PART – A

1. Arrange the given words in alphabetical order and choose the one that comes first.
   A) Qualify B) Quarter C) Quarrel D) Quarry

Direction Q. 2: A foreign expression and four English phrases are given. Identify the meaning of the foreign expression from the choices.

2. ex officio
   A) Unofficial
   B) By virtue of official
   C) A retired official
   D) Make public

Direction Q. 3: Identify the meaning of underlined word as used in the sentence, from among four alternatives.

3. As the result came in, all the party workers were in a jubilant mood and began to rejoice.
   A) propagate
   B) exclaim
   C) applaud
   D) celebrate

Direction Q. 4: An idiom and four possible meanings are given, identify the correct meaning of the idiom from among the answer choices.

4. Cut no ice
   A) feel uncomfortable
   B) come to nothing
   C) to fail
   D) have no influence or effect

Direction Q. 5: Fill in the blanks in the given sentence to make it logically and grammatically correct.

5. A lot of people believe that perspiration _____ body odour.
   A) promotes B) results in C) makes D) causes

Direction Q. 6 : A sentence is written in four different forms. Only one of them is grammatically correct. Choose the correct sentence as your answer.

6. A) This problem affects each and everyone of us.
   B) This problem affects each and every one of us.
   C) This problem affects each one of us.
   D) This problems affects each and everyone of us.

Direction Q. 7: 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. The course is going to start on January 20th.
   A) is going to start by
   B) is going to be started on
   C) starts on
   D) starting on

Direction Q. 8: 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. FANTASTIC
   A) TIAIRLSIC
   B) BDCINREILE
   C) ALCER
   D) YNIMIAGAR

Direction Q. 9: From the choices, select the most suitable synonym for the main word.

9. SURROGATE
   A) influence
   B) nourish
   C) substitute
   D) indicate

Direction Q. 10: From the choices, select the most suitable antonym for the main word.

10. DOCILE
   A) painful
   B) hesitant
   C) obdurate
   D) silent

Direction Q. 11: 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. Gun : Bullet : : Chimney : ?
   A) Ground
   B) House
   C) Roof
   D) Smoke

Direction Q. 12: 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. 21 : 3 : : 574 : ?
   A) 23
   B) 82
   C) 97
   D) 113

Direction Q. 13: 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) Snake B) Whale C) Crocodile D) Lizard

Direction Q. 14: 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) 51 B) 144 C) 64 D) 121

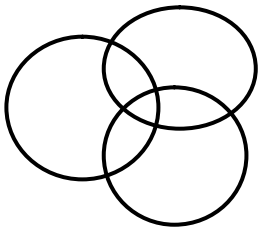
Direction Q. 15: In the given question, a number series is given with one term missing. Choose the correct alternative that will continue the same pattern.

15. 3,9,27,81, (…)
    A) 324 B) 243 C) 210 D) 162

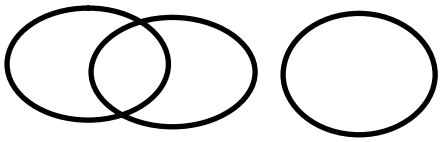
16. If in a certain language, COMPUTER is coded as RFUVQNPC, how is MEDICINE coded in that code ?
    A) EOJDJEFM B) EOLDEJFM C) MFEJDJOE D) MFEDJJOE

17. Which of the following diagrams correctly represents Judge, Thief, Criminal ?

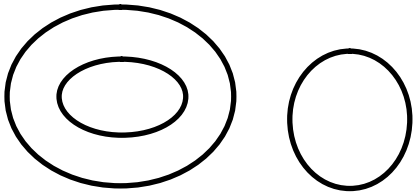
A)



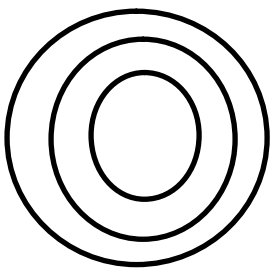
B)



C)



D)



18. A number is doubled and 9 is added. If the resultant is trebled, it becomes 75. What is that number ?
A) 3.5 B) 6 C) 8 D) none of these

19. 40% of 1640 + ? = 35% of 980 + 150% of 850
A) 372 B) 842 C) 962 D) 1052

20. If a : b : c = 4 : 1 : 2 and (a + b + c) = 14 , then the value of c is
A) 6 B) 7 C) 8 D) 4

21. In what time, will a train 100 meters long cross an electric pole, if its speed be 144 km/hr ?
A) 2.5 seconds B) 4.25 seconds C) 5 seconds D) 12.5 seconds

22. Who has clinched the 2017 women's singles India Super Series Badminton Tournament ?
A) Sung-Ji-Hyuan B) P. V. Sindhu
C) Saina Nehawal D) Carolina Marin

23. Which Institute has topped the 2017 National Institutional Ranking Framework (NIRF) ratings for higher standards institutions ?
A) Indian Institute of Science, Bangalore
B) Indian Institute of Technology, Chennai
C) Indian Institute of Technology, Mumbai
D) Indian Institute of Technology, Kharagpur

24. The National Girl Child Day is observed every year on
A) 26th January
B) 24th January
C) 22nd January
D) 20th January

25. Koteshwar Hydro Electric Project is located in
A) Kerala
B) Uttar Pradesh
C) Uttrakhand
D) Rajasthan

26. Concept of Impact Factor was given by
    A) Jorge Hirsch
    B) Eugene Garfield
    C) Henry Maxwell
    D) None

27. Plagiarism is
    A) using the ideas and words of someone else as my own work
    B) result of a new experiments
    C) calculation of the H-index
    D) conducting filed level experiments

28. Which one is not an example of Applied Research ?
    A) curing a specific disease
    B) improving agricultural crop production
    C) determination of boiling point of a liquid
    D) improving the energy efficiency of cars

29. Bibliography is
    A) A list of chemicals used in research
    B) A list of references cited in a research paper
    C) Affiliations of the authors in a research paper
    D) None of the above

30. H-index can be calculated for
    A) an individual researcher
    B) a university department
    C) whole university
    D) all of the above

31. A researcher reproduces a 50 word passage from a cited work but replaces 10 words from the original passage with synonyms. This is an example of
    A) Secondary data
    B) H-index
    C) Paraphrasing
    D) Impact factor

32. Which of the following is not considered to be an example of scientific misconduct ?
    A) Fabrication of data
    B) Authorship on a project that you did not work
    C) Plagiarism
    D) Publishing a table of data with a typographical error

33. Which one of the following tools is used for quantitative research ?
    A) Open ended questions
    B) Check list
    C) Focus depth interviews
    D) Observations

34. Which of the following is non-parametric test ?
    A) t-test
    B) ANOVA
    C) Chi-square test
    D) All of the above

35. An independent t-test can be used to assess which of the following ?
    A) It assesses goodness of fit
    B) It assesses relationships between two interval data sets
    C) It assesses how many factors there are in questionnaire data
    D) All of the above

36. Class of variable which can accept only values from set of integers is classified as
    A) Discrete random variable
    B) Continuous random variable
    C) Posterior random variable
    D) All of the above

37. 10^{-12} is called as
    A) Mega
    B) Terra
    C) Pica
    D) Giga

38. Chi-square curve ranges from
    A) $-\infty$ to $+\infty$
    B) 0 to ∞
    C) $-\infty$ to 0
    D) 0 to 1

39. The straight line graph of the linear equation $Y = a + bX$, slope will be upward if:
    A) $b = 0$
    B) $b < 0$
    C) $b > 0$
    D) $b \neq 0$

40. Histogram is a graph of
    A) Time series
    B) Frequency distribution
    C) Qualitative data
    D) Ogive

41. A circle in which sectors represents various quantities is called
    A) Histogram
    B) Frequency Polygon
    C) Component Bar chart
    D) Pie Chart

42. SPSS is a
    A) Computer hardware used in mouse
    B) Software package used for data analysis
    C) Chemical used in experiments
    D) International organization

43. The correlation coefficient is used to determine
    A) A specific value of the y-variable given a specific value of the x-variable
    B) A specific value of the x-variable given a specific value of the y-variable
    C) The strength of the relationship between the x and y variables
    D) None of these

44. When regression line passes through the origin then
    A) Regression coefficient is zero
    B) Correlation is zero
    C) Association is zero
    D) Intercept is zero

45. In a set of observations, unusual lower and higher values are called as
    A) Outliers B) Central liners
    C) Median liners D) Free liners

