018/23

Question Booklet Alpha Code

A

A

	Question Booklet Sl. No.

Total Number of Questions : 100 **Time : 90 Minutes**

Maximum Marks : 100

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/her 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.

A

1. The dimension of coefficient of viscosity is
   A) $ML^{-1}T^{-1}$ B) MLT^{-1} C) $ML^{-1}T$ D) $ML^{-1}T^{-2}$

2. The radioactive element Neptunium ($_{93}Np^{239}$) emits which particle to form Plutonium
   A) α particle B) β particle C) γ particle D) positron

3. Which of the following is true in the case of hexagonal crystal systems ?
   A) $a = b \neq c$, $\alpha = \beta = 90°$, $\gamma = 120°$ B) $a = b = c$, $\alpha = \beta = \gamma \neq 90°$
   C) $a \neq b \neq c$, $\alpha \neq \beta \neq \gamma \neq 90°$ D) $a \neq b \neq c$, $\alpha = \beta = 90° \neq \gamma$

4. In the case of L – S coupling scheme when L > S, J can have
   A) (2S + L) values B) (2L + 1) values
   C) (2L + S) values D) (2S + 1) values

5. Lyman spectral series of hydrogen atom lies in which region of the electromagnetic spectrum ?
   A) Ultraviolet region B) Infra-Red region
   C) Visible region D) Radio waves

6. Which of the following are not the conditions to produce Haidinger fringes ?
   i. The source must be an extended source.
   ii. The source must be a narrow source.
   iii. The film thickness must be appreciably large.
   iv. The film thickness must be very small.
   v. The observing instrument is to be focused for parallel rays.
   A) Only (i, iii and iv) B) Only (ii, iv and v)
   C) Only (ii and iv) D) Only (iv and v)

7. Which of the following statements are correct in accordance with the first law of Thermodynamics ?
   i. It is applicable to any process by which a system undergoes a physical change.
   ii. It is applicable to any process by which a system undergoes a chemical change .
   iii. It introduces the concept of internal energy.
   iv. It does not provide a method for determining the change in internal energy.
   A) i, ii and iii B) i, iii and iv C) i, ii and iv D) ii, iii and iv

8. The angle of contact depends on
   i. The nature of the liquid.
   ii. The solid with which it is in contact.
   iii. The purity of solid and liquid.
   iv. Nature of the vapour.
   A) i, ii and iii
   B) ii, iii and iv
   C) i, ii, iii and iv
   D) i, iii and iv

9. Which of the following is the relation between numerical aperture and acceptance angle in the case of optical fibre communication ? Symbols have the usual meaning
   A) $\text{Sin}\theta_0 = n_0(n_1^2 - n_2^2)^{1/2}$
   B) $\text{Sin}\theta_0 = n_0^{-1}(n_1^2 - n_2^2)^{1/2}$
   C) $\text{Sin}\theta_0 = n_0^{-1}(n_1^2 - n_2^2)^2$
   D) $n_0^{-1}\,\text{Sin}\theta_0 = (n_1^2 - n_2^2)^{1/2}$

10. In Fraunhoffer single slit diffraction pattern, a screen is placed 1m away from the lens to obtain the pattern. Which is the wavelength of light if the slit width is 0.2 mm and the first minima lie 2.5 mm on either side of the central maximum ?
    A) 4500 Å B) 5500 Å C) 4000 Å D) 5000 Å

11. A Carnot's engine working between 127°C and 27°C absorbs 60 cals of heat. How much heat is rejected ?
    A) 65 cals B) 45 cals C) 35 cals D) 25 cals

12. What is the ratio of extension produced in the wires of the same material, subjected to a force in the ratio of 4 : 1 and their lengths and radius are in the ratio of 1 : 16 and 1 : 4 respectively ?
    A) 2 : 1 B) 1 : 2 C) 1 : 4 D) 1 : 1

13. The correct order of bond angles in NH_3, PH_3, AsH_3 and SbH_3 is
    A) $PH_3 > NH_3 > AsH_3 > SbH_3$
    B) $NH_3 > PH_3 > AsH_3 > SbH_3$
    C) $SbH_3 > AsH_3 > PH_3 > NH_3$
    D) $AsH_3 > SbH_3 > PH_3 > NH_3$

