PART – A

1. Arrange the given words in alphabetical order and choose the one that comes second.

   A) Explosion   B) Emergency   C) Ecstasy   D) Eager

Direction : A foreign expression and four English phrases are given. Identify the meaning of the foreign expression from the choices.

2. esprit de corps

   A) Eternal truth   B) Pertaining to the senses
   C) Similar feeling shared by the group   D) Linguistic group

Direction : Identify the meaning of underlined word as used in the sentence, from among four alternatives.

3. In Maharashtra the <u>turmoil</u> in the education system has percolated right down to the preprimary level.

   A) State of confusion   B) State of uproar
   C) State of negligence   D) State of change

Direction : An idiom and four possible meaning are given, identify the meaning of the idiom from among the answer choices.

4. A bird's- eye view

   A) without care   B) within the walls
   C) an overall view   D) out of place

Direction : Fill in the blanks in the given sentence to make it logically and grammatically correct

5. _____ about nine month ago, john was in excellent health.

   A) Until   B) In   C) At   D) As

Direction : A sentence is written in four different forms. Only one of them is grammatically correct. Choose the correct sentence as your answer.

6. A) Everyone of the students have produced his identity card.
   B) Everyone of the students has produced his identity card.
   C) Everyone of the student has produced his identity card.
   D) Everyone of the students have produced their identity card.

Direction : Four alternative substitutes are given for the underline portion. Identify the choice that replace the underline part to form a logical and grammatically correct statement.

7. My friend asked me <u>when had I completed my work</u>.
   A) when I will have complete my work
   B) when had I completed my work
   C) when I had completed my work
   D) I would have my work completed

Direction : A word and four jumbled choices are given. One of the choices, when properly arranged, give the meaning of the word. Identify the correct choice.

8. DAMAGE
   A) CLOCLET
   B) UNIJRY
   C) TEOTLRAE
   D) AEDMND

Direction : From the choices, select the most suitable synonym for the main word.

9. DETER
   A) distract
   B) suppress
   C) discourage
   D) contaminate

Direction : From the choices, select the most suitable antonym for the main word.

10. EXPEDIENT
    A) necessary
    B) harmful
    C) relevant
    D) imprudent

Direction : There is a certain relation between two given words on one side of : : and one word is given on another side of : : while another word is to be found from the given alternatives , having the same relation with this word as the given pair has. Select the best alternative.

11. Clock : Time : : Thermometer : ?
    A) Heat
    B) Radiation
    C) Energy
    D) Temperature

Direction : There is a certain relation between two given numbers on one side of : : and one number is given on another side of : : while another number is to be found from the given alternatives , having the same relation with this number as the given pair has. Select the best alternative.

12. 1 : 1 : : 25 : ?
    A) 26
    B) 125
    C) 240
    D) 625

Direction : In the given question, four words have been given, out of which three are alike in some manner and the fourth one is different. Choose out the odd one.

13. A) Chair
    B) Bench
    C) Table
    D) Stool

Direction : In the given question, four numbers are given. Out of these, three are alike in a certain way but the rest one is different. Choose the one which is different from the rest three.
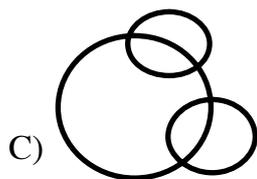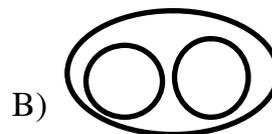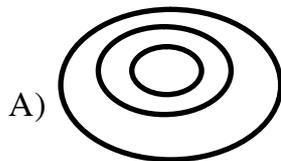
14. A) 10   B) 26   C) 24   D) 21

Direction : In the given question, a number series is given with one term missing. Choose the correct alternative that will continue the same pattern.

