power in English society has had grave and continuing effects.
 - d. the entry of educated women into positions of power traditionally held by men will transform those positions.
23. Woolf uses the word “we” throughout the passage mainly to
 - a. reflect the growing friendliness among a group of people.
 - b. advance the need for candor among a group of people.
 - c. establish a sense of solidarity among a group of people.
 - d. reinforce the need for respect among a group of people.
24. According to the passage, Woolf chooses the setting of the bridge because it
 - a. is conducive to a mood of fanciful reflection.

- b. provides a good view of the procession of the sons of educated men.
 - c. is within sight of historic episodes to which she alludes.
 - d. is symbolic of the legacy of past and present sons of educated men.
25. Woolf indicates that the procession she describes in the passage
- a. has come to have more practical influence in recent years.
 - b. has become a celebrated feature of English public life.
 - c. includes all of the richest and most powerful men in England.
 - d. has become less exclusionary in its membership in recent years.

SECTION II: This section contains 25 questions.

Instructions to answer question 26 and 27: In the question below is given a statement followed by three arguments – Number I, II and III. You have to consider the statement and the following arguments and decide which of these arguments is strong in the statement.

26. Should there be a complete ban on celebration of various days in college?

Arguments:

- I. No, there is nothing wrong in celebrating the days and enjoying once in a while
 - II. Yes, children are giving more importance to such celebration than the studies
 - III. No, this type of celebration gives opportunity for children to express their feelings.
- a. I and II are strong
 - b. II and III are strong
 - c. Only III is strong
 - d. Only II is strong

27. Should the salary and perquisite of public sector undertaking employees be made equivalent to those in the private sector?

Arguments:

- I. Yes, this will help the public sector undertaking to attract and retain competent workforce.
 - II. No, public sector undertaken cannot afford to pay salaries to the level of private sector.
 - III. Yes, otherwise the public sector undertaking will not be able to compete with the private sector organizations.
- a. Only III is strong
 - b. Only I is strong
 - c. Only II is strong
 - d. I and III are strong

28. Analyse the given information and answer the following questions: In a certain code language

- i. 'given time simple plan' was written as '@E4 &N4 %N5 #E6'
- ii. 'tired solution plant great' was written as '#N8 @D5 %T5 &T5'
- iii. 'sick point good turn' was written as '#K4 %D4 @N4 &T5'
- iv. 'garden sister phone team' was written as '&E5 #R6 %N6 @M4'

What will be the code for 'translate'?

- a. #E8
- b. @E9
- c. @E8
- d. #T9

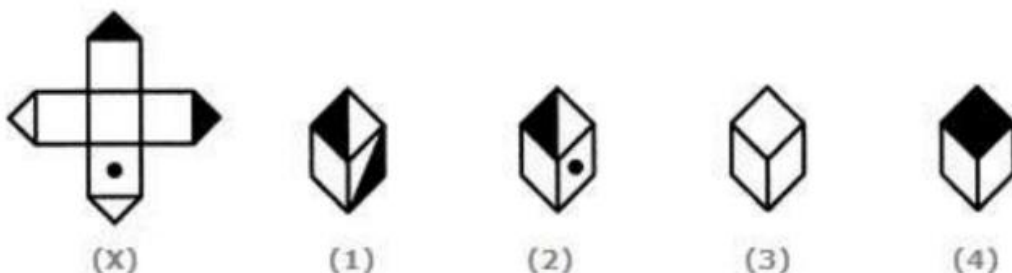
29. Arrange the words given below in a meaningful sequence

- i. Caste
 - ii. Family
 - iii. Newly married couple
 - iv. Clan
 - v. Species
- a. ii, iii, i, iv, v
 - b. iii, ii, i, iv, v
 - c. i, ii, iii, iv, v
 - d. v, iii, iv, i, ii

Instruction to answer the questions 30 and 31: Read the information provided below and answer the questions that follow.