14. Choose the correct answer with respect to the measurement of hardness of water by complexometric titration, carried out using Eriochrome black as indicator in a buffered solution of pH around 10.
    A) Magnesium-indicator complex is more stable than magnesium-EDTA complex
    B) At the end point, the colour changes from blue to red
    C) At the end point, colour of the solution is due to the Mg-indicator complex
    D) Magnesium-EDTA complex is more stable than the magnesium-indicator complex

15. The number of radial nodes present in 4Px orbital is
    A) 4 B) 3 C) 2 D) 1

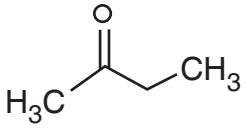
16. Which of the following set of quantum numbers is allowed ?
    A) $n = 3, l = 3, m_1 = -2$
    B) $n = 4, l = 1, m_1 = -2$
    C) $n = 4, l = 3, m_1 = -3$
    D) $n = 4, l = 4, m_1 = -3$

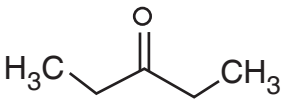
17. Octane number of 2, 2, 4 -trimethyl pentane is
    A) 0 B) 50 C) 70 D) 100

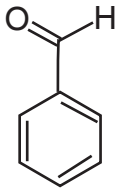
18. Which statement about carbocation is not correct ?
    A) Carbocation is an intermediate in Pinacol-Pinacolone rearrangement
    B) Carbocation is a group of atoms that contain a carbon atom bearing only six electrons
    C) Carbocation is an intermediate in S_N1 reactions
    D) Order of stability of carbocations is $1° > 2° > 3°$

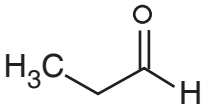
19. Which polymer is used for making bullet proof vests ?
    A) Poly(p-phenylene terephthalamide)
    B) Polycaprolactam
    C) Polymethylmethacrylate
    D) Polycaprolactone

20. The compound that shows positive iodoform test is

A) 

B) 

C) 

D) 

21. At 298 K, 0.2 mol of ammonium acetate and 0.1 mol of acetic acid are dissolved in 1L of water. The pH of resulting solution is (Given pKa of acetic acid is 4.75)
A) 4.75 B) 5.05 C) 4.44 D) 3.92

22. In a saturated calomel electrode, the saturation is with respect to
A) AgCl B) $HgCl_2$ C) Hg_2Cl_2 D) KCl

23. Calculate the temperature at which the average velocity of oxygen equals that of hydrogen at 10K.
A) 200 K B) 160 K C) 320 K D) 300 K

24. What is the percent transmittance of a solution with absorbance (optical density) 1.0 ?
A) 100 B) 10 C) 1 D) 0.1

25. Nyctalopia is a disorder which occurs due to the deficiency of
A) Vitamin D B) Vitamin K
C) Vitamin A D) Vitamin C

26. Which part of conducting system of heart is known as cardiac pacemaker ?
A) A V node B) Bundle of His
C) Purkinje fibres D) S A node

27. Low level of Oxyhemoglobin in blood enables it to transport more Carbondioxide. This phenomenon is
A) Bohr effect
B) Counter current effect
C) Haldane effect
D) Summation effect

28. Functional contractile unit of Muscle is
    A) Telomere
    B) Sarcomere
    C) Dendromere
    D) None of these

29. During depolarization of a nerve fibre as first step there occurs
    A) Movement of Sodium ions from exterior to interior axoplasm
    B) Movement of Sodium ions from axoplasm to exterior
    C) Movement of Potassium ions to the exterior from axoplasm
    D) Movement of Potassium ions from exterior to axoplasm

30. After analyzing the karyotype of an abnormal new born baby doctor diagnosed that he is having Edwards syndrome. The reason is
    A) Trisomy 21
    B) Trisomy 13
    C) Trisomy 18
    D) Trisomy 15

31. According to National Immunization Schedule which Vaccine is scheduled to be given at 10 and 16 years of age
    A) BCG
    B) MMR
    C) DPT
    D) TT