15. 2, 3, 5, 7, 11, (…), 17
     A) 12   B) 13   C) 14   D) 15

16. If in a certain language, MONKEY is coded as XDJMNL, how is TIGER coded in that code ?
     A) QDFHS   B) SDFHS   C) SHFDQ   D) UJHFS

17. Which of the following diagrams correctly represents Carrot, Food, Vegetable ?

A)

B)

C)

D)

18. If × means ÷, – means ×, ÷ means + and + means –, then

(3 – 15 ÷ 19) × 8 + 6 =?
     A) 8   B) 4   C) 2   D) –1

19. If Mary was 32 years old 8 years ago, how old was she, x years ago ?
     A) x-40   B) x-24   C) 40-x   D) 24-x

20. If one third of one fourth of a number is 15, then three tenth of that number is:
     A) 35   B) 36   C) 45   D) 54
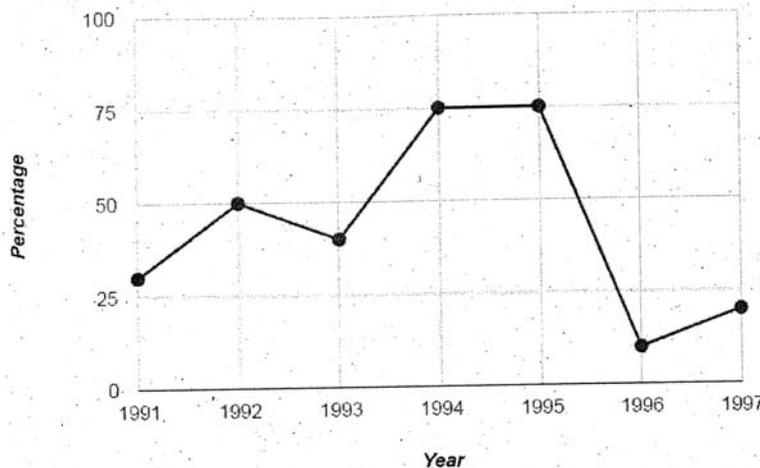
21. Choose the odd one
    A) Throw down the gauntlet: UN peace keeping
    B) In the altogether: Bath tub
    C) The halcyon days: Childhood
    D) The real McCoy: Darjeeling Tea

22. If A : B = 2 : 3 , B : C = 4 : 5 and C : D = 6 : 7, then A : B : C : D is equal to
    A) 16 : 22 : 30 : 35   B) 16 : 24 : 15 : 35
    C) 16 : 24 : 30 : 35   D) 18 : 24 : 30 : 35

23. A speed of 14 meters per second is the same as
    A) 28 km/hr   B) 46.6 km/hr   C) 50.4 km/hr   D) 70 km/hr

24. The Kane Wildlife Sanctuary is located in the State of
    A) Madhya Pradesh   B) Arunachal Pradesh
    C) Uttrakhand   D) Bihar

25. Four States in India will jointly conduct elephant census using direct and indirect methods. These States are
    A) Uttar Pradesh, Uttrakhand, Jharkhand, Orissa
    B) Uttar Pradesh, West Bengal, Orissa, Jharkhand
    C) Jharkhand, Orissa, West Bengal, Chhattisgarh
    D) Madhya Pradesh, Uttar Pradesh, Jharkhand, Orissa

26. What is self-plagiarism ?
    A) It's when authors claim other ideas as their own
    B) Rephrasing the word of some other author without citing
    C) Failing to cite the source of information that was used in a work
    D) It's when authors present their previously published work as a new contribution

27. Which one of the following applications is best suited for plotting and analysis on computers ?
    A) Spreadsheet application   B) Word processor
    C) Presentation application   D) Photo editing application

28. Which one of the following parts of a computer is a memory storage device ?
    A) RAM   B) CPU   C) Mother Board D) Wifi Card

29. A researcher records the blood group from many patients. To which data type does this data collected fall under ?
    A) Binary   B) Categorical
    C) Count   D) Ordinal

30. Which one of the following is not an operating system ?
    A) Microsoft Windows   B) Linux
    C) Ubuntu   D) Microsoft Word

31. Which one of the following is correct ?
    A) C++ is an operating system
    B) C++ is a programming language
    C) C++ is an internet protocol
    D) C++ is a machine language

32. Which one of the following journals is very likely to be the one with high standards of publishing ?
    A) Journals with a large number of pages
    B) Journals with a high impact factor
    C) Journals with online version
    D) Journals without peer review

33. Which one of the following parameters is widely used to judge the citation impact of a scholar ?

    A) TRP rating
    B) h-index
    C) Number of articles he/she has published
    D) Number of awards the scholar has won

34. An open access journal is one
    A) in which one does not have to pay to read articles
    B) in which one does not have to pay to submit articles
    C) in which the articles can be modified and resubmitted by anyone
    D) which does not require a login but one is required to pay to read articles

