

Booklet Code : A

T-13

**ENTRANCE EXAMINATIONS – 2019**

**M.Sc. Animal Biology & Biotechnology**

Hall Ticket No.

Time :2 hours

Max. 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.
- 0.33 mark will be deducted for every wrong answer.
- 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.

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**PART "A"**

1. Nucleosome consists of
  - A) 146 bp DNA wrapped around H2A, H2B, H3 and H4
  - B) 164 bp DNA wrapped around H2A, H2B, H3 and H4
  - C) 146 bp DNA wrapped around 2 copies each of H2A, H2B, H3 and H4
  - D) 164 bp DNA wrapped around 2 copies each of H2A, H2B, H3 and H4
2. An example of hemimetabolous insect is
  - A) *Oncopeltus fasciatus*
  - B) *Vespula vulgaris*
  - C) *Musca domestica*
  - D) *Apis indica*
3. Which of the following compounds have highest dipole moment?
  - A) Dichloromethane
  - B) Chloroform
  - C) Chloromethane
  - D) Carbon

4. Autophagy is facilitated by  
A) Ribosomes  
B) Nucleus  
C) Lysosomes  
D) Mitochondria
5. Fats and oils are  
A) Monoesters of glycerol  
B) Diesters of glycerol  
C) Triesters of glycerol  
D) Diesters of glycol
6. Function of GABA in central nervous system is  
A) Neuronal inhibition  
B) Neuronal activation  
C) Glial cell inhibition  
D) Glial cell activation
7. The total entropy of the universe is  
A) Always increasing  
B) Neither increasing nor decreasing  
C) Always decreasing  
D) Either increasing or decreasing
8. Malaria is transmitted by one of the following species of mosquito  
A) *Culex*  
B) *Aedes*  
C) *Anopheles*  
D) *Albuginosus*
9. Polymerase Chain Reaction was invented by  
A) Kary Mullis  
B) Francis Crick  
C) David Baltimore  
D) Tim Hunt
10. Which one of the following compounds will give a positive iodoform test?  
A) Benzaldehyde  
B) 2-Pentanone  
C) 3-Hexanone  
D) 3-Pentanone
11. Which one of the following is an animal sterol?  
A) Ergosterol  
B) Stigma sterol  
C) Sitosterol  
D) Cholesterol
12. The SI unit of radioactivity is  
A) Hertz  
B) Lumen  
C) Becquerel  
D) Telsa
13. All of the following are CD4+ cells, except  
A) Monocytes  
B) T-helper cells  
C) T-cytotoxic cells  
D) Macrophages
14. Which one of the following metal ions is required for the enzymatic cleavage of type II restriction endonucleases?  
A)  $\text{Ca}^{2+}$   
B)  $\text{Mg}^{2+}$   
C)  $\text{Al}^{+3}$   
D)  $\text{Mn}^{+2}$

15. Equivalent mass of a metal is double that of oxygen. How many times is the mass of its oxide greater than the mass of the metal?
- A) 1.5 times    B) 2 times  
C) 3 times     D) 4 times
16. Invertebrates breathe through
- A) Skin and air sac                                     B) Gills and skin  
C) Trachea and air sac                                 D) Trachea and lungs
17. Which group of vertebrates have highest number of endangered species?
- A) Pisces     B) Mammals  
C) Reptiles     D) Aves
18. Brunner's glands are present in
- A) Submucosa of duodenum                             B) Submucosa of stomach  
C) Mucosa of oesophagus                                D) Mucosa of ileum
19. Chromatography is a technique based on
- A) Adsorption and then dispersion of solute     B) Evaporation and then dispersion of solvent  
C) Hydration of solute                                 D) Evaporation of solute
20. Immortal Jellyfish belongs to
- A) Mollusca     B) Echinodermata  
C) Coelenterata    D) Chordata
21. An 1.2 kb fragment of DNA has a unique site for EcoRI at 400 bp and a PstI site at 550 bp. If it is restriction digested with these two enzymes, which set of fragments will be generated?
- A) 400, 150 and 650 bp                                B) 400, 800 and 550 bp  
C) 400, 550 and 650 bp                                D) 400 and 550 bp
22. Cyclic ether with three membered ring are called
- A) Lactones     B) Oxiranes  
C) Alkoxides    D) Epoxy resins
23. Select mismatch option
- A) Centriole : 9+0                                        B) Cilia: 9+2  
C) Fimbriae : Conjugation                             D) Middle lamella : lignin
24. The number of double stranded DNA copies obtained from one double stranded DNA template after 7 cycles of PCR are
- A) 32     B) 128  
C) 168    D) 132