32. Which of the following is not an autoimmune disorder ?
    A) Grave's disease
    B) AIDS
    C) Type 1 Diabetes
    D) Rheumatoid arthritis

33. The antibody capable of crossing placental barrier is
    A) Ig G
    B) Ig E
    C) Ig M
    D) Ig A

34. In a eukaryotic cell Krebs cycle takes place in
    A) Cytoplasm
    B) Endoplasmic reticulum
    C) Mitochondrial matrix
    D) Lysosome

35. Number of base pairs per turn in B form of DNA is
    A) 11
    B) 9
    C) 10
    D) 12

36. Which one of the following is adrenal disorder ?
    A) Cushing syndrome
    B) Myxedema
    C) Acromegaly
    D) Grave's disease

37. The chemical compound present in middle lamella is
    A) Calcium pectate
    B) Polylactic acid
    C) Gelatin
    D) Gum-arabic

38. Sunken stomata are present in
    A) Epiphytes
    B) Parasites
    C) Xerophytes
    D) Hydrophytes

39. Casparian thickening is present on
    A) Epidermis
    B) Hypodermis
    C) Endodermis
    D) Exodermis

40. Inflorescence in clerodendrum is a
    A) Cymule
    B) Dichasial cyme
    C) Solitary cyme
    D) Monochasial cyme

41. An example for sorosis type of fruit is
    A) Jackfruit
    B) Polyalthia
    C) Orange
    D) Annona

42. Absorption of water by solid and hydrophilic constituents of the cell wall by surface attraction is called
    A) Adhesion
    B) Cohesion
    C) Guttation
    D) Imbibition

43. The light harvesting photosynthetic units present in thylakoid membrane are called
    A) Quantosomes
    B) Phytochrome
    C) Ferredoxine
    D) Antinae molecules

44. 2, 4 Dichlorophenoxy acetic acid belongs to
    A) Gibberline
    B) Antiauxine
    C) Synthetic auxin
    D) Auxin

45. The binomial nomenclature of coconut is
    A) *Elais quineensis*
    B) *Borassus flabellifer*
    C) *Artocarpus Heterophyllus*
    D) *Cocos nucifera*

46. The long cotton hair obtained from Gossypium herbaceum is
A) Lodicule B) Lemna
C) Lint D) Fuzz

47. Select the species endangered in India.
A) Green sea turtle B) Dodo
C) Passenger pigeon D) Pink headed duck

48. Select the primary air pollutant.
A) smog B) tropospheric ozone
C) peroxyacyl nitrate D) ethylene

49. The Rank of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 5 & 7 \end{bmatrix}$ is

A) 2 B) 3 C) 4 D) 5

50. Which of the following sets of vectors are bases for $\mathbb{R}^2$?
A) {(0, 1), (1, 1)} B) {(0, 1), (1, 0)}
C) {(0, 0), (1, 1)} D) {(1, 1), (1, 0)}

51. If $\bar{z}$ is the conjugate of z, then
A) $|\bar{z}| = |z|$ B) $|\bar{z}| < |z|$ C) $|\bar{z}| > |z|$ D) None of these

52. If $\bar{z}$ is the conjugate of z, then

A) $\mathrm{Re}\, z = \frac{1}{2}(z + \bar{z})$ B) $\mathrm{Re}\, z = \frac{1}{2}(z - \bar{z})$ C) $\mathrm{Re}\, z = \frac{1}{2}\bar{z}$ D) $\mathrm{Re}\, z = \frac{1}{2}z$

53. The distance between the points P(–7, 2) and Q(5, –3) is
A) 15 B) 14 C) 13 D) 12

54. The limit of $(x^2 - 4x + 3)$ as $x \to 5$ is
A) 10 B) 7 C) 8 D) 12

55. The limit of $7x^5 - 4x^3 + 2x - 9$ as $x \to -\infty$ is
A) $+\infty$ B) $-\infty$ C) 0 D) None of these

56. Ordinary Differential Equation involves
    A) Only one independent variable
    B) Only two independent variable
    C) Infinite independent variable
    D) None of these