Ten people are sitting in two parallel rows containing five people each, in such a way that there is equal distance between adjacent persons. In row 1, J, K, L, M and N are seated (not necessarily in the same order) and all of them are facing south. In row 2, V, W, X, Y and Z are seated (not necessarily in the same order) and all of them are facing north. Therefore, in the given seating arrangement, each member seated in a row faces another member of the other row. Z sits third to the right of W. V sits second to the left of Z. The persons facing V sits to the immediate right of K. Only one person sits between K and M. J is not an immediate neighbor of K. Only two people sit between J and L. Neither K nor J faces Y.

30. Who amongst the following is facing X?
- a. K
 - b. L
 - c. M
 - d. J
31. Which of the following statements is true regarding M?
- a. M faces one of the immediate neighbours of X
 - b. K is one of the immediate neighbours of M
 - c. L sits to the immediate right of M
 - d. None of the given statements is true
32. Choose the box that is similar to the box formed from the given sheet of paper (X).



- a. 1 and 2 only
 - b. 2 and 4 only
 - c. 2 and 3 only
 - d. 1 and 4 only
33. In a certain code, the symbol for 0 is # and for 1 is =. There is no symbol for rest of the numbers.

Numbers greater than 1 are needed to be written using the two given symbols. Left shifting of 1 doubles its value each time. Study the following example.

0 is written as #

1 is written as =

2 is written as =#

3 is written as ==

4 is written as =## and so on

Which of the following number will be represented by = # # # =?

- a. 25
 - b. 17
 - c. 29
 - d. 31
34. Six friends are sitting in a row and all of them are facing north. Names of all the friends are Mridul, Ram, Ragini, Rupa, Pankaj and Swarup not necessarily in the same order they are sitting. Ram is at one of the extreme ends. There are two persons sitting between Mridul and Swarup. Between Pankaj and Ragini, there is only one person. Rupa is second to the left of Mridul. Mridul is right of Ragini. Who sits third to the right of Rupa?
- a. Ragini
 - b. Swarup
 - c. Pankaj
 - d. Mridul
35. In the question below a statement is provided followed by two conclusions numbered I and II. Read the statement and conclusions and decide which of the conclusions logically follows from the given statement.
- Statement: The Team Manager humiliated Varun in front of his colleagues on a Monday morning.
- Conclusion I: The Team Manager did not like Varun
- Conclusion II: Varun was not as popular as his other colleagues
- a. Only Conclusion I is true
 - b. Only Conclusion II is true
 - c. Both Conclusion I and II are true
 - d. Neither Conclusion I nor II is true
36. If 'CARPET' is coded as 'TCEAPER'; then the code for 'NATIONAL' would be
- a. LNOINTAA
 - b. LNAANTOI
 - c. LNOITAN
 - d. NLATNOIA
37. In the question below a statement is provided followed by two conclusions numbered I and II. Read the statement and conclusions and decide which of the conclusions logically follows from the given statement.
- Statement: Population increase coupled with depleting resources is going to be the scenario of many developing countries in days to come.
- Conclusions I: The population of developing countries will not continue to increase in future.
- Conclusions II: It will be very difficult for the governments of developing countries to provide its people decent quality of life.
- a. Only conclusion I follows
 - b. Only conclusion II follows
 - c. Either I or II follows

d. Neither I nor II follows

38. Choose the box that is similar to the box formed from the given sheet of paper (X).



- a. 1 and 4 only
- b. 3 and 4 only
- c. 1 and 2 only
- d. 2 and 3 only

39. Arrange the given words in meaningful sequence and choose the correct sequence from the given alternatives.

- i. Lungs
- ii. Nostrils
- iii. Windpipe
- iv. Blood

- a. 1,2,3,4
- b. 4,3,2,1
- c. 2,3,1,4
- d. 1,3,4,2

40. Arrange the given words in meaningful sequence and choose the correct sequence from the given alternatives.

- i. Honey
- ii. Flower
- iii. Bee
- iv. Wax

- a. 2, 1, 4, 3
- b. 1, 3, 4, 2
- c. 2, 3, 1, 4
- d. 4, 3, 2, 1

41. In this series, you will be looking at both the letter pattern and the number pattern. Fill the blank in the middle of the series or the end of the series.

SCD, TEF, UGH, _____, WKL

- a. CMN
- b. UJI
- c. VIJ
- d. IJT

42. Find out the?

12, 13, 25, 38, ?, 101, 164

- a. 63
- b. 50
- c. 71
- d. 51

43. In the question below a statement is provided followed by two conclusions numbered I and II. Read the statement and conclusions and decide which of the conclusions logically follows from the given statement. Any of the above two conclusions can happen.

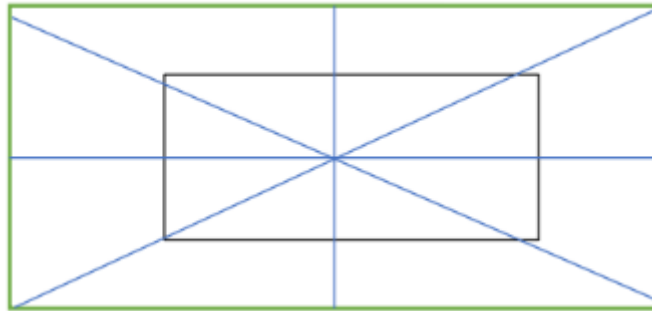
Statement: Quality comes with a price. India is spending a lot for education.

Conclusion I: Soon improvement in the quality of education in India will happen.

Conclusion II: Only funding can improve the quality of education.

- a. Only conclusion I is valid.
 - b. Only conclusion II is valid
 - c. Both conclusion I and II is valid
 - d. Neither Conclusion I and Conclusion II is valid.
44. Today is Sunday, what will be the day after 53 days?
- a. Monday
 - b. Friday
 - c. Thursday
 - d. Sunday
45. In a certain code, HARYANA is written as 8197151, how is DELHI written in that code?
- a. 35489.
 - b. 43598
 - c. 45389
 - d. 54389
46. Select the option in which the words share the same relationship as that shared by the given pair of words: Helmet: Head
- a. Shirt: Hanger
 - b. Shoe: Shoe rack
 - c. Gloves: Hands
 - d. Water: Bottle
47. Mishra family is very famous for their home business of sweets. The owner of Mishra sweet's is Govind Mishra. He has two sons. Their name are Shyam Mishra and Ram Mishra. Shyam is married to Sheela. Ranjan is father-in-law of Shyam and Snigdha is sister of Sheela. Snigdha's mother's name is Sushila. Santosh is nephew of Ram. Ram's mother is Sita..
How is Snigdha related to Santosh?
- a. Niece
 - b. Aunt
 - c. Mother
 - d. Sister
48. In the question below is given a statement followed by two assumptions – Numbered I and II. You have to consider the statement and the following assumptions and decide which of these assumptions is implicit in the statement.
- Statement: "You are hereby appointed as a programmer with a probation period of one year and your performance will be reviewed at the end of the period for confirmation." - A line in an appointment letter.
- Assumption I: The performance of an individual generally is not known at the time of appointment offer.
- Assumption II: Generally, an individual tries to prove his worth in the probation period.
- a. Only assumption I is implicit
 - b. Only assumption II is implicit
 - c. Neither I nor II is implicit
 - d. Both I and II are implicit

49. Seema is going Northwards. She turns right, move some distance and again turns to her right. After moving some distance, she turns to her left, goes forward and again turns to her left. In, in which direction now is Seema going?
- North
 - South-West
 - South
 - West
50. How many straight lines are there in the figure below?



- 10
- 12
- 13
- 11

SECTION III: This section contains 50 questions.