35. The outcome of an experiment is Boolean-valued. Which probability distribution will the observations very likely follow ?
    A) Binary
    B) Poisson
    C) Binomial
    D) Gaussian

36. The probability distribution for a random error that is as likely to move the value in either direction is called
    A) Poisson distribution
    B) Gaussian distribution
    C) Levy distribution
    D) Hermite distribution

37. Random errors in experimental studies can be reduced by
    A) Repeating experiments and carrying out statistical analysis
    B) reducing mistakes made in calculations
    C) ensuring proper calibration of instruments
    D) by reducing the time to carry out the experiments

38. The length of an object is 5.0 cm. Researcher 'A' makes measurement of the length and reports a mean of 4.9 cm with an error of 0.2 cm. Researcher 'B' makes a similar measurement and reports a mean of 3.00 cm with an error of 0.02 cm. What conclusions about the measurements can you derive from these statements?
    A) Measurements of both A and B are precise
    B) Measurements of B is accurate but not as precise as A
    C) Measurements of A is accurate but not as precise as B
    D) Measurements of both A and B are accurate

39. An experimentalist reports the value of his measurements of the height of an object. Which one of the following is the correct way of quoting the results ?

A) 15 : 00 – 1: 23 cm

B) 15: 00 –1 : 23 cm

C) 15 : 0 – 1 : 23453 cm

D) 15 : 000 – 1 : 23 cm

40. If a dependent variable x is related to a measured quantity m by the relation x = m+a, where a is a constant, then the relative error in x is given by

A) $\dfrac{\sigma m}{a}$

B) $\dfrac{\sigma m}{m}$

C) $\dfrac{\sigma m}{m+a}$

D) $\dfrac{\sigma m}{ma}$

41. Approximately, what percentage of the measurements in a Gaussian distribution will fall within –1 standard deviation ?

A) 90 %   B) 68 %   C) 99 %   D) 50 %

42. The function y = axk, where a and k are constants, when plotted on a log-log graph will yield a

A) Parabola

B) Straight line

C) Exponential curve

D) Logarithmic curve

43. The graph below shows the percentage of candidates qualifying an examination over a 7 year period. In which pair of years the number of qualified candidates was the same ?

A) 1994 and 1995

B) 1996 and 1997

C) 1993 and 1994

D) The data in the graph is inadequate to conclude

44. In a histogram, if the bin width is set to a very large value,
    A) all small scale features and fluctuations will be lost
    B) all small scale features and fluctuations will be prominent
    C) No information is lost in all cases
    D) The height of the histogram will become bigger

45. Consider the data points in the table below. Which fitting function would be most appropriate to describe this trend ?

x	y
0	0
10	102
20	398
30	899
40	1598

    A) Linear   B) Exponential
    C) Second order polynomial   D) Gaussian

46. A hypothesis is
    A) a proposition considered as a starting point based on the limited knowledge
    B) a fact assumed to be true without proof
    C) a logical conclusion based on evidences and can always be proved correct using experiments
    D) a corollary to a theorem

47. A null hypothesis in statistical testing is
    A) one which is not used for statistical testing
    B) the hypothesis that there is no statistically significant differences between specified observations
    C) an invalid hypothesis
    D) the hypothesis that there is very large statistically significant differences between specified observations

48. Which one of the following methods is not used for statistical hypothesis testing
    A) Unit test   B) Z-test   C) Chi-squared test   D) F-test

49. Which one of the following should not be used in a journal article ?
    A) Personally identifiable information of human subjects
    B) Experimental setup or Theory
    C) Results and discussion
    D) References

50. The term multivariate analysis refers to
    A) the statistical procedure of analyzing one variable multiple times
    B) the statistical procedure of analyzing one variable by multiple experimentalists
    C) the statistical procedure of analyzing one variable by multiple methods
    D) the statistical procedure of analyzing more than one variable simultaneously

PART-B

51. The wavelength range of UV-C radiations is
    A) 200 – 280 nm
    B) 280 – 320 nm
    C) 320 – 400 nm
    D) 400 – 520 nm

52. According to IS 10500, acceptable limit of total arsenic in drinking water is
    A) 0.001 mg/L
    B) 0.01 mg/L
    C) 0.1 mg/L
    D) 1.0 mg/L

53. The pH of 1.0×10^{-4} M solution of NaOH is
    A) 3.0
    B) 7.0
    C) 10.0
    D) 14.0

54. The radioactive isotope Z has a half-life of 6 hours. After 24 hours, the fraction of the original amount remaining is
    A) 1/2
    B) 1/4
    C) 1/8
    D) 1/16

