

Booklet code: C

1

Hall Ticket Number:

Booklet Code: C

Department of Animal Sciences  
ENTRANCE EXAMINATION February 2014  
M. Sc Animal 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 the OMR answer sheet at the end of the examination to the Invigilator.*
  
- *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.*

\*\*\*\*\*

**PART "A"**

1. Grave's disease is related to

- |                  |                    |
|------------------|--------------------|
| A) Mammary gland | B) Adrenal gland   |
| C) Thyroid gland | D) Pituitary gland |

2. The law "Amount of gas dissolved in a liquid is proportional to its partial pressure" is known as

- |                     |                |
|---------------------|----------------|
| A) Gay Lussac's law | B) Daltons law |
| C) Raoult's law     | D) Henry's law |

3. The process in which lactate formed in skeletal muscle is transported to the liver and kidney, where it reforms glucose is called

- |                      |                          |
|----------------------|--------------------------|
| A) Calvin cycle      | B) Glucose alanine cycle |
| C) Citric acid cycle | D) Cori cycle            |

E - 15

4. A method that allows mapping of transcription start site is

- A) Primer extension  
B) SAGE  
C) DNA foot printing  
D) RT-PCR

5. Which one of the following is not true of the Krebs cycle

- A) Three molecules of NADH are produced per molecule of glucose  
B) Two molecules of FADH<sub>2</sub> are produced per molecule of glucose  
C) Addition of acetyl CoA to oxaloacetic acid starts the cycle  
D) GTP is produced and converted into ATP

6. Industrial melanism in certain moths is an example of

- A) Mullerian mimicry  
B) Sexual selection  
C) Directional natural selection  
D) Warning coloration

7. Total number of stereoisomers possible for ketohexoses are

- A) 4  
B) 8  
C) 16  
D) 32

8. When an acid is exactly half neutralised

- A)  $\text{pH} > \text{pK}$   
B)  $\text{pH} < \text{pK}$   
C)  $\text{pH} = \text{pK}$   
D)  $\text{pH} = 0$

9. The reduction of a ketone always gives

- A) Primary alcohol  
B) Secondary alcohol  
C) Carboxylic acid  
D) Ketal

10. Primary phloem develops from

- A) Lateral meristem  
B) Protoderm  
C) Extrastelar cambium  
D) Provascular tissue

11. Which one of the following drugs blocks mitosis by stabilizing the micronemes?

- A) Colchicine  
B) Taxol  
C) Mitomycin  
D) Vinblastin

12. The correct electron affinity order of N, O, S, Cl is:

- A)  $\text{O} < \text{N} < \text{Cl} < \text{S}$   
B)  $\text{Cl} > \text{O} > \text{S} > \text{N}$   
C)  $\text{N} < \text{O} < \text{S} < \text{Cl}$   
D)  $\text{N} = \text{Cl} > \text{O} = \text{S}$

13. Steroid response elements (SREs) are composed of

- A) Amino acids  
B) Nucleotides  
C) Monosaccharides  
D) Fatty acids

14. Which one of the following hormone has low molecular weight?

- A) TSH  
B) ACTH  
C) TRH  
D) GnRH



## PART "B"

26. Actin filaments are found in all of the following except

- A) Flagella of the bacteria  
B) Sarcomeres of skeletal muscle cells  
C) Microvilli of the intestinal brush border  
D) Contractile rings of the dividing animal cells

27. The standard molar enthalpy of formation of  $\text{CO}_2$  is equal to

- A) Zero  
B) The standard molar enthalpy of combustion of gaseous carbon  
C) The sum of standard molar enthalpies of  $\text{CO}$  and  $\text{O}_2$   
D) The standard molar enthalpy of combustion of carbon

28. Trichocyst are present in

- A) Porifera  
B) Hydrozoa  
C) Protozoa  
D) Ctenophora

29. The human body has ----- pairs of spinal nerves

- A) 10  
B) 31  
C) 28  
D) 35

30. "Red drop" effect is

- A) Decrease in the phosphorylation of majority of cellular proteins in the plant cell  
B) Decrease in the electron transport when plant cells are exposed to red pigment  
C) Decrease in photosynthetic efficiency in far red light  
D) Decrease in the production of red pigment by plant cells during osmotic stress

31. Marsh gas evolving from the decomposing organic matter contains

- A) Hydrogen sulphide  
B) Ammonia  
C) Nitrogen  
D) Methane

32. Which one of the following cell organelles responds to cellular injury immediately?

- A) Lysosomes  
B) Nucleus  
C) Ribosomes  
D) Mitochondria

33. Rubella belongs to following family of RNA viruses

- A) Reoviridae  
B) Picornaviridae  
C) Togaviridae  
D) Retroviridae

34. Conjugate acid of  $\text{HF}_2^-$

- A)  $\text{HF}$   
B)  $\text{H}_2\text{F}_2$   
C)  $\text{F}_2^-$   
D)  $\text{H}^+$

