

U.G./P.G. ENTRANCE EXAMINATION, APRIL 2021

FORENSIC SCIENCE

Time : Two Hours

Maximum : 100 Marks

All questions carry 1 mark each.

$\frac{1}{3}$ mark will be deducted for each wrong answer.

No electronic devices are permitted. Carefully read the instructions given along with the OMR sheet.

1. The process of respiration is :

- (a) Catabolic. (b) Anabolic.
(c) Biophysical. (d) Physical.

2. FADH_2 is formed during the conversion of ——— in Krebs cycle.

- (a) Malate to oxaloacetate.
(b) Fumarate to malate.
(c) Succinate to fumarate.
(d) Isocitrate to oxalosuccinate.

3. In the case of plastids, the sedimentation coefficient is :

- (a) 80 S. (b) 70 S.
(c) 50 S. (d) 40 S.

4. Mitosis can be studied in :

- (a) Brain. (b) Kidneys.
(c) Nail base. (d) Legs.

5. Arrange on the order of relative size :

- (a) Cell, nucleus, chromosome, water molecule and oxygen atom.
(b) Nucleus, water molecule, oxygen atom, chromosome and cell.
(c) Chromosome, cell, nucleus, oxygen atom and water molecule.
(d) Cell, chromosome, nucleus, water molecule and oxygen atom.

6. Inbreeding organism's group is _____.
- (a) Genus. (b) Species.
(c) Family. (d) Order.
7. Variation of prokaryote and eukaryote is mainly based on :
- (a) Chromosome only. (b) Cell organelles only.
(c) Nucleus only. (d) All the above.
8. _____ group of bacteria is responsible for nitrification.
- (a) Spirilla. (b) Vibrio.
(c) Coccus. (d) Bacillus.
9. For sleeping sickness, the vector is :
- (a) Fruit fly. (b) Sandfly.
(c) Housefly. (d) Tsetse fly.
10. During budding, in yeast which process occurs :
- (a) Spindle formation.
(b) Synapsis.
(c) Unequal division of cytoplasm.
(d) Doubling of chromosomes.
11. _____ are devoid of excretory, respiratory and circulatory organs.
- (a) Liver Fluke. (b) Sponges.
(c) Threadworms. (d) Tapeworms
12. Ecosystem belong to the smallest unit of _____.
- (a) Mesosphere. (b) Biosphere.
(c) Lithosphere. (d) Ionosphere.
13. _____ antibodies are present in the 'O' blood group.
- (a) Anti - A. (b) Anti - B.
(c) H - antigen. (d) Anti - A and Anti - B.

14. The fluid mosaic model describes :
- (a) Plasma membrane. (b) Nucleus.
(c) Endoplasmic reticulum. (d) Ribosome.
15. In insects, metamorphosis is regulated through :
- (a) Thyroxine. (b) Ecdysone.
(c) Haemolymph. (d) All the above.
16. ——— is the characteristic feature of Echinodermata.
- (a) Radial symmetry. (b) Vascular system.
(c) Radial canal. (d) Ambulacral system.
17. A modified form of mammary glands is :
- (a) Sweat glands. (b) Lacrimal glands.
(c) Salivary glands. (d) Sebaceous glands.
18. Moulting of snake consists of :
- (a) Cornified cells. (b) Dermis.
(c) Epidermis. (d) Stratum germinativum.
19. ——— is a cold-blooded animal.
- (a) Rabbit. (b) Kangaroo.
(c) Pigeon. (d) Shark.
20. ——— is a parasite living within the tissue of the host.
- (a) Endophyte. (b) Epiphyte.
(c) Ectophyte. (d) None of the above.
21. Cytological testing uses stain :
- (a) Safranin. (b) Fast green.
(c) Cotton blue. (d) Acetocarmine.
22. Protein found in microfilaments is :
- (a) Chitin. (b) Myosin.
(c) Actin. (d) Tubulin.

