

Section 1

1. How many 10-digit numbers, without a leading zero, can be there which contain all the 10 digits 0, 1..., 9?
(a) 2^{10} (b) $10!$ (c) $10! - 1$ (d) 9×9^{10} (e) $9 \times 9!$
2. $x + y + z = xyz$, for three positive integers. How many solutions are possible for the variables?
(a) One (b) Two (c) Three (d) Six (e) Infinitely many
3. The linear equations $5x + 3y = 10$, $2x + ay = 6$, where 'a' is an unknown constant, have a unique solution for which $y = (5/11)x$. Then a is:
(a) 1 (b) 2 (c) 3 (d) 4 (e) 5
4. For $x = 2 \sin x$, $x > 0$, the number of solutions for x is:
(a) None (b) One (c) Two (d) Three (e) Four
5. Maximum value of $(x - 2y)$, subject to, $xy \leq 10$ is:
(a) 5 (b) $\sqrt{10}$ (c) 10 (d) 20 (e) Infinity
6. A merchant buys two articles for Rs.900. He sells one of them at a profit of 22% and the other at a loss of 8% and makes no profit or loss in the end. What is the selling price of the article that he sold at a loss?
(a) Rs. 606.80 (b) Rs. 660 (c) Rs. 636.80 (d) Rs. 240 (e) None of these
7. A shopkeeper who marked his goods up by 50% subsequently offered a discount of 20%. What is the percentage profit that the merchant make after offering the discount?
(a) 20% (b) 25% (c) 120% (d) 30% (e) None of these
8. Father and son working together can finish a job in X days. If father works alone and completes the job, he will take X + 5 days. If son works alone and completes the same job, he will take X + 45 days. In how many days can both of them working together finish the job?
(a) 25 days (b) 60 days (c) 15 days (d) 24 days (e) None of these

9. What is the highest integral value of 'k' for which the quadratic equation $x^2 - 6x + k = 0$ have two real and distinct roots?

- (a) 9 (b) 7 (c) 3 (d) 8 (e) 12

10. In what ratio should a 20% methyl alcohol solution be mixed with a 50% methyl alcohol solution so that the resultant solution has 40% methyl alcohol in it?

- (a) 1 : 2 (b) 2 : 1 (c) 1 : 3 (d) 3 : 1 (e) 2 : 3

11. For what values of 'k' will the pair of equations $3x + 4y = 12$ and $kx + 12y = 30$ will not have a unique solution?

- (a) 12 (b) 9 (c) 3 (d) 7.5 (e) 2.5

12. Anjana is reviewing her algebra assignment answers. She has determined that one of her solutions is incorrect. Which one of the following is incorrect?

- (a) $2x + 5(x-1) = 9$; $x = 2$
(b) $p - 3(p-5) = 10$; $p = 2.5$
(c) $4y + 3y = 28$; $y = 4$
(d) $5w + 6w - 3w = 64$; $w = 8$
(e) $t - 2t - 3t = 32$; $t = 8$

13. During a 5-day religious festival, the number of visitors to the temple tripled each day. If the festival opened on a Thursday with 345 visitors, how many pilgrims visited the temple on that Sunday?

- (a) 345 (b) 1,035 (c) 1,725 (d) 3,105 (e) 9,315

14. For what range of values of 'x' will the inequality $15x - \frac{2}{x} > 1$?

- (a) $x > 0.4$
(b) $x < \frac{1}{3}$

(c) $-1/3 < x < 0.4, x > 15/2$

(d) $-1/3 < x < 0, x > 2/5$

(e) $x < -1/3$ and $x > 2/5$

15. The area of a rectangle is 247 square centimetres. If the length is decreased by 3 cm and the breadth increased by 3 cm, then the rectangle is transformed to a square. What is the perimeter of the original rectangle?

(a) 48 cm (b) 56 cm (c) 64 cm (d) 72 cm (e) None of these

16. A triangle is formed connecting the centres of three circles drawn in such a manner that they touch each other externally. There is no overlap between the circles. The sides of the triangle are 21 cm, 22 cm and 23 cm. What is the radius of the smallest circle?

