

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.

Turn over

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.

Turn over

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.

Turn over

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.

Turn over

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.

Turn over

70. A lift is moving up with acceleration equal to $\frac{1}{5}$ 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) $\frac{1}{2}$.
(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 stokes.
(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.

Turn over

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.