23. Homology and similarity of nucleic acid sequences can be identified through using which bioinformatics tool ?
- (a) SPSS. (b) EMBOSS.
(c) BLAST. (d) RasMol.
24. Cell organelles from a homogenate can be separated by :
- (a) Differential centrifugation.
(b) X-ray diffraction.
(c) Chromatography.
(d) Electrophoresis.
25. _____ cells don't divide.
- (a) Epithelial. (b) Liver.
(c) Nerve. (d) None of the above.
26. Hydrolytic product of _____ is present in honey.
- (a) Maltose. (b) Insulin.
(c) Lactose. (d) Starch.
27. _____ is present in blood group substances.
- (a) Fucose. (b) Mucose.
(c) Lactose. (d) Maltose.
28. Prostaglandins synthesis is inhibited by :
- (a) Cyanide. (b) Aspirin.
(c) Arsenite. (d) Fluoride.
29. _____ basic amino acid :
- (a) Proline. (b) Serine.
(c) Glycine. (d) Histidine.
30. Foetal haemoglobin comprises.
- (a) Two α and two γ chains.
(b) Two α and two β chains.
(c) Both (a) and (b).
(d) None of the above.

31. The optimum pH for the maximum activity of most of the enzymes is :
- (a) Between 8 and 12. (b) Between 7 and 3.
(c) Between 6 and 5. (d) Between 5 and 9.
32. Metabolism of _____ requires vitamin C.
- (a) Tryptophan. (b) Phenylalanine.
(c) Both (a) and (b). (d) None of the above.
33. The importance of leukotrienes is in :
- (a) Oxidation reaction. (b) Reduction reaction.
(c) Inhibitory reaction. (d) Allergic reaction.
34. _____ is a Lanthanide having the smallest atomic radius.
- (a) Holmium. (b) Cerium.
(c) Europium. (d) Gadolinium.
35. The number of nucleotides required to code a specific amino acid.
- (a) Four. (b) Three.
(c) Two. (d) One.
36. $C_{12}H_{24}O_2$ is known as _____.
- (a) Dodecanoic acid. (b) Palmitoleic acid.
(c) Decanoic acid. (d) Miristic acid.
37. In galvanisation process _____ is coated on Iron sheets.
- (a) Zinc. (b) Silver.
(c) Tin. (d) Chromium.
38. The most denser liquid is :
- (a) Chloroform. (b) Acetone.
(c) Petrol. (d) Water.
39. Aniline contains _____ group.
- (a) Amide. (b) Imino.
(c) Amino. (d) Nitro.

40. In SiO_2 , Si hybridisation is :
- (a) sp^3 . (b) sp^2 .
(c) sp . (d) None of the above.
41. Zinc has _____ electrons in the M shell.
- (a) 2. (b) 18.
(c) 35. (d) 60.
42. The largest atomic radius is exhibited by :
- (a) Sodium. (b) Silicon.
(c) Aluminium. (d) Chlorine.
43. Chloroform molecule exhibits _____ shape.
- (a) Angular. (b) Linear.
(c) Trigonal pyramidal. (d) None of the above.
44. Equal masses of Hydrogen and Helium are contained in a vessel. In this mixture, the fraction of the partial pressure of Hydrogen will be _____.
- (a) $2/3$. (b) $3/2$.
(c) $1/2$. (d) $2/1$.
45. Nitrogen exhibits a minimum oxidation state of :
- (a) - 5. (b) - 4.
(c) - 3. (d) - 2.
46. The freezing temperature of 'Heavy water' is :
- (a) 3.8°C . (b) 0°C .
(c) -0.38°C . (d) -4°C .
47. In water, the strongest reductant is :
- (a) Rb. (b) Li.
(c) K. (d) Na.
48. _____ is an adsorbent used in chromatography.
- (a) Al_2O_3 . (b) AlN .
(c) SO_3 . (d) B_2O_3 .

49. _____ is a semi-conductor material.
- (a) Tin. (b) Germanium.
(c) Silicon. (d) Carbon.
50. IUPAC stands for :
- (a) International Union of Pure and Applied Chemistry.
(b) Indian Union of Pure and Applied Chemistry.
(c) Indo-American Union of Physical and Applied Chemistry.
(d) International Union of Physical and Applied Chemistry.
51. Which among the following is the characteristic of a physical standard ?
- (a) Reproducibility. (b) Invariability.
(c) Indestructability. (d) All the above.
52. In uniform motion, electric charge produces :
- (a) Both electric and magnetic fields.
(b) A magnetic field only.
(c) An electric field only.
(d) None of the above.
53. Which of the following remains constant when sound waves travel from air to water ?
- (a) Frequency. (b) Velocity.
(c) Wavelength. (d) All the above.
54. In the case of a freely falling body, the distance travelled is proportional to :
- (a) Velocity. (b) Time.
(c) Square of the time. (d) Acceleration.
55. A car moving with a speed of 36 km/hr is brought to rest in 10s by applying brakes, the retardation produced will be :
- (a) 1 m/s^2 . (b) 2 m/s^2 .
(c) 1.5 m/s^2 . (d) 2.5 m/s^2 .
56. Which among the following is a vector quantity ?
- (a) Charge. (b) Kinetic energy.
(c) Temperature. (d) Impulse.