25. If the electron in a hydrogen atom drops from the  $n=6$  to the  $n=4$  level, the radiation emitted is in which series of lines in the spectrum of atomic hydrogen

- A) Lyman
- B) Balmer
- C) Paschen
- D) Brackett

**PART "B"**

26. A living fossil found only in New Zealand is

- A) Tautara
- B) Agamid
- C) Trionchid
- D) Emydid

27. In arterial blood,  $\text{CO}_2$  is majorly transported as

- A) Bicarbonate
- B) Carbamino hemoglobin
- C) Carbonic acid
- D) Carboxyhemoglobin

28. Hypocalcemia is caused due to under secretion of

- A) Thyroxine
- B) Parathormone
- C) Calcitonin
- D) Glucagon

29. When ethylene glycol is heated with concentrated  $\text{HNO}_3$  it forms

- A) Oxalic acid
- B) Ethylene oxide
- C) Dioxane
- D) Diethylene glycol

30. "Red tides" are caused by large numbers of

- A) Dinoflagellates
- B) Zooflagellates
- C) Green algae
- D) Diatoms

31. DNA is highly viscous because of

- A) Large ratio of length versus diameter
- B) Coiling of two strands around an axis
- C) DNA interacting with histone proteins
- D) Nitrogenous bases of each strand held by hydrogen bonds

32. The temperature to which a gas must be cooled before it can be liquefied by compression is called

- A) Boyle's temperature
- B) Critical temperature
- C) Liquefaction temperature
- D) Inversion temperature

33. Chaperon does one of the following functions

- A) Synthesizes proteins
- B) Refolding of proteins
- C) Unfolds proteins
- D) Degradation of proteins

34. Chromosome painting technique is also known as

- A) ChIP
- B) FISH
- C) ISH
- D) Karyotyping

35. Which one of the following is not related to Bacteriophage?

- A) Plasmid
- B) Phagemid
- C) Cosmid
- D) BAC

36. As heat is removed from a liquid which tends to supercool, its temperature drops below freezing point and then rises suddenly. What is the source of heat which causes the temperature rise?

- A) The enthalpy of fusion
- B) The enthalpy of evaporation
- C) The enthalpy of sublimation
- D) The enthalpy of deposition

37. Antibiotic which can inhibit bacterial cell wall synthesis is

- A) Chloramphenicol
- B) Tetracycline
- C) Penicillin
- D) Streptomycin

38. Isopropyl alcohol reacts with acidic sodium dichromate to give

- A) Acetaldehyde
- B) Acetic acid
- C) Propionic acid
- D) Acetone

39. The symbiotic relationship between barnacles and whales is

- A) Commensalism
- B) Neutralism
- C) Parasitism
- D) Mutualism

40. Meiosis arrest in ovary happens at

- A) Diplotene of Meiosis I
- B) Diakinesis of Meiosis I
- C) Pachytene of Meiosis I
- D) Zygotene of Meiosis I

41. One of the following is an egg laying mammal

- A) Pangolin
- B) Porcupine
- C) Tachyglossus
- D) Bat

42. An azeotropic solution of two liquids has a boiling point lower than either of them when it

- A) Shows negative deviation from Roul't's law
- B) Shows positive deviation from Roul't's law
- C) Shows ideal behaviour
- D) Is saturated