55. After 5 days of incubation at 20°C, the residual dissolved oxygen in blanks was 7.80 mg/L and in a 0.1 percent dilution of the waste was 2.30 mg/L. What is the 5 day BOD of the waste ?
    A) 55 mg/L
    B) 550 mg/L
    C) 5500 mg/L
    D) 55000 mg/L

56. How much oxygen (O_2) in gm is required for complete combustion of 44g of propane ?
    A) 32g
    B) 64g
    C) 82g
    D) 160g

57. How much carbon dioxide is produced by one kilogram of Carbon ?
    A) 44 kg
    B) 11/3 kg
    C) 22/9 kg
    D) 4/6 kg

58. If greenhouse effect were to be absent, the mean effective radiating temperature of Earth's atmosphere will be
    A) 255 K
    B) 273 K
    C) 288 K
    D) 298 K

59. The entropy of a pure crystalline substance at –273K is
    A) Infinity
    B) Zero
    C) 100 J/K
    D) 373 J/K

60. In an isothermal process
    A) there is no change in enthalpy
    B) there is no change in temperature
    C) there is no change in internal energy
    D) all of these

61. The global warming potential of CO_2 is
    A) 1.0
    B) 21.0
    C) 100
    D) 310

62. Superfund is related with
    A) protection of Ozone layer from CFCs
    B) growing of trees in devastated forests
    C) production of wild animals using genetic engineering
    D) cleaning sites contaminated with hazardous substances

63. The plants of which category will be benefitted by increased concentration of CO_2 in the atmosphere ?
    A) C-3 plants   B) C-4 plants
    C) CAM plants   D) None of the above

64. Which one of the following is a secondary air pollutant ?
    A) CO   B) CO_2 C) NO_x D) O_3

65. Gaia hypotheses suggest that
    A) carbon dioxide is responsible for global warming
    B) organisms show cannibalism
    C) plume diffusion is a function of the air stability
    D) organisms co-evolve with their environment

66. Which of the following Award is given by Ministry of Environment and Forest, India for Wildlife Protection?
    A) Pitambar Pant Award
    B) Amrita Devi Bishnoi Award
    C) Indira Gandhi Paryavaran Puraskar
    D) Dr. Salim Ali National Fellowship Award

67. A drug capable of interfering with the development of a fetus is called as
    A) Mutagen   B) Teratogen
    C) Carcinogen   D) None of the above

68. National Institute of Disaster Management is located at
    A) Poona   B) Midnapore   C) New Delhi   D) Bangalore

69. Which of the following is not correctly matched?
    A) Rann of Kachchh – Wild Ass
    B) Sunderbans – Bengal Tiger
    C) Dachigam National Park – Snow Leopard
    D) Periyar – Elephant

70. Kazhiranga National Park is famous for
    A) One-horned rhinoceroses   B) Two-horned rhinoceroses
    C) Elephant   D) Tiger

71. Almatti Dam is built on
    A) The Kaveri river   B) The Krishna river
    C) The Godavari river   D) The Gomati river

72. Fluoride from drinking water can be removed by
    A) Nalgonda method   B) Nellore method
    C) Bangalore method   D) Indore method

73. Turbidity of water can be determined by
    A) Flame photometer   B) TDS meter
    C) Nephelometer   D) Liquid Scintillation counter

74. Which fertilizers can cause Methaemoglobinaemia disorder ?
    A) Phosphorus fertilizers   B) Potassium fertilizers
    C) Zinc fertilizers   D) Nitrogen fertilizers

75. The darker zone in lakes where light penetration is negligible is called
    A) Littoral zone   B) Limnetic zone
    C) Profundal zone   D) Euphotic zone

76. The most common chemical used for cloud seeding is
    A) Silver iodide   B) Zinc iodide
    C) Sodium chloride   D) Potassium chloride

77. Fuel Cells are
    A) Biogas plants   B) Hydrogen battery
    C) Carbon cell   D) Nuclear cell

78. Global Positioning Service (GPS) is based on the principle
    A) Transmission   B) Trilateration
    C) Orbiteration   D) Globalization