51. In a batch of 40 students, 26 take Maths, 18 take Biology and 8 take neither of the two. How many takes both Maths and Biology?
- 10
 - 11
 - 12
 - 14
52. If X , Y and Z are three sets such that $X \cap Y = X \cap Z$ and $X \cup Y = X \cup Z$, the
- $X = Z$
 - $Y = Z$
 - $X \cap Y = \emptyset$
 - $X = Y$
53. Which function is an example if a one-to-one function?
- $f(x) = x^2$
 - $f(x) = x + 1$
 - $f(x) = |x|$
 - $f(x) = x^3$
54. The graph of the function $y = g(x)$ is symmetrical about the line $x = 2$, then
- $g(x) = -g(-x)$
 - $g(2 + x) = g(2 - x)$
 - $g(x) = g(-x)$
 - $g(x + 2) = g(x - 2)$
55. Domain of function $f(x) = \sin^{-1} 5x$ is

a. $-\frac{1}{5}, \frac{1}{5}$

b. $\frac{1}{5}, -\frac{1}{5}$

c. R

d. $0, \frac{1}{5}$

56. If $x = \frac{2\sqrt{6}}{\sqrt{3}+\sqrt{2}}$, then the value of $\frac{x+\sqrt{2}}{x-\sqrt{2}} + \frac{x+\sqrt{3}}{x-\sqrt{3}}$ is

a. $\sqrt{2}$

b. $\sqrt{3}$

c. 6

d. 2

57. The ratio of two numbers 3: 4 and their LCM is 120. The sum of numbers is

a. 35

b. 70

c. 140

d. 105

58. What is the sum of the first 10 odd natural numbers?

a. 50

b. 100

c. 55

d. 110

59. Which of the following numbers will completely divide $7^{10} + 7^{11} + 7^{12} + 7^{13}$?

a. 14

b. 6

c. 21

d. Not Divisible

60. The H.C.F of two polynomials is $(x - 7)$ and their LCM is $x^3 - 10x^2 + 11x + 70$. If one of the polynomials is $x^2 - 5x - 14$, find the other.

a. $x^2 - 12x + 35$

b. $x^2 - 8x + 35$

c. $x^2 - 14x + 45$

d. $x^5 + 12x - 16$

61. The zeros of the quadratic polynomial $x^2 + kx + k$, where $k \neq 0$

a. both cannot be positive

b. both cannot be negative

- c. are always unequal
- d. are always equal

62. Find the number of real values of y for which the equality $|3y^2 + 12y + 6| = 5y + 16$ holds good.

- a. 1
- b. 2
- c. 3
- d. 4

63. If the roots of the equation $8x^3 - 14x^2 + 7x - 1 = 0$ are in GP, then find the roots.

- a. $1, \frac{1}{2}, \frac{1}{4}$
- b. $1, \frac{1}{3}, \frac{1}{9}$
- c. $1, \frac{1}{4}, \frac{1}{16}$
- d. $1, \frac{1}{2}, \frac{1}{3}$

64. The equation of the plane through (3, -6, 9) and perpendicular to $y - z$ axis is

- a. $4y + 7z = 0$
- b. $y + 6 = 0$
- c. $y + 9 = 0$
- d. $7y + 4z = 0$

65. Which of the following plane passing through the points (a, 0, 0), (0, b, 0), (0, 0, c)

- a. $ax + by + cz = 0$
- b. $ax + by + cz = 1$
- c. $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$
- d. $ax - by - cz = 0$

66. Consider the lines $L_1 = \frac{x+1}{3} = \frac{y+2}{1} = \frac{z+1}{2}$ and $L_2 = \frac{x-2}{1} = \frac{y+2}{2} = \frac{z-3}{3}$. The shortest distance between L_1 and L_2 is

- a. 0
- b. $\frac{17}{\sqrt{3}}$
- c. $\frac{41}{5\sqrt{3}}$
- d. $\frac{17}{5\sqrt{3}}$