**35. Following region marks the future dorsal side of the embryo**

- A) Archenteron  
B) Grey crescent  
C) Mesoderm  
D) Proctodeum

**36. Galvanising the sheet of iron is done by dipping the sheet into molten**

- A) Mercury  
B) Cadmium  
C) Lead  
D) Zinc

**37. Which one of the following enzymes is activated by phosphorylation?**

- A) Acetyl CoA carboxylase  
B) Pyruvate kinase  
C) Fructose 1,6-biphosphate  
D) Fructose 2,6-biphosphate

**38. To measure the population density of a monarch butterflies occupying a particular park, 100 butterflies are captured, marked with a small dot on a wing and then released. The next day, another 100 butterflies are captured, including the recapture of 25 marked butterflies. One would correctly estimate the population to be**

- A) 500  
B) 400  
C) 200  
D) 600

**39. Optical isomerism is shown by**

- A) N-butyl chloride  
B) Sec-butyl chloride  
C) Ter-butyl chloride  
D) Isobutyl chloride

**40. The reversible phenomenon of gas exchange explained by Bhor effect is exhibited by**

- A) Transferrin  
B) Haemoglobin  
C) Phycocyanin  
D) Myoglobin

**41. Nuclear localization signals are mainly composed of**

- A) Hydrophobic amino acids  
B) Acidic amino acids  
C) Basic amino acids  
D) Sulfur containing amino acids

**42. When the inhibitory effect of two or more end products on a single regulatory enzyme is strictly additive, the feed back inhibition is known as**

- A) Concerted  
B) Multivalent  
C) Cumulative  
D) Cooperative

**43. Smooth movement of partially processed food down the intestine is facilitated by mucin secreted by**

- A) Goblet cells  
B) Clara cells  
C) Luminal cells  
D) Enterocytes

**44. Most of the red, blue and purple colours of plants are due to a pigment called**

- A) Anthocyanin  
B) Catotene  
C) Chlorophylls  
D) Xanthophylls

45. Mercurous chloride is known as

- A) Calomel  
B) Amalgam  
C) Plaster of Paris  
D) Blue Vitriol

46. When a child with a blood group  $I^A, I^B$  is born of a woman with genotype  $I^B, II^B$ , the father of the child could not be a man of genotype

- A)  $I^B, I^B$   
B)  $I^A, I^A$   
C)  $I^A, I^B$   
D)  $I^A, II^B$

47. Protein glycosylation occurs in one of the following cell organelles

- A) Golgi complex  
B) Peroxisomes  
C) Ribosomes  
D) Lysosomes

48. Total number of atoms present in 25 mg of camphor having molecular formula  $C_{10}H_{16}O$

- A)  $9.98 \times 10^{19}$   
B)  $6.02 \times 10^{20}$   
C)  $9.98 \times 10^{20}$   
D)  $2.67 \times 10^{21}$

49. Timber yielding plants like pine, fir, spruce and cedar belong to

- A) Angiosperm  
B) Gymnosperm  
C) Monocotyledons  
D) Dicotyledons

50. An example of known oncogenic virus is

- A) HIV-1  
B) Herpes zoster  
C) Epstein-Barr virus  
D) Vesicular stomatitis virus

51. Ethers react with cold concentrated  $H_2SO_4$  to form

- A) Oxonium salts  
B) Alkenes  
C) Alkoxides  
D) Zwitterions

52. The rate of renaturation of a DNA molecule is given by "cot" value, which is

- A) the product of molar concentration of nucleotide residues and the time of renaturation in seconds  
B) the product of number of nucleotides and the temperature of renaturation  
C) the product of the number of purines and pyrimidines divided by the time of renaturation  
D) the product of length (in Angstroms) of DNA molecule and renaturation time

53. The condition where hind limbs are absent but their remnants are embedded in the flesh is referred to as

- A) Hypophalangy  
B) Heterophalangy  
C) Hyperphalangy  
D) Homophalangy

54. Which of the following types of vector would be most suitable for introducing DNA into a human cells?

- A) Plasmid  
B) Bacteriophage  
C) Cosmid  
D) Adenovirus

55. Which one of the following is used to prepare Aspirin?

- A) Picric acid  
B) Mesoxalic acid  
C) Salicylic acid  
D) Methyl salicylate

56. An antigenic epitope associates with one of following part of an antibody

- A) Antibody binding site  
B) The heavy chain constant region only  
C) Combined regions of heavy and light chains  
D) The light chain constant region only

57. The major structural protein underlying nuclear envelope is

- A) Keratin  
B) Dynein  
C) Lamin  
D) Elastin

58. Isopropyl bromide reacts with alcoholic KOH to give

- A) Propene  
B) Isopropyl alcohol  
C) Propane  
D) n-propyl alcohol

59. The genome size of HIV virus is

- A) 5.75 Kb  
B) 9.75 Kb  
C) 12.75 Kb  
D) 20.75 Kb

60. DNA shows hyperchromicity in all processes except by

- A) Heat denaturation  
B) Addition of a denaturant  
C) Increasing pH  
D) Decreasing pH