79. Alkalinity of water is mainly due to

    A) CO_3^{2-} and HCO_3^{-} B) CO_3^{2-}, Cl^{-} and SO_4^{2-}

    C) Cl^{-}, NO_3^{-}, HCO_3^{-} D) Na^{+} and K^{+}

80. As per the Noise Pollution (Regulation and Control) Rules, 2000, the night time limits of noise in residential area is
    A) 35 dB(A) Leq   B) 45 dB(A) Leq
    C) 55 dB(A) Leq   D) 75 dB(A) Leq

81. According to the Bio-Medical Waste (Management and Handling) Rules, 1998, The colour of container for the disposal of Human Anatomical Waste should be
    A) Yellow   B) Red   C) Blue   D) Black

82. Which indicator is used in argentometric titration method of chloride determination ?
    A) Potassium chromate   B) Potassium dichromate
    C) Erichrome Black-T   D) Starch

83. Chemical formula of CFC-11 is
    A) CCl_3F B) CCl_2F_2 C) $CClF_3$ D) CCl_4

84. The Catalytic converter used in mother vehicles converts
    1) NO_X to N_2 2) Hydrocarbons to CO_2
    3) CO to CO_2 4) SO_X to Sulphur

    Codes :
    A) only 1 is correct   B) only 1 and 2 are correct
    C) 1, 2 and 3 are correct   D) All are correct

85. Producer gas is a mixture of
    A) CO and H_2 B) CO and CH_4
    C) CH_4 and H_2 D) CO_2 and CH_4

86. Nitrogen dioxide in ambient air is determined by
    A) Gas Phase Chemiluminescence Method
    B) Jackson Candle Method
    C) Jacob and Hochheiser Modified Method
    D) Modified West and Gaeke Method

87. Which of the following is a Pozzolana, material ?
    A) Cement   B) Fly ash   C) River sand   D) Activated sludge

88. Which one of the following is correct ?
    A) Soil organic matter (%) = 1.472 ×Soil organic carbon (%)
    B) Soil organic matter (%) = 1.724 × Soil organic carbon (%)
    C) Soil organic matter (%) = 0. 58 × Soil organic carbon (%)
    D) Soil organic matter (%) = 1.274 × Soil organic carbon (%)

89. Which of the following regents are used in Walkley and Black method of total organic matter determination ?
    A) KOH and H_2SO_4 B) $Na_2 S_2O_3$ and H_2SO_4
    C) HNO_3 and H_2SO_4 D) $K_2Cr_2O_7$ and H_2SO_4

90. El Nino occurs in
    A) Indian ocean   B) Atlantic ocean
    C) Pacific ocean   D) Artic ocean

91. The main constituents of Liquefied Petroleum Gas (LPG) are
    A) Methane + ethane
    B) Ethane + propane
    C) Propane + butane
    D) Butane + acetylene

92. At same temperature, which pair of the following solutions are isotonic solutions ?
    A) 0.1M $BaCl_2$ and 0.1M Urea
    B) 0.2 M Urea and 0.2 M NaCl
    C) 0.1M $Ba(NO_3)_2$ and 0.1M K_2SO_4
    D) 0.2 M NaCl and 0.2 M K_2SO_4

93. Which of the following mode of expressing concentration is independent of temperature ?
    A) Molarity
    B) Molality
    C) Normality
    D) Formality

94. Kyoto Protocol is related to
    A) reducing acid rain
    B) reducing greenhouse gases
    C) use of nuclear energy
    D) reducing water pollution

95. "Fanning" plumes are obtained under
    A) unstable atmosphere
    B) extreme inversion condition
    C) super adiabatic environment
    D) neutral atmospheric conditions

96. Which one has the highest porosity ?
    A) Sand
    B) Silt
    C) Gravel
    D) Clay

97. Temperature in stratosphere
    A) Increase with altitude
    B) Decrease with altitude
    C) Remains constant with altitude
    D) None of the above

98. The transfer of energy between an object and its environment, due to fluid motion is called as
    A) Conduction
    B) Convection
    C) Radiative transfer
    D) Advection

99. Which pair is correctly matched ?
    A) The Environment Protection Act — 1988
    B) The Public Liability Insurance Act — 1993
    C) The Indian Forest Act — 1927
    D) Forest (Conservation) Act — 1986

100. The most common anion in river water is
    A) Carbonate
    B) Bicarbonate
    C) Chloride
    D) Fluoride

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SPACE FOR ROUGH WORK

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