67. A point P on the line $3x + 5y = 15$ is equidistant from the coordinate axes can lie in

- a. Quadrant I
- b. Quadrant I and II
- c. Quadrant I, II and III

d. Quadrant I, II and IV

68. The base area of a cylinder is 154cm^2 and height is 5cm. Find the volume of a cylinder.

a. 770

b. 750

c. 700

d. 780

69. If the foot of the perpendicular drawn from the point $(1, 0, 3)$ on a line passing through

$(\alpha, 7, 1)$ is $\left(\frac{5}{3}, \frac{7}{3}, \frac{17}{3}\right)$, then the value of α is

a. 2

b. 3

c. 5

d. 4

70. If the line, $\frac{x-3}{1} = \frac{y+2}{-1} = \frac{z+\lambda}{2}$ lie in the plane, $2x - 4y + 3z =$

2, then the shortest distance between this line and the $\frac{x-1}{1} = \frac{y}{9} = \frac{z}{4}$ is

a. 2

b. 1

c. 0

d. 3

71. Let two points be $A(1, -1)$ and $B(0, 2)$. If a point $P(x', y')$ be such that the area of triangle $PAB = 5$ square units and it lies on the line, $3x + y - 4\lambda = 0$, then the value of λ is

a. 4

b. -3

c. -4

d. 3

72. Find the value of v if the points $(5, 1)$, $(-2, -3)$ and $(8, 2v)$ are collinear.

a. $\frac{19}{15}$

b. $\frac{19}{14}$

c. $\frac{15}{19}$

d. $\frac{14}{19}$

73. Find the area of a triangle whose vertices are $(1, -1)$, $(-4, 6)$ and $(-3, -5)$

a. 24

b. 25

c. 27

d. 23

74. If $x = \operatorname{cosec} \vartheta - \cot \vartheta$ and $y = (\operatorname{cosec} \vartheta + \cot \vartheta)^{-1}$ then which one of the following is correct?

a. $p - q = 1$

b. $p = q$

c. $p + q = 1$

d. $p + q = 0$

75. Evaluate $\sin^2 5 + \sin^2 10 + \sin^2 15 + \dots + \sin^2 85 + \sin^2 90$

a. 8.5

b. 8

c. 9.5

d. 9

76. The expression $\frac{\tan A}{1 - \cot A} + \frac{\cot A}{1 - \tan A}$ can be written as

a. $\sec A + \operatorname{cosec} A$

b. $\sin A \cos A + 1$

c. $\sec A \operatorname{cosec} A + 1$

d. $\tan A + \cot A$

77. Find the maximum value of $\sin x + \cos x$.

a. $\sqrt{2}$

b. $\frac{\sqrt{3}}{2}$

c. 2

d. 3

78. The period of $4 \cos 3x + y$ is

a. $\frac{\pi}{3}$

b. $\frac{2\pi}{3}$

c. $\frac{\pi}{2}$

d. $\frac{\pi}{4}$

79. Each side of an equilateral triangle subtends an angle of 60° at the top of a tower 'x' m high located at the centre of the triangle. If 'y' is the length of each side of the triangle, then: -

a. $3y^2 = 2x^2$

b. $y^2 = 3x^2$

c. $2y^2 = 3x^2$

d. $3y^2 = x^2$

80. The radius of a circular wheel is 1.75 m. The number of revolutions that it will make in covering 11 km is:

a. 500

b. 10000

c. 100

d. 1000

81. The length of a rectangle is increased by 60%. By what percent would the width be decreased so as to maintain the same area?

a. $37\frac{1}{2}\%$

b. 60 %

c. 75 %

d. 120 %

82. The ratio between the length and width of the rectangular field is 3:2. If only length is increased by 5 m. The new area of the field is 2600 m². What is the width of the rectangular field?

a. 60 m

b. 50 m

c. 40 m

d. 65 m

83. The radius of a cylinder is 10 cm and height is 4 cm. The number of centimetres that may be added either to the radius or to the height to get the same increase in the volume of the cylinder is:

a. 5

b. 4

c. 25

d. 16

84. A spherical ball of lead 6 cm in radius is melted and recast into three spherical balls. The radii of two of these balls are 3 cm and 4 cm. What is the radius of the third sphere?

a. 6 cm

b. 6.5 cm

c. 5.5 m

d. 5 cm

85. Which of the following is a measure of central tendency?

a. Standard Deviation

b. Variance

c. Median

d. Range

86. Three mangoes and three apples are in a box. If two fruits are chosen at random, the probability that one is a mango and the other is an apple is

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

b. $\frac{3}{5}$

c. $\frac{1}{3}$

d. $\frac{4}{5}$

87. For a standard normal probability distribution, the mean (μ) and the standard deviation (s) are:

a. $\mu = 0, s = 1$

b. $\mu = 100, s = 10$

c. $\mu = 1, s = 1$

d. $\mu = 1, s = 0$

88. If the mean and variance of a binomial distribution are 5 and 4 respectively, then the sample size of the data of n in:

- a. 25
- b. 10
- c. 15
- d. 20

89. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?

- a. 20300
- b. 2400
- c. 25200
- d. 2500

90. Let (x_0, y_0) be the solutions of the following equations $(2x)^{\ln 2} = (3y)^{\ln 3}, 3^{\ln x} = 2^{\ln y}$, then x_0 is

- a. $\frac{1}{6}$
- b. $\frac{1}{3}$
- c. 6
- d. $\frac{1}{2}$

91. If $\log_3 x + \log_3 y = \log_3 2$ and $\log_3 (x + y) = 2$, then

- a. $x = 3, y = 6$
- b. $x = 8, y = 1$
- c. $x = 1, y = 8$
- d. $x = 9, y = 3$

92. The value of $\left(\frac{1}{3} - \frac{1}{2}\right) + \frac{1}{2}\left(\frac{1}{3^5} + \frac{1}{2^3}\right) + \frac{1}{3}\left(\frac{1}{3^3} - \frac{1}{2^2}\right) + \dots$

- a. 1
- b. $\log 1$
- c. $\log \frac{2}{3}$
- d. $\log \frac{3}{2}$

93. Find the values of x such that $2 \log_3 x - \log_3 (x - 2) = 2$

- a. 3, -3
- b. -3, -6
- c. 3, 6
- d. -3, 6

94. The value of $\log_7 \log_7 \sqrt{7\sqrt{7\sqrt{7}}}$ equal to

- a. $3 \log_2 7$
- b. $1 - 3 \log_2 7$

c. $\frac{7}{8}$

d. $1 - 3 \log_7 2$

95. If $\log_3 (x^4 + x^3) - \log_3 (x - 1) = 3$ then x is equal to?

a. 1

b. 6

c. 3

d. 9

96. If $y = e^{x+e^{x+e^{x+\dots\infty}}}$, then $\frac{dy}{dx}$ is:

a. $\frac{y}{1-y}$

b. $\frac{y}{1+y}$

c. $\frac{1+y}{y}$

d. $\frac{1-y}{y}$

97. If the graph of the continuous function $y = f(x)$ passes through $(a, 0)$, then $\lim_{x \rightarrow a} \frac{\ln(1+6f^2(x)-3f(x))}{3f(x)}$ is equal

to

a. 1

b. 0

c. -2

d. -1

98. $\int_0^{\frac{\pi}{2}} \frac{\sqrt[3]{\sin x}}{\sqrt[3]{\sin x + \sqrt[3]{\cos x}}} dx = a \cdot \frac{\pi}{2}$ then the value of a is

a. $\frac{1}{2}$

b. 2

c. $-\frac{1}{2}$

d. -2

99. If the length of the hypotenuse of a right triangle is 13 and one of the acute angles is 60 degrees, what is the length of the side adjacent to the 60-degree angle?

a. 6.5

b. 6

c. 5

d. 10

100. If $\tan \theta = 1$ & $\tan \vartheta = \frac{1}{2}$, then $\tan(\theta - \vartheta)$ is

a. $\frac{1}{2}$

b. 1

c. $-\frac{1}{2}$

d. $\frac{1}{3}$