

Hall Ticket Number:

Booklet Code: A

W-13

ENTRANCE EXAMINATION 2020

M. Sc. Animal Biology and Biotechnology

Time: 2 hours

Maximum Marks: 100

INSTRUCTIONS: PLEASE READ BEFORE ANSWERING!

- Enter your hall ticket number on this sheet and the answer (OMR) sheet.
- Answers have to be marked on the OMR answer sheet following the instructions provided there upon. Make sure that you have clearly mentioned the Booklet Code (A or B or C) on your OMR sheet.
- Hand over OMR answer sheet at the end of the examination.
- All questions carry one mark each. Answer all, or as many as you can.
- There are a total of 11 pages in this question paper. Answer sheet (OMR) will be provided separately. Check this before you start answering.
- The question paper consists of Part A and Part B. The marks obtained in Part A will be taken in consideration in case of a tie i.e., when more than one student gets equal marks, to prepare the merit list.

PART "A"

1. Gizzards are found in which group of animals
A) Turtles and frogs
B) Crocodiles, alligators and birds
C) Salamander and mammals
D) Toads, tortoise and snakes
2. Which of the following has the maximum number of unpaired electrons?
A) Mg^{2+}
B) V^{3+}
C) Fe^{3+}
D) Ti^{3+}
3. Human placenta is derived from
A) Inner cell mass of early blastocyst
B) Trophectoderm of early blastocyst
C) Endoderm
D) Mesoderm
4. The pH of blood is
A) 7.4
B) 6.4
C) 8
D) 8.5

5. Alkaline hydrolysis of oils and fats is called
A) Saponification
B) Fermentation
C) Diazotisation
D) Rancidification
6. Haplontic life cycle is seen in which one of the following plants
A) Funaria
B) Fucus
C) Marchantia
D) Chlamydomonas
7. Phalloidin affects which of the following structures
A) Intermediate filaments
B) Collagen fibers
C) Microfilaments
D) Microtubules
8. Trypsin is active in pH range
A) 4.5 to 5.5
B) 6.0 to 7.0
C) 7.5 to 8.5
D) 2.5 to 3.5
9. The scientist Claude Bernard is known for his concept on
A) Autophagy
B) Homeostasis
C) Cell-cell communication
D) Hormonal feed back
10. Randomness or disorder increases in the order
A) Gas→liquid→solid
B) Gas→solid→liquid
C) Solid→liquid→gas
D) Liquid→solid→gas
11. The genome of Corona virus is
A) RNA, positive strand
B) RNA, negative strand
C) Diploid RNA
D) Linear DNA
12. Carbonyl chloride reacts with ammonium to give
A) Acetone
B) Urea
C) Chloroform
D) Acetamide
13. Which of the following host is used for producing commercial hepatitis B vaccine
A) *Pichia pastoris*
B) *Escherichia coli*
C) *Bacillus subtilis*
D) CHO cells
14. In some scale insects, parthenogenesis occurs in which only female offspring are produced without any mating. This process is known as
A) Apomixis
B) Automixis
C) Thelytoky
D) Gynogenesis

15. Cyanide inhibits
- | | |
|-------------------------|----------------------------|
| A) NADH dehydrogenase | B) Succinate dehydrogenase |
| C) Cytochrome c oxidase | D) ATP synthase |
16. Which one of the following is not a normal constituent of urine
- | | |
|---------|--------------|
| A) NaCl | B) Albumin |
| C) Urea | D) Uric acid |
17. Klenow enzyme lacks
- | | |
|------------------------------|------------------------------|
| A) 5'3' exonuclease activity | B) 3'5' exonuclease activity |
| C) 5'3' polymerase activity | D) Proof reading activity |
18. Synepitheliochorial form of placentation is usually seen in
- | | |
|--------------|---------------|
| A) Primates | B) Rodents |
| C) Ruminants | D) Carnivores |
19. Acetic acid undergoes reduction with LiAlH_4 to give
- | | |
|------------|------------|
| A) Ethanol | B) Ethane |
| C) Ethyne | D) Ethanal |
20. The type of cleavage in mammalian embryo is described as
- | | |
|---------------------|------------------------|
| A) Unequal cleavage | B) Rotational cleavage |
| C) Radial cleavage | D) Planar cleavage |
21. In mammals, one of the following vitamins is required in amino group transfer reaction
- | | |
|---------------|---------------------|
| A) Riboflavin | B) Pantothenic acid |
| C) Folic acid | D) Pyridoxine |
22. Rigor mortis, a condition characterized by stiffened muscles in a dead vertebrate is due to
- | | |
|-------------------------------|---------------------------------|
| A) Depletion of ATP | B) Depletion of NADPH |
| C) Excess accumulation of ATP | D) Excess accumulation of NADPH |
23. Which of the following is present at the time of cracking of hydrocarbons?
- | | |
|-----------|---------------|
| A) Copper | B) Zeolite |
| C) Nickle | D) Molybdenum |
24. The World Environment day is celebrated on
- | | |
|--------------------------|-----------------------------|
| A) 3 rd March | B) 7 th April |
| C) 5 th June | D) 16 th October |
25. Which of the following is an inhibitor of RNA polymerase?
- | | |
|----------------|----------------|
| A) Amoxicillin | B) Tetracyclin |
| C) Rifampicin | D) Polymixin B |