57. Rocket propulsion is based on which principle ?
- (a) Newton's second law.
 - (b) Newton's first law.
 - (c) Newton's third law.
 - (d) Principle of conservation of energy.
58. The escape velocity of a satellite moving round the earth is :
- (a) Not possible.
 - (b) 1.41 %.
 - (c) 20 %.
 - (d) 41.4 %.
59. Hydraulic press working is based on :
- (a) Boyle's law.
 - (b) Newton's law of motion.
 - (c) Archimedes principle.
 - (d) Pascal's law.
60. If the pressure on the gas is increased from p to $2p$ atmosphere, then its heat conductivity _____.
- (a) Increases.
 - (b) Remains constant.
 - (c) Decreases.
 - (d) Decreases logarithmically.
61. Sound is having the largest velocity in :
- (a) Steel.
 - (b) Water.
 - (c) Air.
 - (d) Vacuum.
62. The shape of a drop of a liquid is determined by :
- (a) Gravity.
 - (b) Surface tension.
 - (c) Both (a) and (b).
 - (d) Neither gravity nor surface tension.
63. The amount of heat required to raise the temperature of 1 kilogram of water by 1°C is called :
- (a) Calorie.
 - (b) Calorie/ $^{\circ}\text{C}$.
 - (c) Kilo-calorie.
 - (d) Kelvin.

64. 100 g of ice is mixed with 100 g of water at 100°C . What will be the final temperature of the mixture ?
- (a) 20°C . (b) 30°C .
(c) 40°C . (d) 50°C .
65. Audible sound has a frequency range of :
- (a) 20 kHz to 20 MHz.
(b) 20 Hz to 20 kHz.
(c) 0 Hz to 30 kHz.
(d) 20 kHz to 20,000 kHz.
66. Clouds get charged due to :
- (a) Motion of water molecules in it.
(b) Conduction.
(c) Induction.
(d) The magnetic field of the earth.
67. Boyle's law is applicable in :
- (a) Isotonic process. (b) Isobaric process.
(c) Isothermal process. (d) Sochroic process.
68. The shape of a regular body is changed due to :
- (a) Shearing strain. (b) Longitudinal strain
(c) Bulk strain. (d) Metallic strain.
69. Boiled egg and raw egg are subjected to spin on a table by applying the same rotational torque. Which egg will spin faster ?
- (a) Boiled egg.
(b) Raw egg.
(c) Both eggs will have the same spin rate.
(d) Nothing can be said.

70. A lift is moving up with acceleration equal to $1/5$ of that due to gravity. The apparent weight of a 60 kg man standing in the lift will be _____.
- (a) zero kg. (b) 48 kg.
(c) 60 kg. (d) 72 kg.
71. The frequency of ultrasonic waves is :
- (a) Audible. (b) Above audible range.
(c) Below audible range. (d) None of the above.
72. _____ is having the unit, electron volt.
- (a) Power. (b) Electric charge.
(c) Potential difference. (d) Energy.
73. The ratio of inertial mass to gravitational mass is equal to :
- (a) 0. (b) $1/2$.
(c) 1. (d) 2.
74. In a capillary tube, Mercury will be having _____ meniscus.
- (a) Plane. (b) Concave.
(c) Convex. (d) Uncertain.
75. Reynolds number is related to :
- (a) Strength of metals. (b) Fluid systems.
(c) Temperature. (d) None of the above.
76. The sign of forgery includes :
- (a) Pen lifts. (b) Connecting strokes.
(c) Retouching. (d) All the above.
77. In the world, Fingerprint Bureau was 1st established at :
- (a) Delhi. (b) Calcutta.
(c) USA. (d) Bombay.