57. Divergence and Curl of a vector field are
    A) Scalar and Scalar
    B) Scalar and Vector
    C) Vector and Vector
    D) Vector and Scalar

58. The curl of vector field $F(x, y, z) = x^2i + 2zj - yk$ is
    A) $-3i$ B) $-3j$ C) $-3k$ D) 0

59. The identity permutation is
    A) Odd permutation
    B) Even permutation
    C) Neither even nor odd
    D) None of these

60. Let G be a group and $a \in G$. If the order of a is n and order of a^p is m, then
    A) $m = 0$ B) $m \geq n$ C) $m \leq n$ D) None of these

61. Which of the following is HazChem code of LPG ?
    A) 2RE B) 2SE C) 2WE D) 2P

62. A Chemical added to give odour to detect LPG leaks
    A) Ethyl Mercaptan
    B) Methyl Mercaptan
    C) Pottassium Chloride
    D) Aluminium Stearate

63. The process of extinguishing a fire by stopping/limiting the supply of oxygen using blankets, sand, etc. is called
    A) Cooling
    B) Starvation
    C) Blanketing
    D) Mitigation

64. As per Indian Standards Fire in metals is under the category of _____ Fire.
    A) Class A B) Class B C) Class C D) Class D

65. Major constituent chemical in ABC dry chemical powder is
    A) Mono ammonium phosphate
    B) Ethyl methyl acetate
    C) Sodium bicarbonate
    D) Sulphur dioxide

66. What is the colour of the sprinkler bulb of sprinkler system operating at 79 degree Celsius ?
    A) Green
    B) Blue
    C) Red
    D) Yellow

67. What is the working principle of hydraulic equipments ?
    A) Centrifugal force
    B) Newton laws
    C) Pascal's law
    D) Charle's law

68. What type of pump is used mainly in Fire engines ?
    A) Rotary
    B) Centrifugal
    C) Plunger
    D) All the above

69. The yellow colour in the NFPA Hazard Diamond denote the following hazard of the material
    A) Flammability
    B) Health
    C) Reactivity
    D) Specific hazard

70. CPR stands for
    A) Cardio Pulmonary Rescue
    B) Cardio Pulmonary Resuscitation
    C) Critical Patient Rescue
    D) Cardio Patient Rescue

71. Heating effect of current is not directly dependant on
    A) Current
    B) Resistance
    C) Time of flow
    D) Pressure

72. As per Indian Standards Class C fire refers to
    A) Fire in liquids
    B) Fire in gases
    C) Fire in solids
    D) None of these

73. Emergency information panel doesn't consist
    A) Class label
    B) Vehicle number
    C) UN Number
    D) Specialist advice

74. The chemical constituents of TEC powder
    A) Sodium Chloride, Potassium Chloride, Barium Chloride
    B) Sodium Chloride, Calcium Chloride, Barium Chloride
    C) Sodium Chloride, Calcium Chloride, Potassium Chloride
    D) Sodium Chloride, Calcium Chloride, Magnesium Chloride

75. The acronym BLEVE stands for
    A) Boiling Liquid Expanding Vapour Explosion
    B) Boiling Liquid Exploding Vapour Expansion
    C) Boiling Liquid Emitting Vapour Explosion
    D) Boiling Liquid Exploding Vapour Emission

76. Dry ice is chemically
    A) Calcium Chloride
    B) Solid Carbon Dioxide
    C) Magnesium Sulphate
    D) Sodium Chloride

77. Which of the following does not undergo sublimation ?
    A) Solid Iodine
    B) Dry ice
    C) Silica
    D) Camphor

78. The most efficient shield against radioactive emissions
    A) Lead
    B) Aluminium
    C) Glass
    D) Steel

79. The efficiency of fire pump can be denoted as
    A) Efficiency=Water power/Brake power
    B) Efficiency=Brake power/Water power
    C) Efficiency=Pressure/Head
    D) Efficiency=Head/Pressure

80. LEL stands for
    A) Lower Expansion Limit
    B) Lower Explosive Limit
    C) Lower Extinguishing Limit
    D) Lower Extinguishing Level

81. Who among the following was nominated twice to the Sri Mulam Popular Assembly as a representative of the Dalits in 1921 and 1931 ?
    A) Kumara Guru
    B) Moorkoth Kumaran
    C) Chathan Master
    D) K. Kelappan

82. Name the newspapers published by Herman Gundert
    A) Rajyasamacharam and Paschimodayam
    B) Vivekodayam and Prabhatham
    C) Malayalee and Rajyasamacharam
    D) Vivekodayam and Malayalee

83. In which session of the Congress of 1923, T.K. Madhavan moved a resolution for the eradication of untouchability in Kerala ?
    A) Delhi B) Kakinada C) Belgaum D) Bombay

84. The work “Pingala” is written by
    A) Kuttimalu Amma B) Anna Chandi
    C) Ulloor S Parameswara Iyer D) Kesav Dev

85. K.V. Unni was associated with
    A) Vaikom Satyagraha B) Paliyam Satyagraha
    C) Kuttamkulam Satyagraha D) None of these

86. The project named “Cosmos Malabaricus” was signed between Kerala and
    A) Portugal B) Netherlands C) Britain D) Russia

87. Citizen Constitution Literacy Campaign, aimed at educating everyone above the age of 10 years about the basic principles of the Constitution was launched at
    A) Ernakulam B) Kozhikode
    C) Thiruvananthapuram D) Kollam

88. The first Indian Superintendent of Calicut Lunatic Asylum was
    A) Ayyathan Gopalan B) T.K. Madhavan
    C) Krishna Pillai D) G.P. Pillai

89. The journal called *Paropakari* was published by
    A) E.K. Moulavi
    B) Vakkom Abdul Khadar Moulavi
    C) Makti Thangal
    D) Muhammad Hamadani Thangal

90. Under whose instruction, the Travancore Government issued orders permitting the Channar women to wear jacket and pinafore made of raw cotton ?

A) Daniel Eliott
B) Sir Henry Ward
C) Francis Napier
D) Charles Trevelyan

91. Find out the memory which possesses all of the following features.

i. A small high speed buffer memory to hold instructions temporarily during processing.
ii. Reduce the waiting time of the CPU.
iii. A temporary storage area where frequently accessed data can be stored for rapid access.
iv. Transparent or invisible to the processor.

A) Register
B) Cache memory
C) RAM
D) ROM

92. Which of the following is/are correct about Non-Impact Printer ?

i. It has the ability to produce carbon copies.
ii. The print head of printer uses small pins, which strike on the paper to create a character or image.
iii. They use thermal, electrostatic, chemical or inkjet technology to produce printed output.

A) Only (iii)
B) Only (i and ii)
C) Only (i and iii)
D) All of the above (i, ii and iii)

93. The software that manages computer's memory, processes and its hardware is called

A) Application software
B) Personal computer software
C) Operating system
D) Driver software

94. Which of the following functions can be performed with the help of spreadsheets ?
    1. Maintaining records.
    2. Creating videos.
    3. Analysing data.
    4. Performing financial calculations.
    5. Writing letters.

    A) 1, 2, 3, 4, 5 B) 1, 3, 4 C) 1, 3, 5 D) 3, 4, 5

95. _____ is an unlawful activity where fake websites or emails that look original or authentic are presented to the user to fraudulently collect sensitive and personal details, particularly usernames, passwords, banking and credit card details.

    A) Denial-of-service B) Spamming
    C) Hacking D) Phishing

96. Which among the following was established under IT Act, 2000 to resolve disputes arising from the law ?

    A) Cyber Administrative Tribunal B) Technology Disputes Tribunal
    C) Cyber Appellate Tribunal D) IT Disputes Tribunal

97. Which type of network is used in Cable Television Network ?

    A) LAN B) MAN C) WAN D) PAN

98. A _____ is a passage to connect two networks together that may work upon different networking models.

    A) Router B) Modem C) Bridge D) Gateway

99. The correct sequence of HTML tags for starting a webpage is

    A) Head, Title, HTML, Body B) HTML, Body, Title, Head
    C) HTML, Head, Title, Body D) HTML, Title, Head, Body

100. Which of the following is a popular search engine ?

    A) YouTube B) Twitter C) LinkedIn D) Google

Space for Rough Work