PART "B"

26. Circadian rhythms in mammals are regulated by
 A) Melatonin
 B) Acetylcholine
 C) Dopamine
 D) Thyroxine
27. The SI unit of pressure is
 A) Atm
 B) Joule
 C) Pascal
 D) Torr
28. Which is the most primitive group of algae?
 A) Blue green algae
 B) Red algae
 C) Brown algae
 D) Green algae
29. Which of the following catalyst is used during the hydrogenation of oils?
 A) Mo
 B) Ni
 C) Pt
 D) Fe
30. Human beings can hear range of sound frequency
 A) Between 20-20,000 Hertz
 B) Between 10-1000 Hertz
 C) Between 10-100 Hertz
 D) Below 20 Hertz
31. Pattern recognition receptors (PRRs) primarily bind to
 A) Cytokines
 B) Hormones
 C) Unmethylated CpG DNA
 D) Chemokines
32. Among these, one of the following does not belong to adenohipophysis
 A) Pars distalis
 B) Pars nervosa
 C) Pars intermedia
 D) Pars tuberalis
33. Gynecomastia is caused by
 A) Hypothyroidism
 B) Acromegaly
 C) Cigarette smoking
 D) Alcoholism
34. Effect of temperature on viscosity is explained by
 A) Hole theory
 B) Arrhenius theory
 C) Collision theory
 D) Adsorption theory
35. Which of the following is related to silviculture
 A) Culture of Hilsa
 B) Culture of silver carp
 C) Culture of silkworms
 D) Culture of forest

36. Plant species with a wide range of genetic distribution evolve into a local population known as
- A) Ecotype B) Ecosystem
C) Population D) Biome
37. Example of ecotone is
- A) Desert B) Forest
C) Marshland D) River
38. Which one of the following secreted by thyroid gland is a main marker of disorders that are accompanied by systemic inflammation and sepsis?
- A) Parathyrin B) Thyroxine
C) Procalcitonin D) Triiodothyroxine
39. The vitamin that is derived from cholesterol is
- A) Vitamin A B) Vitamin B12
C) Vitamin D D) Vitamin K
40. Which of the following poisonous gas is formed when chloroform is exposed to light and air?
- A) Chlorine B) Carbon monoxide
C) Phosgene D) Mustard gas
41. Alveolar cells of the lungs arise from which one of the following layers?
- A) Endoderm B) Mesoderm
C) Ectoderm D) Endoderm and ectoderm
42. Cervical cancer is caused by
- A) Epstein-Barr virus B) Papillomavirus
C) Herpesvirus D) Corona virus
43. Annexin V is used to study which of the following process
- A) Necrosis B) Apoptosis
C) Cell Cycle D) Mitochondrial membrane potential
44. Complete transection of pituitary stalk would result in the deficiency of ALL except
- A) Triiodothyronine B) Estradiol
C) Cortisol D) Aldosterone
45. Molality of 40% (by mass of solution) urea solution is
- A) 0.4 B) 0.6
C) 11.11 D) 0.167

46. One of the following statements holds true for a DNA vaccine
- A) DNA encodes an antibody protein against a specific antigen which would act against the pathogen
 - B) DNA encodes a pathogenic antigenic protein which would stimulate the production of antibodies
 - C) DNA encodes pathogen DNA which stimulates antibodies against DNA of a pathogen
 - D) DNA codes for nuclease which specifically cleaves pathogen DNA
47. A living connecting link that provides evidence for organic evolution is
- A) Archeopteryx between reptiles and mammals
 - B) Lung fish between pisces and reptiles
 - C) Duck billed platypus between reptiles and mammals
 - D) Sphenodon between reptiles and birds
48. Phenol red has a pH range of
- A) 6.4 to 8.2
 - B) 1.2 to 2.8
 - C) 3.1 to 4.6
 - D) 9.3 to 10.5
49. A mutation that results in substitution of one base for another in the protein coding sequence of a gene such that the produced amino acid sequence is not modified is known as
- A) Nonsense mutation
 - B) Missense mutation
 - C) Synonymous mutation
 - D) Non-synonymous mutation
50. Decomposers that specifically act on the fecal matter of other organisms are called as
- A) Heterophagic
 - B) Allophagic
 - C) Coprophagic
 - D) Paraphagic
51. Pulse-chase labeling is to determine
- A) Fate of protein synthesis
 - B) Rate of cell proliferation
 - C) Rate of DNA synthesis
 - D) Rate of cell death
52. Vinegar has percentage of acetic acid
- A) 5%
 - B) 2.5%
 - C) 0.5%
 - D) 1%
53. Nucleotides have a nitrogenous base attached to a sugar at the
- A) 5' carbon
 - B) 2' carbon
 - C) 3' carbon
 - D) 1' carbon
54. The enzyme that catalysis the formation of estrogens from androgen precursors is
- A) CYP11
 - B) CYP21
 - C) CYP17
 - D) CYP19

55. A sigmoid shaped curve is obtained due to the cooperative binding of O_2 with
- A) Immunoglobulin B) Myoglobin
C) Haemoglobin D) Albumin
56. The Michaelis-Menton equation relates the rate of an enzyme-catalyzed reaction to
- A) Substrate concentration B) Product concentration
C) Activation energy D) Inhibitor concentration
57. The volume of gas occupied by its one equivalent at S.T.P is
- A) 22.4 L B) 11.2 L
C) 5.6 L D) 1.0 L
58. Meselson-Stahl provided experimental evidence on semiconservative mode of DNA replication. One of the following isotopes was used in their experiment to label the DNA
- A) C^{14} B) H^3
C) N^{15} D) N^{14}
59. Which of the following is an antifungal agent?
- A) Amphotericin B) Tetracycline
C) Metronidazole D) Amoxicillin
60. The number of subunits in *E. coli* DNA polymerase I is
- A) 1 B) 2
C) 3 D) 4
61. Chromosome puffs occur in
- A) Polytene chromosomes B) Satellite DNA
C) Lampbrush chromosomes D) Sex chromosomes
62. The chlorination of methane to give CCl_4 is an example of
- A) An electrophilic addition B) A free radical substitution
C) An electrophilic substitution D) A nucleophilic addition
63. Insecticide DDT is a
- A) Organophosphate B) Organochlorine
C) Organofluoride D) Organothorium
64. The "free testosterone index" is calculated as the ratio of
- A) Total testosterone/sex hormone binding globulin B) Sex hormone binding globulin/total testosterone
C) Serum testosterone/sex hormone binding globulin D) Sex hormone binding globulin/ serum testosterone

65. Carbon-carbon double bond consists of
- A) 1 σ , 1 π bond
B) 2 σ , 1 π bond
C) 2 σ , 2 π bonds
D) 1 σ sigma, 2 π bonds
66. Plant cells that undergo programmed cell death become functional
- A) Phloem sieve tube
B) Xylem vessel
C) Stomatal guard cell
D) Root cap cell
67. With regard to dihybrid cross, select the CORRECT statement from the following
- A) Tightly linked genes on the same chromosome show higher recombinations
B) Genes far apart on the same chromosome show very few recombinations
C) Tightly linked genes on the same chromosome show very few recombinations
D) Loosely linked genes on the same chromosome show similar recombinations as the tightly linked ones
68. Which of the following is the most primitive ancestor of man
- A) Homo habilis
B) Ramapithecus punjabicus
C) Australopithecus
D) Homo neanderthalensis
69. Which of the following is an anti-lipolytic hormone?
- A) Epinephrine
B) Glucagon
C) Insulin
D) Norepinephrine
70. If there are only 20 individuals left in a population, then as per IUCN, it would be classified in one of the following category
- A) Rare
B) Endangered
C) Critically endangered
D) Extinct
71. 2-Butanol is optically active because it contains
- A) An asymmetric carbon
B) A plane of symmetry
C) A hydroxyl group
D) A center of symmetry
72. Removal of RNA polymerase III from nucleoplasm will affect the synthesis of
- A) mRNA
B) rRNA
C) tRNA
D) hnRNA
73. RNA polymerase holoenzyme contains five subunits. Which of the following subunit contains helix-turn-helix motif?
- A) α subunit
B) β subunit
C) β' subunit
D) σ factor