61. Formation of primitive streak in chick embryo is evident in during

- A) Neurulation  
B) Gastrulation  
C) Allantoic development  
D) Chorion development

62. The common intermediate of proteins, carbohydrates and lipid metabolism

- A) Ammonia  
B) Pyruvic acid  
C) Acetyl CoA  
D) Phosphoglyceraldehyde

63. The percentage of solar energy entering the space in the form of light rays that is absorbed in the atmosphere is

- A) 37%  
B) 45%  
C) 57%  
D) 71%

64. Desalinating of sea water is done by

- A) Reverse osmosis  
B) Osmosis  
C) Filtration  
D) Evaporation

65. On a Lineweaver-Burk plot, the slope of the reaction in the presence of a competitive inhibitor is indicated by

- A)  $K_m/V_{max}$   
B)  $1/V_{max}$   
C)  $V_{max}/K_m$   
D)  $1/[S]$

66. The endomembrane system of a cell includes

- A) Nucleus, Golgi complex and endoplasmic reticulum  
B) Golgi complex, ribosome and endoplasmic reticulum  
C) Lysosomes, Golgi complex and endoplasmic reticulum  
D) Lysosomes, nucleus and ribosomes

67. Heat of neutralization of NaOH with equivalent amount of acid is maximum in the case of

- A) HCl  
B) HNO<sub>3</sub>  
C) HF  
D) CH<sub>3</sub>COOH

68. In a shallow lentic habitat, which zone is most productive?

- A) Littoral  
B) Pelagic  
C) Profundal  
D) Limnetic

69. Which one of the following vitamins is considered as hormone?

- A) Vitamin A  
B) Vitamin D  
C) Vitamin K  
D) Vitamin C

70. The placental type where the number of barriers between maternal and foetal blood streams is reduced to just two is referred to as

- A) Haemoendothelial placenta  
B) Haemochorial placenta  
C) Endothelial placenta  
D) Syndesmochorial placenta

71. Which one of the following pairs of compounds gives positive reaction to Tollen's test?

- A) Glucose, sucrose  
B) Glucose, fructose  
C) Sucrose, fructose  
D) Sucrose, mannose

72. Leucine zipper motif in some proteins function to

- A) Bind excess leucine in cells  
B) Activate enzymes that allow leucine biosynthesis  
C) Facilitate binding of the proteins to DNA  
D) Facilitate binding of proteins to ribosomes

73. Example of intracellular protozoan parasite that resides in phagolysosome is

- A) *Plasmodium*  
B) *Leishmania*  
C) *Toxoplasma*  
D) *Thileria*

74. Two moles PCl<sub>5</sub>, 1 mole Cl<sub>2</sub> and 1 mole PCl<sub>3</sub> are taken in 1 litre flask. When equilibrium is set up, PCl<sub>5</sub> is found to 50% dissociated into products. The K<sub>c</sub> is

- A) 4 mol/Litre  
B) 1.5 mol/Litre  
C) 1 mol/Litre  
D) 0.17 mol/Litre



**75. Monotremes are unique mammals because they**

- A) Possess hair  
B) Give birth to young ones  
C) Secrete milk in pouch  
D) Lay eggs

**76.  $\Delta G^\circ$  in a biochemical reaction represents**

- A) Free energy change  
B) Equilibrium constant  
C) Standard free energy change  
D) Redox change potential

**77. Which one of the following types of drugs reduce fever?**

- A) Tranquilisor  
B) Antibiotic  
C) Analgesic  
D) Antipyretic

**78. Unit of viscoicity is**

- A) Poise  
B) Dyne/cm  
C) Joule/m<sup>2</sup>  
D) Joule

**79. Copper containing mitochondrial enzyme is**

- A) Catalase  
B) Succinic dehydrogenase  
C) Cytochrome c oxidase  
D) Acid phosphatase

**80. Which alkyl free radical is the most stable?**

- A) Methyl  
B) Primary  
C) Secondary  
D) Tertiary

**81. Which one of the following is not a chromosome instability syndrome?**

- A) Klinefelter syndrome  
B) Ataxia telangiectasia  
C) Fanconi anaemia  
D) Bloom syndrome

**82. Perception to the sense of taste depends on**

- A) G protein coupled receptors  
B) Gated cation channels  
C) Gated anion channels  
D) Both gated anion and cation channel

**83. BCG is used to protect against**

- A) Tuberculosis  
B) Pertusis  
C) Influenza  
D) Measles

**84. RNA molecules that can catalyse chemical reactions such as self splicing are known as**

- A) Isozymes  
B) Ribozymes  
C) Ribosomes  
D) Lysozyme

**85. Which one of the following amino acid has a maximum of three codons?**

- A) Phenyl alanine  
B) Isoleucine  
C) Leucine  
D) Glycine

86. Which one of the following is true regarding stomatal opening in leaf?

- A) Involves closing of  $K^+$  channel  
B) Occurs when there is an increase in turgor pressure of the guard cells  
C) Occurs in dark  
D) Occurs in response to abscisic acid

87. