088/2017

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet alpha code viz. A, B, C & D.

2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.

3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.

4. If you get a question booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.

5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is un-numbered, please get it replaced by new question booklet with same alpha code.

6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.

7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.

8. A blank sheet of paper is attached to the question booklet. This may be used for rough work.

9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**

10. Each question is provided with four choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball-Point Pen in the OMR Answer Sheet.

11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**

12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.

13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

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1. Paramecium reproduces sexually by

    (A) Conjugation   (B) Binary fission

    (C) Multiple fission   (D) Budding

2. Name the largest living flightless bird.

    (A) Pigeon   (B) Crane

    (C) Struthio   (D) Vulture

3. Filariasis is caused by

    (A) Ascaris   (B) Wuchereria

    (C) Fasciola   (D) Tapeworm

4. Which is a fresh water sponge ?

    (A) Sycon   (B) Euplectella

    (C) Euspongia   (D) Spongilla

5. In Mammals, number of neck vertebrae is _____.

    (A) 2   (B) 5

    (C) 10   (D) 7

6. Which is a living fossil ?

    (A) Sepia   (B) Teredo

    (C) Neopilina   (D) Starfish

7. Which among the following is not an Echinoderm ?

    (A) Ophiothrix   (B) Ascaris

    (C) Sealilly   (D) Starfish

8. Tusk of Elephant is modified

    (A) Upper incisors
    (B) Lower incisors
    (C) Upper canines
    (D) Upper molars

9. Excretion is uricotelic in _____ .

    (A) Amphibians
    (B) Fishes
    (C) Reptiles
    (D) Mammals

10. _____ is an anticoagulant.

    (A) Heparin
    (B) Urea
    (C) Glucose
    (D) Ammonia

11. _____ is an agranulocyte.

    (A) Neutrophil
    (B) Basophil
    (C) Erythrocyte
    (D) Monocyte

12. ABO blood groups were identified by

    (A) Lamark
    (B) Karl Landsteiner
    (C) Gregor Mendel
    (D) Robert Koch

13. Which hormone causes contraction of uterus during childbirth ?

    (A) Thyroxin
    (B) Oxytocin
    (C) Progesterone
    (D) Estrogen

14. Which among the following is a limbless Amphibian ?

    (A) Frog
    (B) Toad
    (C) Salamander
    (D) Icthyophis

15. _____ is a neurotransmitter.

    (A) Acetylcholine
    (B) Vasopressin
    (C) Insulin
    (D) Glucose

16. Two charges interact even if they are not in contact with each other.

    (A)   True   (B)   False

    (C)   Partially true   (D)   Partially false

17. Among the various transistor amplifier circuits, which configuration can operate at higher frequency ?

    (A)   Common Emitter   (B)   Common Collector

    (C)   Common Base   (D)   None

18. Interference of light can be explained with the help of

    (A)   Wave theory   (B)   Corpuscular theory

    (C)   Quantum theory   (D)   Radiation theory

19. Energy equivalent of 1 kg of coal

    (A) 9×10^{17} J   (B) 9×10^{16} J

    (C) 9×10^{15} J   (D) 9×10^{9} J

20. Principle of STM is based on

    (A)   De Broglie hypothesis   (B)   Corpuscular theory

    (C)   Quantum tunneling   (D)   Photoelectric effect

21. Principle of rocket propulsion is based on

    (A)   Principle of conservation of mass   (B)   Newton's First Law

    (C)   Newton's Second Law   (D)   Law of conservation of momentum

22. Which one among the quarks has greatest rest mass ?

    (A)   Bottom   (B)   Strange

    (C)   Top   (D)   Charm

23. A galvanometer can be converted to voltmeter by connecting

    (A)   Low resistance in series   (B)   Low resistance in parallel

    (C)   High resistance in series   (D)   High resistance in parallel

24. Period of oscillation of a pendulum oscillating in a freely falling lift

    (A) Increases   (B) Decreases

    (C) Remains the same   (D) Becomes infinity

25. An electron has a velocity 0.99 e. It's energy will be

    (A) 310 MeV   (B) 31 MeV

    (C) 0.31 MeV   (D) 0.031 MeV

26. In a common base configuration, base current and emitter current are 0.01 mA and 1 mA respectively. What is the value of collector current ?

    (A) 0.99 mA   (B) 1.01 mA

    (C) 0.001 mA   (D) 100 mA

27. Quantised Lattice vibrations are called

    (A) Photons   (B) Gravitons

    (C) Phonons   (D) Fermions

28. Heavy water is used in atomic reactors as

    (A) Coolant   (B) Moderator

    (C) Fuel   (D) Shield

29. A diamagnetic substance has relative permittivity

    (A) Less than one   (B) Equal to one

    (C) Greater than one   (D) Zero

30. Velocity of a simple executing simple harmonic oscillation with amplitude 'a' is

    (A) Zero at the extreme positions

    (B) Maximum at the extreme positions

    (C) Zero at the equilibrium position

    (D) Minimum at the equilibrium position

31. IUPAC name of glycerol is
    (A) ethane-1,2-diol
    (B) propane-1,2,3-triol
    (C) 2-methyl propan-2-ol
    (D) 2-methyl propan-1-ol

32. The pH of a solution of sodium hydroxide is 9. What will be its pH when more water is added to this solution ?
    (A) Less than 9
    (B) Greater than 9
    (C) Equal to (9)
    (D) Equal to 7

33. What is the colour of the precipitate formed when aqueous solution of sodium sulphate and barium chloride are mixed ?
    (A) Yellow
    (B) Green
    (C) Orange
    (D) White

34. Which type of reaction takes place when an iron is dipped in a solution of copper sulphate ?
    (A) Combination
    (B) Displacement
    (C) Decomposition
    (D) None of these

35. Dehydrogenation of isopropyl alcohol yields
    (A) propanone
    (B) propene
    (C) ethyl alcohol
    (D) propyl alcohol

36. Which of the following is known as regenerated fibre ?
    (A) nylon-6
    (B) nylon-6, 6
    (C) Rayon
    (D) Terylene

37. The monomer unit present in natural rubber is
    (A) isoprene
    (B) neoprene
    (C) chloroprene
    (D) ethylene

38. The molarity of sodium hydroxide solution prepared by dissolving 4 g in enough water to form 250 ml of the solution is
    (A) 0.4 M
    (B) 4 M
    (C) 0.1 M
    (D) 1 M

39. Which of the following does not disturb the equilibrium point ?
    (A) Concentration
    (B) Temperature
    (C) Pressure
    (D) Catalyst

40. Bleaching powder is prepared by passing chlorine through
    (A) Quick lime
    (B) Lime water
    (C) Dry slaked lime
    (D) Milk of lime

A

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41. The chemical formula of plaster of paris is
- (A) $CaSO_4 2H_2O$
- (B) $(CaSO_4)_2 H_2O$
- (C) $CaSO_4 \cdot H_2O$
- (D) $CaSO_4$

42. Cinnabar is an ore of
- (A) Zinc
- (B) Lead
- (C) Mercury
- (D) Silver

43. Radioactivity was discovered by
- (A) Rutherford
- (B) Mullikan
- (C) J.J. Thomson
- (D) Henri Becqueral

44. The total number of orbitals associated with the principal quantum number 3 is
- (A) 6
- (B) 9
- (C) 3
- (D) 18

45. The systematic nomenclature of element having atomic number 115 is
- (A) Unp
- (B) Unq
- (C) Uup
- (D) Uuq

46. The shape of XeF_4 molecule is
- (A) Bent
- (B) Trigonal pyramidal
- (C) Tetrahedral
- (D) Square planar

47. Aspirin is _____
- (A) 2-acetoxy benzoic acid
- (B) Salicylic acid
- (C) 3-acetyl salicylic acid
- (D) 4-acetyl salicylic acid

48. Chemical substances which are capable of killing microorganisms but are not safe to be applied to living tissues is
- (A) Tranquilizers
- (B) Disinfectants
- (C) Antiseptics
- (D) Analgesics

49. The octane number of isooctane is
- (A) zero
- (B) one
- (C) ten
- (D) hundred

50. Among the following species which one is an example of electrophile ?
- (A) alcohol
- (B) ether
- (C) dichloro carbene
- (D) carbanion