78. In the arson case, the presence of accelerants is tested using.
- (a) UV- Vis spectrophotometer.
 - (b) EDX.
 - (c) Gas chromatography.
 - (d) AAS.
79. In human hair, the medullary index is :
- (a) Less than $1/3$.
 - (b) Greater than $1/3$.
 - (c) Less than $1/5$.
 - (d) Greater than $1/10$.
80. STR stands for :
- (a) Simple Tandem Repeat.
 - (b) Short Tandem Repeat.
 - (c) Sharp Tandem Repeat.
 - (d) Six Tandem Repeat.
81. Expert opinion is defined in :
- (a) Section 45 of IEA
 - (b) Section 45 of IPC
 - (c) Section 45 of CrPC
 - (d) Section 43 of IEA
82. Nuclear DNA cannot be extracted from :
- (a) Epithelial cells.
 - (b) White blood cells.
 - (c) Red blood cells.
 - (d) All the above.
83. Choking in smoothbore firearms helps to :
- (a) Strike the bullet on target precisely.
 - (b) Reduce the dispersion of pellets.
 - (c) Increase the dispersion of pellets.
 - (d) All the above.
84. The purpose of documenting the chain of custody of evidence is :
- (a) To make sure it gets to the correct scientist in the lab.
 - (b) To keep the evidence from falling out and getting lost.
 - (c) To make sure that the evidence is admissible in court.
 - (d) To keep it from getting stolen.

85. LSD stands for :

- (a) Lysergic acid dimethylamide.
- (b) Lysergic acid diethylamide.
- (c) Long-standing drug.
- (d) Long sensation drug.

86. A radial loop :

- (a) Opens toward the little finger of the hand.
- (b) Is a type of whorl pattern.
- (c) Comprises 50 % of all fingerprints.
- (d) Opens toward the thumb side of the hand.

87. If a body has been discovered several days after death, the PMI may be determined by :

- (a) Insect's activity.
- (b) Livor mortis.
- (c) Rigor mortis.
- (d) None of the above.

88. In Marquis test, the presence of amphetamines shows.

- (a) Orange to brown colour.
- (b) Purple to black colour.
- (c) Yellow to green colour
- (d) Gray to black colour.

89. Reports of the officers from FSL are valid before the court of law as per:

- (a) Section 293 CrPC.
- (b) Section 293 IPC.
- (c) Section 293 IEA.
- (d) None of the above.

90. State Forensic Science laboratory, Kerala is located at :

- (a) Kerala Police Academy, Thrissur.
- (b) Police Headquarters, Thiruvananthapuram.
- (c) Kannur DHQ.
- (d) None of the above.

91. In digital forensics 'EnCase' is used for :

- (a) Anti-virus purposes.
- (b) Recovering deleted data.
- (c) Surveillance.
- (d) Spying.

92. HTTP stands for :
- (a) Hyper Tandem Text Protocol.
 - (b) Hypertext Transfer Protocol.
 - (c) High-test Transfer Protocol.
 - (d) Higher Transfer Protocol.
93. Spoofing in cyberspace refers to :
- (a) Malware attack.
 - (b) Deleting data.
 - (c) Disguising a communication or identity.
 - (d) Copying data.
94. Which among the following is not an operating system ?
- (a) Linux.
 - (b) Ubuntu
 - (c) Microsoft Office.
 - (d) Windows 10.
95. In computing, Trojan Horse is an :
- (a) Anti-virus.
 - (b) Imaging software.
 - (c) Malware.
 - (d) All of the above.
96. NTFS is an :
- (a) Anti-virus.
 - (b) File system.
 - (c) Spying software.
 - (d) Operating system.
97. Network forensics deals with.
- (a) Recovery of data.
 - (b) Blocking the cookies.
 - (c) Both (a) and (b).
 - (d) IP Tracing and Network Traffic Monitoring.

98. A desktop computer in 'ON' condition can be seized.
- (a) After shutdown.
 - (b) After documenting and photographing the screen initially.
 - (c) After unplugging from the power source.
 - (d) Both (b) and (c).
99. In digital forensics, KRUSE and HEISER methodology includes :
- (a) Acquire, Authentication and Analyse.
 - (b) Authentication, Acquire and Analyse.
 - (c) Analyse, Acquire and Authentication.
 - (d) None of the above.
100. One byte is how much Kilobyte.
- | | |
|------------|-------------|
| (a) 0.1. | (b) 0.01. |
| (c) 0.001. | (d) 0.0001. |