74. X-linked hyper IgM syndrome is characterized by mutations in the gene encoding
- A) CD40 ligand
 - B) Rag-1 and Rag-2
 - C) FOXP1
 - D) FOXC1
75. Ozonolysis of 2-butyne gives
- A) Formic acid
 - B) Propionic acid
 - C) Acetic acid
 - D) Butanoic acid
76. Which of the following disease is not linked to lysosomes?
- A) Tay-Sach's Disease
 - B) Pompe's Disease
 - C) Marfan Syndrome
 - D) Gaucher's Disease
77. In muscle, the first product generated in the breakdown of glycogen is
- A) Maltose
 - B) UDP-glucose
 - C) Glucose-6-phosphate
 - D) Glucose-1-phosphate
78. The failure of chromosomes to segregate properly in meiosis or mitosis, leading to aneuploidy is called
- A) Centromeric fusion
 - B) Robertsonian fusion
 - C) Nondisjunction
 - D) Translocation
79. Which of the following is a nucleophile
- A) $AlCl_3$
 - B) H_3O^+
 - C) BF_3
 - D) CN^-
80. Sharks and Rays belong to
- A) Acanthodii
 - B) Osteichthyes
 - C) Actinopterygii
 - D) Elasmobranchii
81. The polyA tail of an mRNA consists of multiple adenine units in the form of
- A) Adenosine triphosphate
 - B) Adenosine diphosphate
 - C) Adenosine monophosphate
 - D) Adenosine
82. Clomifene use is related to
- A) Infertility in women
 - B) Infertility in men
 - C) Contraception in women
 - D) Contraception in men
83. The H-C-H bond angle in ethylene is
- A) 60 degrees
 - B) 120 degrees
 - C) 90 degrees
 - D) 180 degrees

84. A child disturbs a wasp nest, is stung repeatedly, and goes into shock within minutes, manifesting respiratory failure and vascular collapse. This is most likely due to
- A) Systemic anaphylaxis B) Serum sickness
C) Arthus reaction D) Cytotoxic hypersensitivity
85. In which of the following conditions, the realized niche exceeds over the fundamental niche?
- A) Competition B) Amensalism
C) Commensalism D) Mutualism
86. Prostaglandins and leukotrienes are the bioactive lipids playing role in the regulation of inflammation. These are formed from one of the following fatty acids
- A) Oleic acid B) Arachidic acid
C) Palmitoleic acid D) Arachidonic acid
87. Poly ADP-ribose polymerase is needed for the repair of
- A) Single stranded DNA breaks B) Double stranded DNA breaks
C) Double stranded RNA breaks D) Ribose sugar break
88. How many isomers are possible for heptane?
- A) 9 B) 10
C) 11 D) 12
89. Aminopterin, present in HAT medium used in the production of hybridoma, blocks
- A) DNA polymerase B) Thymidine kinase
C) Dihydrofolate reductase D) Thymidine phosphatase
90. Bulbourethral glands are found in all, EXCEPT
- A) Dogs B) Cats
C) Swines D) Bulls
91. In plants, the function of plasmodesmata is similar to
- A) Tight junctions B) Gap junctions
C) Desmosomes D) Adherens junctions
92. The depletion of the ozone layer is caused by
- A) Nitrous oxide B) Carbon Monoxide
C) Chlorofluorocarbons D) Methane
93. Bacterial pathogen present in atherosclerotic plaque is
- A) *Porphyromonas gingivalis* B) *Pseudomonas aeruginosa*
C) *Chlamydia Pneumoniae* D) *Salmonella enterica*
94. Baeyer's reagent is
- A) Dilute KMnO_4 B) $\text{HCl} + \text{ZnCl}_2$
C) Br_2 in CCl_4 D) NH_2HN_2

95. The genes for a trait that are inherited by both men and woman but manifest a phenotype in women are referred to as
- A) Sex influenced
 - B) Sex limited
 - C) Sex linked
 - D) Sex determining
96. Shortage of acetylcholine in brain is associated with
- A) Parkinson's disease
 - B) Alzheimer's disease
 - C) Huntington's disease
 - D) Schizophrenia
97. Which of the following is not an autoimmune disease?
- A) Rheumatoid arthritis
 - B) Lupus erythematosus
 - C) Bovine spongiform encephalitis
 - D) Grave's disease
98. Chemical ions responsible for muscle contraction are
- A) Na^+ and Ca^+
 - B) Na^+ and K^+
 - C) Ca^+ and K^+
 - D) Ca^+ and Mg^+
99. Which of the following is used as an antifreeze?
- A) Ethylene Glycol
 - B) Glycerol
 - C) Picric acid
 - D) Diethyl ether
100. The pyruvate dehydrogenase reaction involves all the following cofactors EXCEPT
- A) Biotin
 - B) NAD^+
 - C) Lipoic acid
 - D) Thiamine and coenzyme A

For rough work