46. The median value for the below given data set :
    (13, 18, 13, 14, 13, 16, 14, 21, 13) is
    A) 9 B) 13 C) 14 D) 15

47. The probability of an event cannot be
    A) 0.3 B) 0.5 C) – 0.5 D) 1.0

48. Normal distribution is
    A) Platykurtic B) Mesokurtic
    C) Leptocurtic D) All of the above

49. Which of the following is an example of a secondary source of information ?
    A) Experiment B) Survey
    C) Journal D) Questionnaire

50. Hypothesis tests are designed so that the _____ hypothesis will be rejected.
    A) null B) alternative
    C) alpha D) beta

PART – B

51. Individuals occupying a particular habitat and adapting to it phenotypically but not genotypically are known as
    A) Ecotypes
    B) Ecophenes
    C) Ecospecies
    D) Coenospecies

52. Which of the following geological periods is characterized by the first appearance of mammals ?
    A) Tertiary
    B) Cretaceous
    C) Permian
    D) Triassic

53. Which of the following global hotspots of biodiversity has the highest number of endemic plants and vertebrates ?
    A) Sundaland
    B) Tropical Andes
    C) Brazil's Atlantic Forest
    D) Mesoamerican forests

54. The utilization or consumption efficiency of herbivores is highest in
    A) Plankton communities of ocean waters
    B) Mature temperate forests
    C) Managed grasslands
    D) Managed rangelands

55. According to 2014 IUCN Red List, which of the following vertebrate classes has the largest percentage of threatened species ?
    A) Mammals
    B) Birds
    C) Reptiles
    D) Amphibians

56. Which of the following gases do not contribute to global warming through its greenhouse effect ?
    A) Nitrous oxide
    B) Methane
    C) Carbon dioxide
    D) Nitric oxide

57. An oligotrophic lake has
    A) High level of nutrients in water
    B) High aquatic productivity
    C) Algal blooms
    D) Low nutrients and low productivity

58. A high BOD value in an aquatic environment is indicative of
    A) Pollution free system
    B) Highly polluted system due to excess of nutrients
    C) Highly polluted system due to abundant heterotrophs
    D) Highly pure water with abundance of autotrophs

59. The electrons from excited chlorophyll molecule of photosystem II are accepted first by
    A) Ferredoxin
    B) Cytochrome-b
    C) Cytochrome-f
    D) Quinone

60. Which of the following plant hormones uses the two-component histidine kinase receptor system for signal transduction ?
    A) Auxin
    B) Gibberellin
    C) Cytokinin
    D) Abscisic acid

61. The herbicide, dichlorophenyl dimethyl urea, is an inhibitor of
    A) Shikimate pathway for biosynthesis of aromatic amino acids
    B) Electron transport from P680 to P700
    C) Branched chain amino acid pathway
    D) Electron transport from P700 to ferredoxin

62. Which of the following plant-derived signalling molecules induces hyphal branching of arbuscular mycorrhizal fungi, a phenomenon that is observed at the initial stages of colonization by these fungi ?
    A) Salicylic acid
    B) Abscisic acid
    C) Strigolactones
    D) Systemin

63. Which of the following are not transcribed by RNA polymerase II ?
    A) miRNA and some snRNA
    B) miRNA and snoRNA
    C) mRNA and snoRNA
    D) tRNA and 5S rRNA

64. Telomerase, a RNA-protein complex, which completes the replication of telomeres during DNA synthesis, is a specialised
    A) RNA-dependent DNA polymerase
    B) DNA-dependent DNA polymerase
    C) DNA- dependent RNA polymerase
    D) RNA-dependent RNA polymerase

65. Which of the following events will not usually lead to transformation of a normal cell into a cancer cell ?
    A) Gain of function of oncogenes
    B) Loss of function of tumor suppressors
    C) Gain of function of genes involved in nucleotide excision repair
    D) Loss of function of pro-apoptosis related genes

66. Which type of cells located in gastric glands is responsible for the release of histamine ?
    A) Mucous neck cells
    B) Entero-chromaffin like cells
    C) Chief cells
    D) Parietal cells

67. Serum has essentially the same composition as plasma EXCEPT that it lacks
    A) Albumin
    B) Stuart-Prower factor
    C) Anti-hemophilic factor
    D) Hageman factor

68. Entry of enveloped viruses into its host cells is mediated by
    A) Only endocytosis
    B) Both endocytosis and phagocytosis
    C) Both endocytosis and membrane fusion
    D) Only pinocytosis

69. Which of the following is not an assumption of the Hardy-Weinberg model ?
    A) Population mates at random with respect to the locus in question
    B) Selection is not acting on the locus in question
    C) One allele is dominant and the other is recessive at this locus
    D) The population is effectively infinite in size

70. Error-free repair of double strand breaks in DNA is accomplished by
    A) Non-homologous end-joining
    B) Base excision repair
    C) Homologous Recombination
    D) Mismatch Repair

71. RNA interference is mediated by both siRNA and miRNA. All the following statements about them are true EXCEPT
    A) Both siRNA and miRNA are processed by DICER
    B) Both siRNA and miRNA usually guide silencing of the same genetic loci from which they originate
    C) miRNA is a natural molecule while siRNA is either natural or a synthetic one
    D) miRNA, but not siRNA is processed by Drosha

72. The following are some of the characteristics of MHC class I and class II molecules EXCEPT one, which is applicable only for MHC class I. Identify the appropriate statement.
    A) They are expressed constitutively in all nucleated cells
    B) They are glycosylated polypeptides with domain structure
    C) They are involved in presentation of antigen fragments to cells
    D) They are expressed on surface membrane of B cells

73. Which of the following statements best defines an oncogene ?
    A) An oncogene never codes for a cell cycle protein, which promotes cell proliferation.
    B) Oncogenes are always involved in inherited forms of cancer.
    C) An oncogene codes for a protein that prevents a cell from undergoing apoptosis.
    D) An oncogene is a dominantly expressed mutated gene that renders a cell advantageous towards survival.

74. The transport of fructose into the enterocytes is mediated by
    A) sodium-dependent glucose transporter 1 (SGLT 1)
    B) glucosetransporter 5 (GLUT5)
    C) SGLT 2
    D) GLUT 4

75. Rhizobial genes that participate in legume nodule formation are called nodulation (nod) genes. The nod D-encoded protein
    A) is an acetyl transferase that adds a fatty acyl chain to the Nod factor
    B) binds to the nod box and induces transcription of all nod genes
    C) catalyzes the linkage of N-acetyl glucosamine residues
    D) influences the host specificity of Rhizobium

76. A protein has three domains P, Q and R, whereas another protein has three domains R, S and Q in that order. The preferred alignment algorithm for these two proteins will be
    A) Local alignment
    B) Global alignment
    C) Both algorithms will give the same results
    D) None of the methods are suitable in this case

77. In animal cell culture, CO_2 incubator is used for maintaining open culture system. Which of the following represents the function of CO_2 ?
    A) It serves as a carbon source to the cells
    B) It maintains the temperature via greenhouse effect
    C) It dissolves in the medium and generates carbonic acid and regulates the pH to neutrality
    D) It dissolves in the medium and generates carbonic acid and regulates the pH to alkaline side

78. If you remove a set of cells from an early embryo, you observe that the adult organism lacks the structure that would have been produced from those cells. Therefore, the organism seems to have undergone
    A) Autonomous specification
    B) Conditional specification
    C) Morphogenic specification
    D) Syncytial specification

79. Phenylalanine, a precursor of most of the phenolics in higher plants is a product of which of the following pathways ?
    A) Shikimic acid pathway
    B) Malonic acid pathway
    C) Mevalonic acid pathway
    D) Methylerythritol pathway

80. Coupling of the reaction centers of oxidative phosphorylation is achieved by which of the following ?
    A) Making a complex of all four reaction centers
    B) locating all four complexes in the inner membrane
    C) Ubiquinonesand cytochrome
    D) pumping of protons

81. A human is phenotypically female, but her interphase somatic nuclei do not display the existence of Barr bodies. Which of the following conditions could explain the above feature ?
    A) Klinefelter syndrome
    B) 2n + XXX
    C) Turner syndrome
    D) 2n + YY

82. Which of the following techniques will you use to identify more than 30,000 differentially expressed genes in normal and tumor tissues in one single experiment ?
    A) RAPD
    B) Genome sequencing
    C) ChIP assay
    D) Transcriptome analysis

83. Which of the following statements is true for two different tripeptides consisting of either glycine or proline ?
    A) Glycine tripeptide will have relatively larger allowed area on the Ramachandran plot
    B) Proline tripeptide will have relatively larger allowed area on the Ramachandran plot
    C) Both the tripeptides will fall primarily in the disallowed regions of the Ramachandran plot
    D) Both the tripeptides will fall primarily in the overlapping allowed regions of the Ramachandran plot

84. C banding of human chromosomes specifically reveals
    A) Polymorphism of constitutive heterochromatin of chromosomes 1, 9, 16 and Y
    B) Polymorphism of constitutive heterochromatin of chromosomes 3, 7, 12 and X
    C) Polymorphism of facultative heterochromatin of chromosome X
    D) Satellite sequences

85. Cytotoxic T cells express
    A) CD8 marker and are class II MHC-restricted
    B) CD4 marker and are class I MHC-restricted
    C) CD4 marker and are class II MHC-restricted
    D) CD8 marker and are class I MHC-restricted

86. Which of the following is a component in the signalling pathway stimulated by receptor tyrosine kinases ?
    A) Adenylate cyclase
    B) Janus kinase
    C) Autophosphorylating receptor
    D) Ras activating protein

87. Which of the following enzymes helps in the survival of Helicobacter pylori in the gastric antrum ?
    A) Carbonic anhydrase
    B) β-lactamase
    C) Urease
    D) Transpeptidase

88. A method where a strong enhancer is randomly inserted in a plant genome by transformation, resulting in mutant plants with dominant phenotypes, is known as
    A) Enhancer trapping
    B) Tilling
    C) Activation tagging
    D) Gene trapping

89. Which one of the following reporter genes can be used for real-time visualization of living cells/tissues in transgenic plants?
    A) gus
    B) gfp
    C) cat
    D) beta-galactosidase

90. In order to have a desired shRNA cassette integrated in target cells, which of the following gene transfer vectors is preferable ?
    A) Baculovirus vector
    B) Herpes virus vector
    C) Adenoviral vector
    D) Lentiviral vector

91. Intracellular transport in mammalian cells through vesicular fusion is regulated by which of the following GTPases ?
    A) Rho
    B) Ran
    C) Rab
    D) Ras

92. In Drosophila embryogenesis, the signal received from Gurken proteins by follicle cells results in posteriorization of these cells. Knocking out the gene for Gurken in Drosophila will NOT result in failure of
    A) Accumulation of maternal mRNAs
    B) Rearrangement of maternal mRNA at the two ends of the embryo
    C) Establishment of gradients of Gurken
    D) Establishment of anterior-posterior axis

93. Which of the following cellular CD surface markers is used in the identification of B cells from blood samples ?
    A) CD3
    B) CD4
    C) CD25
    D) CD19

94. The KDEL sequence of the ER luminal proteins is responsible for
    A) Translocation of the proteins into the ER lumen
    B) Insertion of proteins into the membrane of the ER
    C) Quality control in the ER
    D) Retrieval of ER luminal proteins from the Golgi

95. The prominent group of micro-organism involved in marine bio-corrosion is
    A) Sulphate reducing bacteria
    B) Sulphur oxidizing bacteria
    C) Iron oxidizing bacteria
    D) Sulphide oxidizing bacteria

96. Severe combined immunodeficiency mice and nude mice differ in which of the following cellular components?
    A) B lymphocytes
    B) T lymphocytes
    C) Macrophages
    D) Natural killer cells

97. The trp operon is transcribed when
    A) Tryptophan concentration in the cell is high
    B) The trp repressor is bound to tryptophan or a similar shaped molecule
    C) Tryptophan is bound to its aporepressor
    D) The appropriate co-repressor is absent

98. Humans have 23 pairs of chromosomes, while our closest relatives, chimpanzees, have 24 pairs. This important chromosomal change could best be described as
    A) non-disjunction followed by deletion
    B) translocation followed by deletion
    C) duplication followed by deletion
    D) translocation followed by inversion

99. An antibiotic that resembles the 3'end of a charged tRNA molecule is
    A) Streptomycin
    B) Sparsomycin
    C) Puromycin
    D) Tetracycline

100. Which one of the following enzymes is an established intracellular anti-oxidant ?
    A) Lactate dehydrogenase
    B) Phenylalanine hydroxylase
    C) Superoxide dismutase
    D) γ-Secretase

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SPACE FOR ROUGH WORK