43. All are non-essential fatty acids except

- A) Palmitic acid
- B) Linolenic acid
- C) Oleic acid
- D) Steric acid

44. The storage form of carbohydrate in liver is

- A) Glycogen
- B) Sucrose
- C) Galactose
- D) Glucose

45. The migration of positively charged colloidal particles under an electric field towards the cathode is called

- A) Cataphoresis  
 B) Electro-osmosis  
 C) Sedimentation  
 D) Electrodialysis

46. Baculovirus expression system can be best used in

- A) Bacteria  
 B) Yeast  
 C) Mammalian cell  
 D) Insect cell

47. The Kozack consensus sequence was originally defined as

- A) GCCGUGG  
 B) ACCAUGG  
 C) AUGGACC  
 D) AUGGAUG

48. When an ideal gas expands in vacuum, work done is

- A) R  
 B)  $3/2R$   
 C)  $4R$   
 D) 0

49. The formula representing exponential growth rate of a population is

- A)  $dt/dN = rN$   
 B)  $rN/dN = dt$   
 C)  $dN/dt = rN$   
 D)  $dN/rN = dt$

50. The priming function in glycogen synthesis is carried out by

- A) Lysine  
 B) Arginine  
 C) Glycogenin  
 D) Glutamate

51. Which one of the following is not a hermaphrodite?

- A) Earthworm  
 B) Tilapia  
 C) Killifish  
 D) Pulmonate snail

52. Intracellular store of Calcium is

- A) Golgi  
 B) Endoplasmic reticulum  
 C) Cytoplasm  
 D) Nucleus

53. How many isomers are possible for pentane?

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

54. Which of the following is not true about retroviruses? They are characterized by

- A) The presence of an RNA genome  
 B) Reverse transcriptase  
 C) They integrate into host chromosome  
 D) They carry their own reverse transcriptase and can produce progeny without a host

55. In humans and mammals the main nitrogenous waste is  
A) Urea  
B) Uric acid  
C) Ammonia  
D) Amino acids
56. Which of the following enzymes is present in the snake venom?  
A) Phospholipase A1  
B) Phospholipase A2  
C) Phospholipase B  
D) Phospholipase D
57. Use and disuse theory was elaborated by  
A) Jean-Baptist Lamarck  
B) Charles Darwin  
C) J B S Haldane  
D) August Weisman
58. Which of the following is a carbohydrate with no nutritional value  
A) Glycogen  
B) Starch  
C) Dextrin  
D) Cellulose
59. Most important reason for the declining trend of biodiversity is  
A) Habitat destruction  
B) Habitat pollution  
C) Exotic species introduction  
D) Over exploitation
60. Kinetic energy of an article of 20g is 4 joule while that of another article of same mass is 16 joules. Hence velocity ratio of their motion is  
A) 1:4  
B) 4:1  
C) 1:2  
D) 2:1
61. A virus mediated delivery of DNA into mammalian cells is called  
A) Transformation  
B) Transfection  
C) Transduction  
D) Transversion
62. The term "Open mitosis" is used in the following context  
A) Nuclear envelop breaks down before the chromosomes separate  
B) Nuclear envelop breaks down after the chromosomes separate  
C) Nuclear division happens without cytokinesis  
D) Segregation of homologous chromosomes without chiasmata formation
63. The following amino acid does not contribute the fluorescence of a protein  
A) Tryptophan  
B) Tyrosine  
C) Serine  
D) Phenylalanine
64. Which one of the following is not a hallmark of cancer?  
A) Self-sufficiency in growth signals  
B) Insensitivity to anti-growth signals  
C) Sustained angiogenesis  
D) Halted angiogenesis

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65. When chloroform is heated with aqueous NaOH, it gives
- |                |                   |
|----------------|-------------------|
| A) Formic acid | B) Sodium formate |
| C) Acetic acid | D) Sodium acetate |
66. Angiogenesis refers to generation of new
- |                 |                  |
|-----------------|------------------|
| A) Bone tissue  | B) Blood cells   |
| C) Cancer cells | D) Blood vessels |
67. The most common configuration of amino acids and DNA respectively is
- |            |            |
|------------|------------|
| A) L and B | B) D and B |
| C) D and Z | D) L and Z |
68. The theory of evolution by natural selection was independently developed by
- |  |                                      |
|--|--------------------------------------|
| A) Charles Lyell and Charles Darwin        | B) Charles Darwin and Alfred Wallace |
| C) Erasmus Darwin and Jean-Baptist Lamarck | D) Charles Lyell and James Hutton    |
69. Enthalpy content is zero in one of the following
- |                         |                          |
|-------------------------|--------------------------|
| A) H (g)                | B) CaCO <sub>3</sub> (s) |
| C) H <sub>2</sub> O (l) | D) Na (s)                |
70. The specificity of an antibody is due to
- |                                   |  |
|-----------------------------------|--|
| A) Its valence                    | B) The heavy chain                                   |
| C) The Fc portion of the molecule | D) The variable portion of the heavy and light chain |
71. The process by which a malignant cell spreads in the body is called
- |                |                |
|----------------|----------------|
| A) Homeostasis | B) Metastasis  |
| C) Epistasis   | D) Microstasis |
72. The first part of small intestine is
- |          |             |
|----------|-------------|
| A) Cecum | B) Jejunum  |
| C) Ileum | D) Duodenum |
73. Which one of the following compounds will react with ammoniacal silver nitrate
- |             |             |
|-------------|-------------|
| A) 1-Butene | B) 1-Butyne |
| C) 2-Butene | D) 2-Butyne |
74. Which one of the following is a polymer of fructose
- |              |             |
|--------------|-------------|
| A) Inulin    | B) Dextrin  |
| C) Cellulose | D) Glycogen |



75. Cytochalasins will interfere with actin polymerization. If cytochalasin is added to cultured mammalian cells that have just begun mitosis, what is most likely to happen?

- A) Cells with arrest at metaphase      B) Mitosis will complete but cytokinesis gets arrested  
C) Cells will arrest at telophase      D) Mitosis will not proceed beyond prophase

76. Which one of the following is incorrect about the secondary structure of proteins?

- A)  $\alpha$ -helix and  $\beta$ -sheet are examples of secondary structure      B) Aromatic amino acids participate in  $\beta$ -sheet formation  
C) Intermolecular and intramolecular hydrogen bonds are important in stabilizing secondary structure      D) Glycine and Alanine are abundant in  $\beta$ -pleated sheets

77. With regard to DNA quantity, the correct order for different phases of cell cycle is

- A)  $G1 > S > G2$       B)  $S > G2 > G1$   
C)  $G2 > S > G1$       D)  $G1 < G2 < S$

78. Effect of temperature on viscosity is given by

- A) Hole theory      B) Arrhenius theory  
C) Adsorption theory      D) Collision theory

79. Which one of the following is a substrate specific enzyme?

- A) Hexokinase      B) Thiokinase  
C) Lactase      D) Decarboxylase

80. Conjugate base of  $Zn^{2+}$  is

- A)  $Zn(OH)^+$       B)  $Zn(OH)_2$   
C)  $ZnO$       D)  $Zn(H_2O)^{2+}$

81. The three domains of life in biology are

- A) Archaea, Eukarya, Bacteria      B) Protista, Eubacteria, Eukarya  
C) Archaea, Eubacteria, Eukarya      D) Prokarya, Bacteria, Archaea

82. The first immunoglobulin heavy chain that is expressed on the surface of newly produced B cells is

- A) IgA      B) IgD  
C) IgG      D) IgM

83. A gametophyte is a \_\_\_\_\_ plant that produces gametes by \_\_\_\_\_

- A) Haploid; meiosis      B) Diploid; meiosis  
C) Haploid; mitosis      D) Diploid; mitosis