(a) 10 cm (b) 10.5 cm (c) 11 cm (d) 9.5 cm (e) None of these

17. In a period of 12 hours, how many times will the hands of a clock be making an angle of 180 degrees?

(a) 12 times (b) 24 times (c) 36 times (d) 6 times (e) None of these

18. The number 31 is split up into two parts in such a way that the sum of squares of the parts is 481. What is the difference between the two parts?

(a) 7 (b) 5 (c) 1 (d) 4 (e) None of these

19. If $x = y^2 = z^3 = w^4 = u^5$, then what is the value of the expression $\log_x xyzwu$

(a) $1^{47/60}$ (b) $1^{111/120}$ (c) $2^{17/60}$ (d) $2^{13/60}$ (e) 0

20. If $x^y = y^z = z^x = k$, then which of the following is equal to k ?

- (a) $k = (xyz)^{xyz}$
- (b) $k = (xyz)^{xy+yz+xz}$
- (c) $k = \frac{x^y + y^z + z^x}{xyz}$
- (d) $k = (xyz)^{(xyz)/(xy+yz+xz)}$
- (e) None of the above

21. If $\left(x + \frac{1}{x}\right) = 3$, the value of $x^3 + \frac{1}{x^3}$ is:

- (a) 21
- (b) 18
- (c) 27
- (d) 15
- (e) None of these

22. If $2^x - 2^{x-1} = 8$, then the value of x^3 is:

- (a) 32
- (b) 64
- (c) 16
- (d) 128
- (e) 256

23. A cistern can be filled by pipes A and B in 6 hours and 8 hours respectively. When full, the tank can be emptied by a pipe C in 12 hours. If all the taps be turned on at the same time, the cistern will be full in:

- (a) 4 hrs 18 min
- (b) 4 hrs 26 min
- (c) 4 hrs 42 min

(d) 4 hrs 48 min

(e) 6 Hours 12 min

24. The sum of a number and its reciprocal is five times the difference of the number and its reciprocal. The number is:

- (a) $\sqrt{\frac{3}{2}}$ (b) $\pm \frac{1}{\sqrt{2}}$ (c) $\pm \frac{1}{\sqrt{3}}$ (d) $\sqrt{\frac{2}{3}}$ (e) None of these

25. If Rs. 645 are divided among A, B, C so that A receives 25% more than B and B receives 25% less than C, then B's share is:

- (a) Rs. 144 (b) Rs. 180 (c) Rs. 192 (d) Rs. 204 (e) Rs. 300

Section II

DIRECTIONS for Questions 26 to 29. Based on the information given below, select the most appropriate choice as the answer.

Your favourite multiplex is running a mini film festival, showing a classic film from a different genre and a different country on each Wednesday on the coming six weeks. Unfortunately, you have lost the schedule of the festival. However, you remember the following:

I. The documentary will be shown earlier than the French film and later than the Iranian film

II. The film from Hong Kong will be shown earlier than the romantic film and later than the comedy

- III. The thriller will be shown earlier than the action film
- IV. The Russian film will be shown earlier than the Indian film
- V. The thriller is not from Japan, Hong Kong or Russia
- VI. The Indian film is not the historical film or the documentary
- VII. In the first week a Japanese film will be shown
- VIII. In the last week a historical film will be shown.

26. The historical film is from which country:
 (a) India
 (b) France
 (c) Russia
 (d) Hong Kong
 (e) Cannot be determined

27. In the fourth week the film shown will be from:
 (a) India
 (b) Russia
 (c) Hong Kong
 (d) Iran
 (e) India or Iran

28. The Japanese film is from the genre
 (a) Action
 (b) Romantic
 (c) Comedy
 (d) Documentary
 (e) Classic

29. The romantic film is from:
 (a) India
 (b) Japan
 (c) Russia
 (d) Hong Kong
 (e) Insufficient information to answer the question

DIRECTIONS for Questions 30 to 33. Given below is some data regarding the number of registered companies in India during a four year period. Based on this data alone, please answer the following questions:

Year	Registered companies	New registrations during the year	Companies that went into liquidation during the year
2004-05	661,371	21,486	650
2005-06	712,435	34,040	1,161
2006-07	732,169	54,020	1,380
2007-	743,678	51,708	17,818

30. During these years, the rate of change in the total registered companies has:
- (a) increased
 - (b) decreased
 - (c) almost remained static
 - (d) dipped then increased
 - (e) increased first then decreased
31. The rate of change in the number of new registrations shows:
- (a) a static phase followed by a decreasing phase
 - (b) a decrease phase followed by an increase
 - (c) a continuous increase
 - (d) first an increase and then a dip
 - (e) a continuous decrease
32. The rate of change in the number of companies that has undergone liquidation has
- (a) monotonically increased
 - (b) monotonically decreased
 - (c) first dipped and then increased
 - (d) first increased and then dipped
 - (e) remained more or less the same
33. From the point of view of the economy, this data indicates that the worst performance was during
- (a) 2004-05
 - (b) 2005-06
 - (c) 2006-07
 - (d) 2007-08
 - (e) 2005-06 and 2006-07

DIRECTIONS for Questions 34 to 36. Choose the answer from the choices given.

34. Ram is 1.8 m tall, but not the tallest of the 5 persons we consider. Shyam is taller than 2 persons but shorter than Ram. Nikhil is as taller than Dennis as Mukul than Ram. Who is the shortest?
- (a) Ram (b) Shyam (c) Nikhil (d) Dennis (e) Mukul.
35. If $A E U V \equiv K O E F$, then $C M D Z \equiv ?$
- (a) E W X J (b) M W N J (c) E W X K (d) E W Y K (e) M N J W.
36. If $4987 \equiv 1$, $5623 \equiv 7$, $1291 \equiv 4$, then $8579 \equiv ?$
- (a) 1 (b) 2 (c) 3 (d) 4 (e) 5

DIRECTIONS for Questions 37 to 39: In each of these questions, there are 3 statements. Mark -

- (a) If the correctness of the 3rd statement can be inferred from statement 1, and only from statement 1;
- (b) If the correctness of the 3rd statement can be inferred from statement 2, and only from statement 2;
- (c) If the correctness of the 3rd statement can be inferred from either statement 1, or statement 2;
- (d) If the correctness of the 3rd statement can be inferred from statement 1, and statement 2, used simultaneously;
- (e) If the correctness of the 3rd statement cannot be inferred from the statements, independently or simultaneously.

37. Statements

1: Interest rate is never more than 15% per year.

2: In a bank, with annually compounded interest rate money is doubled after 5 years.

3: In the bank, money will be quadrupled in 10 years.

38. Statements

1: The 5th term of an arithmetic progression (a.p.) is 5.

2: The 10th term of the a.p. is 0.

3: The 3rd term of the a.p. is not a prime number.

39. Statements

1: All the sides of a triangle is less than 5 cm.

2: The triangle is a right-angled triangle.

3: The area of the triangle is less than 12.5 cm².

DIRECTIONS for Questions 40 to 42: Table below presents data on high technology exports in selected years from certain Asian nations. Answer the questions based on the table.

Year	Country-wise High-Technology Exports as % of Manufactured Exports			
	India	China	Malaysia	Singapore
1991	2.89	6.11	38.19	45.00
1993	2.43	6.84	41.10	50.00
1995	4.30	10.05	46.10	55.00
1997	4.75	12.68	48.99	59.00
1999	4.29	16.76	58.90	63.00
2001	6.00	20.00	57.00	60.00
2003	5.00	27.00	58.00	59.00
2005	5.00	31.00	55.00	57.00

40. Among the four countries, which country has the least impressive rate of growth in the ratio of high-technology exports to manufacturing exports during 1991-2005?
- (a) India.
 (b) China.
 (c) Malaysia.
 (d) Singapore.
 (e) India and China
41. If the export performance since 2001 is considered, which of the following predictions about 2007 is most likely to be true?
- (a) The export ratio of Singapore will be lower in 2007.
 (b) The export ratio of Malaysia will increase in 2007.
 (c) China's export ratio will increase by at least 20% in 2007.
 (d) There will not be any change in the export ratio of India in 2007.
 (e) Both (a) and (b)
42. If the data given in Table 1 is plotted into a graph, which of the following is true about the trend line for Malaysia?
- (a) It is flatter than India's.
 (b) It is steeper than China's.
 (c) It is same as Singapore
 (d) It is steeper than Singapore's.
 (e) Its flatness or steepness cannot be compared.

DIRECTIONS for Questions 43 to 46: Answer these questions based on the following alphabets:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

43. If the sequence of second half of the alphabet is reversed, which of the following would be 9th letter to the right of 8th letter from left?

- (a) X
- (b) Q
- (c) W
- (d) D
- (e) None of these

44. In the alphabet BC is to YX in the same way as EF is to

- (a) UV
- (b) VU
- (c) WV
- (d) VW
- (e) None of these

45. What will come in place of the question mark (?) in the following letter sequence?

JXG HTJ FPN ? BHY

- (a) DLS
- (b) ELS
- (c) DLR
- (d) DLT
- (e) None of these

46. If the sequence of alphabet is reversed, which of the following would be the 14th letter from your left?

- (a) N
- (b) L
- (c) O
- (d) P
- (e) None of these

DIRECTIONS for Questions 47 to 50: Read the following information to answer the given questions.

- (1) There is a family of six members A, B, C, D, E and F.
- (2) There are two married couples in the family and the family members represent three generations.
- (3) Each member has a distinct choice of a colour amongst green, yellow, black, red, white and pink.
- (4) No lady member likes either green or white.
- (5) C, who likes black colour, is the daughter-in-law of E
- (6) B is brother of F and son of D and likes pink.
- (7) A is grandmother of F and F does not like red.
- (8) The husband who has a choice of green colour, his wife likes yellow.

47. Which of the following is true about F?

- (a) Brother of B
- (b) Sister of B
- (c) Either sister or brother of B
- (d) Daughter of C
- (e) None of these

48. Which of the following is one of the married couples?

- (a) CD
- (b) DA
- (c) AC
- (d) Cannot be determined
- (e) None of these

49. How many male members are there in the family?

- (a) Two
- (b) Three
- (c) Four
- (d) Cannot be determined
- (e) None of these

50. Which of the following is the colour combination of one of the couples?

- (a) Yellow red
- (b) Green black
- (c) Red yellow
- (d) Yellow green
- (e) None of these

Section III

DIRECTIONS for Questions 51 to 53: The passage given below is followed by questions. Choose the best answer to each question.

“Culture is a rather hazy concept that lends itself to many alternative definitions. One dictionary definition is that culture is ‘the integrated pattern of human knowledge, belief, and behaviour that depends upon man’s capacity for learning and transmitting knowledge to succeeding generations’. The main challenge of any cultural analysis is how to

separate the effects of culture from the effects of strictly economic factors and institutions. The difficulty in achieving this separation has, for the most part, prevented economists from tackling culture. One way around this problem is to exploit the difference in the 'portability' of culture relative to economic and institutional conditions. When individuals emigrate, they may take some aspects of their culture with them and transmit them inter-generationally, but they live in the economic and formal institutional environment of the host country. This suggests that studying immigrants or their descendents may be a useful strategy for isolating some aspects of culture."

51. The author describes culture as a hazy concept because
- (a) There are alternative definitions to culture.
 - (b) Culture is not defined precisely.
 - (c) Cultural effects cannot be separated from economic factors and institutions.
 - (d) It depends upon man's capacity for learning and transmitting knowledge.
 - (e) Culture is transitional
52. Which of the following is the best alternative to the word 'portability' used in the passage?
- (a) Transferability.
 - (b) Absorption.
 - (c) Adaptation
 - (d) Convertibility.
 - (e) Transportability.
53. Which of the following is the best title for the passage?
- (a) A Study of Emigrant Culture.
 - (b) Anthropology and Culture
 - (c) A Study of Culture.
 - (d) A Strategy for Studying Culture.
 - (e) An Economist's Study of Culture.

DIRECTIONS for Questions 54 to 56: The passage given below is followed by questions. Choose the best answer to each question.

“Property is a larger part of access to resources, whether legally recognized or not. While not all forms of access to resources or their benefits are guaranteed by a politico-legal institution, they may still constitute an important element in people’s livelihoods. Indeed, the ‘grey zone’ between what people have rights to and what they merely have access to is terrain worth exploring. In parallel to this, politico-legal authority is only part of a larger picture of power, whether legitimate or not. Not all forms of power to decide who gets access to what resources and benefits, and on what terms, are legitimized with equal effect. Nonetheless, powerful groups and institutional coalitions may still exercise what are essentially political decisions about people’s access to resources and benefits. This second ‘grey zone’ between authority and power – that is, successfully and less-successfully legitimized decisions about how resources are distributed in society – is equally worth investigating.”

54. What does the author imply by the usage “‘grey zone’ between what people have rights to and what they merely have access to”?

- (a) All people have rights, but only a few have access.
- (b) People have all rights, but they do not have access to all rights.
- (c) People may have some rights, but they may have only access to some other things.
- (d) Some people have some rights; some other people have only access to things.
- (e) Having only rights without access to resources is the perpetual social problem.

55. In the context of the passage, what is the difference between authority and power?

- (a) Authority is legal, power is illegal.
- (b) Authority is successfully legitimized, power is less successfully legitimized.
- (c) Authority is legal, power is political.
- (d) Authority gives legal right to people, power only gives them access.
- (e) Authority is legitimate power

56. Which of the following words is the least explained in the passage?

- (a) Right.
- (b) Property.
- (c) Power.
- (d) Authority.
- (e) None of these words are explained

DIRECTIONS for Questions 57 to 59: There are two blanks in each of the sentences. A pair of words can be used to fill these blanks. Among the pair of words given in the four options, only ONE pair can be used to fill the blank. Choose the option that is appropriate in filling the blank.

57. An employee _____ an airline, hotel or rented car will not necessarily have the right _____ to find the lowest possible price when the employer is paying the bill.

- (a) selecting, incentives
- (b) selecting, background
- (c) buying, incentives
- (d) choosing, time
- (e) contacting, skills

58. Our brains _____ a wealth of sights, sounds, and other sensory information to allow us to _____ sense of our environment.

- (a) emit, obtain
- (b) decipher, absorb
- (c) perceive, understand
- (d) emit, make
- (e) decipher, make

59. If you are not _____ where a predator is coming from, it might be better to make the decision to run _____ and get it wrong 50% of the time than to just stand there and get killed every time.

- (a) clear, west
- (b) sure, left
- (c) told, east
- (d) convinced, along
- (e) standing, right

DIRECTIONS for Questions 60 to 64: The passage given below is followed by questions. Choose the best answer to each question.

A leading Indian industrialist in an article on ways to strengthen India's economy has drawn attention to the problems of inflation and industrial sickness among other things. One of the main reasons for industrial sickness in our country has been the fact that business and industrial managers, have not been able to look beyond the immediate future. They have been too preoccupied with their attempts to report favourable results of the current year- higher profits and larger dividends to the shareholders. The planning horizon has hardly ever exceeded five years. Investments have been inadequate for new plants and towards diversification and expansions. Modernization and asset creation has seriously lagged behind. In business, growth is needed for survival; one has to grow if one does not want to be *wiped out*. This is particularly true today with liberalization of imports and increasing competition. Moreover, growth and higher productivity create employment and higher employment creates larger markets both for industrial and consumer products. It was Henry Ford who brought home the need for the creation of a larger and a more stable middle class, that is, a larger number of people who can afford more and more of goods and services. Our industrialists have not been able to shed the petty shopkeeper's mentality and our highly educated management has tagged along merrily and without concern.

60. The leading industrialist attributes industrial-sickness mainly to
- a) Lacunae in five-year plans
 - b) Preoccupation of managers with matters unrelated to business
 - c) Higher profits and larger dividends to shareholders
 - d) Lack of foresight among managers
 - e) Inflation and other economic problems
61. According to the passage, growth and increasing productivity leads to
- a) Imposition of restrictions on imports
 - b) Employment and thus provide an outlet to industrial and consumer products
 - c) Encouragement to export of excess of consumer goods
 - d) Disproportionate surplus of commodities
 - e) None of the above

62. Why did Henry Ford stress the need for a more stable middle class?
- a) They are mostly service oriented
 - b) They do not have shopkeeper mentality
 - c) They can afford to buy more and more expensive goods
 - d) They are most unstable
 - e) None of the above
63. 'The planning horizon has hardly ever exceeded five years' implies
- a) Planning should not be for a period of less than five years
 - b) The planning process is very time consuming
 - c) The planners are not inclined to think of future
 - d) Planning should take care of all probable ups and downs in the next five year period
 - e) Five year period is too short for successful implementation of plans
64. According to the passage, the net gains pursued by managers are at the cost of
- a) Diversification, modernization and asset creation
 - b) Availability of markets for industrial and consumer products
 - c) Inflation and industrial sickness
 - d) Liberalization of imports and increase in competition
 - e) Higher profits and larger dividends to share holders

DIRECTIONS for Questions 65 to 71: In each of the following questions, a related pair of words or phrases is followed by four pairs of words or phrases. Select the pair that best expresses a relationship similar to that expressed in the original pair

65. ADULATION: FLATTERY::
- (a) Humility: Vanity
 - (b) Credulity: Sincerity
 - (c) Retribution : Rehabilitation
 - (d) Emulation: Rivalry
 - (e) Castigation: Admonishment
66. VINDICTIVE: MERCY::
- (a) Avaricious: Greed
 - (b) Insightful: Hope
 - (c) Modest: Guilty
 - (d) Skeptical: Truthfulness
 - (e) Susceptible: Gullible

67. DEFLECT: MISSILE ::
(a) Defend: Fortress
(b) Reflect: Mirror
(c) Direct: Approach
(d) Diversity: Portfolio
(e) Distract: Attention
68. INOCULATION: IMMUNITY ::
a) Talisman: Charm
b) Serum: Antidote
c) Exposure: Weathering
d) Argument : Idea
e) Indoctrination: Paradigm
69. BOOK: CHAPTER ::
(a) Painting: Frame
(b) Sentence: Verb
(c) Building: Room
(d) Tree: Root
(e) Novel : Idiom
70. CELEBRATE: MARRIAGE ::
(a) Window: Bedroom
(b) Lament: Bereavement
(c) Enjoy: Movie
(d) Face: Penalty
(e) Attract: Attention
71. MIND: MATTER ::
(a) Physical: Spiritual
(b) Abstract: Concrete
(c) Action: Reflection
(d) Theory: System
(e) Elegy : Sorrow

DIRECTIONS for Questions 72 to 75: The passage given below is followed by questions. Choose the best answer to each question.

“The community knows ...in its collective capacity, all the contents of the Encyclopaedia and all the contributions to the Proceedings of learned bodies, but it does not know the warm and intimate things that make up the colour and texture of an individual life...If he is a superb literary artist he may create in sensitive readers a state of mind not wholly unlike his own, but if he tries scientific methods the stream of experience will be lost and dissipated in a dusty desert...Language, our sole means of communicating *scientific* knowledge, is essentially social in its origin and in its main functions. It is true that, if a mathematician were wrecked on a desert island, he would...seek to make his solitude endurable by calculations using the language of mathematics; it is true also that a man may keep a diary which he intends to conceal from all eyes but his own....Nevertheless the chief purpose of language is communication, and to serve this purpose it must be public, not a private dialect invented by the speaker. It follows that what is most personal in each individual’s experience tends to evaporate during the process of translation into language. What is more, the very publicity of language is in large part a delusion. A given form of words will usually be interpreted by competent listeners in such a way as to be true for all of them or false for all of them, but in spite of this it will not have the same meaning for all of them. Differences which do not affect the truth or falsehood of a statement are usually of little practical importance, and are therefore ignored, with the result that we all believe our private world to be much more like the public world than it really is.”

72. The fact that not all part of experience can be expressed in language is because:
- (a) language is public while experience is private
 - (b) experience is public while language is private
 - (c) language expresses scientific truths
 - (d) Language is shared
 - (e) Experience is subjective while Language is Objective
73. According to this passage, a literary artist is able to:
- (a) pass on personal knowledge to all readers
 - (b) pass on personal knowledge to some readers
 - (c) use scientific language

- (d) Create literature even using mathematics
- (e) Communicate at personal level

74. If we represent the set of community knowledge by C and the set of an individual's knowledge by I, then from the passage we may be able to infer the following relationships between C and I:

- (a) C is a sub-set of I
- (b) I is a sub-set of C
- (c) C and I intersect
- (d) C and I are the same
- (e) I is a result of C

75. Language is public because:

- (a) it is a literary vehicle used by literary artists
- (b) It is understood differently by listeners
- (c) it can be used by mathematicians in isolation
- (d) it is used to communication
- (e) personal Experiences can be expressed adequately using language