51. Spirogyra different from Moss protonema in having

    (A) Pyrenoid   (B) Branched filament

    (C) Discoid chloroplast   (D) Rhizoidal branches

52. An insectivorous plant among the following

    (A) Cuscuta   (B) Nepenthus

    (C) Viscum   (D) Pinus

53. Gymnosperms do not form fruits because they lack

    (A) Pollination   (B) Fertilization

    (C) Seeds   (D) Ovary

54. In Dicot stem, primary vascular bundles are

    (A) Scattered   (B) Arranged in rings

    (C) Closed   (D) Concentric

55. A beneficial association which is necessary for the survival of both the partners is called

    (A) Symbiosis   (B) Commensalism

    (C) Parasitism   (D) Mutualism

56. What is a taxon ?

    (A) A group of related plants or animals

    (B) A type of living organism

    (C) A group of related families

    (D) A taxonomic group of any rank

57. During cell division, synapetonemal complex appears in

    (A) Amitosis   (B) Mitosis

    (C) Meiosis-I   (D) Meiosis-II

58. Among the following, which is the hydrogen acceptor ?

    (A) CoA   (B) DNA

    (C) NADP+   (D) ATP

59. Middle lamella is a part of

    (A) Cell wall   (B) Nuclear envelope

    (C) Plasmalemma   (D) Cytoplasm

60. Cellulose is

    (A) Disaccharide   (B) Pentosan polysaccharide

    (C) Monosaccharide   (D) Hexasan polysaccharide

61. Non-biological nitrogen fixation can be occurs by

    (A) Electrical Energy   (B) Ionising radiation

    (C) Both of these   (D) None of these

62. Which of the following group of plants can be used as indicators of SO_2 pollution ?

    (A) Ferns   (B) Epiphytic Lichens

    (C) Liverworts   (D) Hornworts

63. What is the hereditary material of TMV ?

    (A) RNA   (B) DNA

    (C) Both DNA and RNA   (D) None of these

64. Which among the following is a micronutrient ?

    (A) Phosphorus   (B) Potassium

    (C) Calcium   (D) Zinc

65. Which of the following is the smallest RNA ?

    (A) m-RNA   (B) r-RNA

    (C) t-RNA   (D) Chromosomal RNA

66. The real part of sin ($\alpha + i\beta$) is

 (A) $\sin\alpha \cos\beta$

 (B) $\sin\alpha \cosh\beta$

 (C) $\cos\alpha \sin\beta$

 (D) $\cos\alpha \sinh\beta$

67. Imaginary part of $\cosh(x + iy)$ is

 (A) $\cosh x \cos y$

 (B) $\sinh x \sin y$

 (C) $\cos x \cosh y$

 (D) $\sin x \sinh y$

68. The rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 5 & 7 \end{bmatrix}$ is

 (A) 3

 (B) 2

 (C) 1

 (D) 0

69. The eigen values corresponding to the matrix $A = \begin{bmatrix} 7 & -2 & -2 \\ -2 & 1 & 4 \\ -2 & 4 & 1 \end{bmatrix}$ are

 (A) $(1, 3, 2)$

 (B) $(3, -2, 4)$

 (C) $(3, -3, 9)$

 (D) $(3, -3, 4)$

70. The inverse of $A = \begin{bmatrix} 1 & 2 \\ 1 & 1 \end{bmatrix}$ is

 (A) $\begin{bmatrix} 1 & 1 \\ 1 & 2 \end{bmatrix}$

 (B) $\begin{bmatrix} 1 & 2 \\ -1 & -1 \end{bmatrix}$

 (C) $\begin{bmatrix} -1 & -2 \\ 1 & -1 \end{bmatrix}$

 (D) $\begin{bmatrix} -1 & 2 \\ 1 & -1 \end{bmatrix}$

71. Which are the roots of the equation $x^3 - 12x^2 + 39x - 28 = 0$ if the roots are in arithmetic progression ?

 (A) $(1, 4, 7)$

 (B) $(2, 2, 7)$

 (C) $(2, 4, 7)$

 (D) $(1, 2, 5)$

72. The general solution to $x(1 + y^2)\,dx + y(1 + x^2)\,dy = 0$ is

 (A) $\left[\dfrac{(1 + x^2)}{(1 + y^2)}\right] = K$

 (B) $\left[\dfrac{(1 + y^2)}{(1 + x^2)}\right] = K$

 (C) $(1 + x^2)(1 + y^2) = K$

 (D) $(2 + x^2)(2 + y^2) = K$

73. The unit vector in the direction of the vector from $P_1(1, 0, 1)$ to $P_2(3, 2, 0)$ is

    (A) $i + j + k$ (B) $2i + 2j - k$

    (C) $(2/3)i + (2/3)j - k$ (D) $(2/3)i + (2/3)j - k/3$

74. The work done by a force F = [2, 3, 4] acting on a body if the body is displaced from the point A (3, 5, 0) to a point B(5, 7, 0) along the straight line AB is

    (A) 4   (B) 10

    (C) 6   (D) 12

75. The grad ϕ at the point $(1, -2, -1)$ for $\phi(x, y, z) = 3x^2y - y^3z^2$ is

    (A) $-12i - 9j - 16k$ (B) $-2i - 7j - 8k$

    (C) $-2i - 9j - 16k$ (D) $-12i - 7j - 16k$

76. The eccentricity of the ellipse $2x^2 + 3y^2 = 6$ is

    (A) $\sqrt{3}$ (B) $\dfrac{1}{\sqrt{3}}$

    (C) $\dfrac{2}{\sqrt{3}}$ (D) $2\sqrt{3}$

77. Equation of the hyperbola with one focus (4, 0) and the corresponding directrix $x = 2$ is

    (A) $[(x^2/8) - (y^2/4)] = 1$ (B) $[(x^2/4) - (y^2/2)] = 1$

    (C) $x^2 - y^2 = 8$ (D) $x^2 - y^2 = 4$

78. If the vertices of a tetrahedron are (1, 3, 6), (3, 7, 12), (8, 8, 9), (2, 2, 8).What is the volume of it ?

    (A) 45   (B) 55

    (C) 95   (D) 90

79. For what value of λ the vectors a = [2, -1, 1], b = [1, 2, -3] and c = [3, λ, 5] are coplanar ?

    (A) 3   (B) 4

    (C) 5   (D) 2

80. For any group G if the order of any element a $\in$ G is n, then what is the order of a^p where p is prime to n ?

    (A) n^2 (B) n

    (C) $2n$ (D) $\sqrt{n}$

81. National Mission on Clean Ganga (NMCG) observed Ganga Swatchata Snakalp Divas on
    (A) May 4th, 2017   (B) May 2nd, 2017
    (C) April 5th, 2017   (D) March 3rd, 2017

82. Name the first city in the world to have its own Microsoft designed Font.
    (A) Cairo   (B) Sharjah
    (C) Sidney   (D) Dubai

83. The 13th India-EU Summit was held in which city on 30th March, 2016 ?
    (A) Paris   (B) Rome
    (C) Brussels   (D) Berlin

84. Hemis Gompa Festival which is internationally known is of which State ?
    (A) Jammu & Kashmir   (B) Haryana
    (C) Uttarakhand   (D) Rajasthan

85. Article 360 of Indian Constitution stands for
    (A) Election & Election Commission   (B) Provision for Emergency
    (C) Official Language   (D) Power of Parliament to amend the Constitution

86. The idea of 'Concurrent List' was borrowed from the Constitution of which country ?
    (A) Australia   (B) England
    (C) Japan   (D) USA

87. The Constitutional Amendment which amended Article 326 and lowered voting age from 21 to 18 years
    (A) 86th Amendment   (B) 61st Amendment
    (C) 65th Amendment   (D) 69th Amendment

88. Beti Bachao Beti Padhao (BBBP) Programme was launched at Panipat, Haryana on
    (A) 20th January, 2015   (B) 24th June, 2015
    (C) 1st July, 2015   (D) 22nd January, 2015

89. Who established the First Printing Press in Kerala ?
    (A) Rev. Habik   (B) Arnos Pathiri
    (C) Dr. Herman Gundert   (D) Benjamin Bailey

90. Vaala Samudaya Parishkarani Sabhas was organised by
    (A) Kumara Gurudevan   (B) Sahodaran Ayyappan
    (C) Pandit K.P. Karuppan   (D) Ayyankali

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                                                                   [P.T.O.]

91. 'Dhyana Sallapangal' is an important work of which social reformer ?
    (A) Kuriakose Elias Chavara   (B) Vagbadananda
    (C) Poikayil Yohannan   (D) Ayyavaikundar

92. 'Avanavan Kadamba' is a drama written by
    (A) V.T. Bhattathiripad   (B) Kaavalam Narayana Panicker
    (C) N.N. Pillai   (D) O. Madhavan

93. Samyukhta Rashtriya Samithi was organised in connection with
    (A) Paliyam Satyagraha   (B) Malayali Memorial
    (C) Nivarthana Agitation   (D) Channar Agitation

94. Onnekal Kodi Malayalikal is an important work written by
    (A) E.M. Sankaran Namboothripad   (B) G.P. Pillai
    (C) K.P. Kesava Menon   (D) Vallathol Narayana Menon

95. The Social reformer who led 'Achipudava Samaram' is
    (A) K.P. Vellon   (B) K. Paramu Pillai
    (C) Arattupuzha Velayudha Panicker (D) C. Krishnan

96. The organisation founded by Subhananda Gurudevan is
    (A) Ananda Sabha   (B) Atma Bodhodaya Sangham
    (C) Kallianadayini Sabha   (D) Atmiya Sabha

97. 'Athma Kathakkoru Aamukham' is the autobiography of
    (A) Arya Pallam   (B) Lalitha Prabhu
    (C) A.V. Kuttimalu Amma   (D) Lalithambika Antarjanam

98. Kerala Pulayar Mahasabha was founded under the leadership of
    (A) Velukkutty Arayan   (B) P.K. Kumaran Master
    (C) P.K. Chathan Master   (D) T.K. Madhavan

99. The founder editor of Bashaposhini one of the oldest Malayalam literary magazines
    (A) Kandathil Varughese Mapila   (B) Moorkoth Kumaran
    (C) G. Sankara Kurup   (D) Ulloor S Parameswar Iyer

100. Who won the Vayallar Award – 2016 ?
    (A) Sree Kumaran Thampi   (B) C. Radhakrishnan
    (C) Subash Chandran   (D) U.K. Kumaran