84. The pathway for glucose synthesis by non-carbohydrate precursors is

- A) Glycogenesis      B) Glycolysis  
C) Gluconeogenesis      D) Glycogenolysis

85. Optical isomers that are not mirror images are called  
A) Diastereomers  
B) Enantiomers  
C) Metamers  
D) Mesocompounds
86. The enzyme that catalyzes the direct transfer and incorporation of oxygen into a substrate molecules is known as  
A) Oxidase  
B) Oxygenase  
C) Peroxidase  
D) Hydrolase
87. The ecological pyramid that is always straight is  
A) Pyramid of number  
B) Pyramid of biomass  
C) Pyramid of energy  
D) Pyramid of types
88. Acetone undergoes reduction with hydrazine in the presence of NaOH to form propane. This reaction is known as  
A) Clemmensen reaction  
B) Wolf-Kisnér reduction  
C) Rosemund reduction  
D) Reimer-Tiemann reaction
89. Allosteric inhibitor of an enzyme  
A) Enhances catalytic action  
B) Binds to active site  
C) Enacts feedback regulation  
D) Denatures it
90. Which one of the following nutrients is rich in cholesterol?  
A) Fish  
B) Egg Yolk  
C) Pulses  
D) Cereals
91. Integrity of DNA is assessed at this checkpoint  
A) G2  
B) M  
C) G1  
D) S
92. In a mercury battery the cathode is made up of  
A) Zn  
B) ZnO in contact with steel  
C) Steel in contact with HgO  
D) Zn in contact with HgO
93. The major role of Golgi apparatus is  
A) Glycosylation of lipids and proteins  
B) Phosphorylation of lipids and proteins  
C) Acetylation of lipids and proteins  
D) Ubiquitination of lipids and proteins
94. If there are only 20 individuals left in a population then as per the IUCN, it would be kept under the category  
A) Extinct  
B) Endangered  
C) Critically endangered  
D) Rare

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95. Diethyl ether on heating with excess concentrated HI gives
- A) Methyl iodide                      B) Isopropyl iodide  
C) Ethyl iodide                        D) n-Propyl iodide
96. The photosensitive part of rod cells are made of
- A) Rhodopsin                          B) Myelin  
C) Keratin                                D) Actin
97. Ectoderm gives rise to
- A) Nervous system                      B) Digestive system  
C) Circulatory system                D) Respiratory system
98. The enzyme that synthesizes DNA from an mRNA template is
- A) DNA polymerase I                 B) RNA polymerase I  
C) Polynucleotide kinase             D) Reverse transcriptase
99. The energy of oxidation is initially trapped as a high-energy phosphate compound and then used to form ATP. Which one of the following intermediates of glycolysis is a high energy compound?
- A) Fructose-6-P                        B) Glyceraldehyde-3-P  
C) Fructose-1,6 bisphosphate        D) Phosphoenolpyruvate (PEP)
100. Which one of the following hormones is not related to osmoregulation?
- A) Vasopressin                         B) Aldosterone  
C) Oxytocin                              D) Corticosterone

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For rough work

# University of Hyderabad

## Entrance Examinations - 2019

School/Department/Centre : School of Life Sciences, Dept of Animal Biology

Course/Subject : M.Sc Animal Biology and Biotechnology (Set A revised)

Q.No.	Answer	Q.No.	Answer	Q.No.	Answer	Q.No.	Answer
1	C	26	A	51	B	76	B
2	A	27	A	52	B	77	C
3	C	28	B	53	B	78	A
4	C	29	A	54	D	79	C
5	C	30	A	55	A	80	A
6	A	31	A	56	B	81	A
7	A	32	B	57	A	82	D
8	C	33	B	58	D	83	C
9	A	34	B	59	A	84	C
10	B	35	A and D *	60	C	85	A
11	D	36	A	61	C	86	B
12	C	37	C	62	A	87	C
13	C	38	D	63	C	88	B
14	B	39	A	64	D	89	C
15	A	40	A	65	B	90	B
16	B	41	C	66	D	91	C
17	B	42	B	67	A	92	C
18	A	43	B	68	B	93	A
19	A	44	A	69	D	94	C
20	C	45	A	70	D	95	C
21	A	46	D	71	B	96	A
22	B	47	B	72	D	97	A
23	C and D *	48	D	73	B	98	D
24	B	49	C	74	A	99	D
25	D	50	C	75	B	100	D

Note/Remarks : \* For Q. No 23 and 35 benefit will be given to all candidates

Signature  
School/Department/Centre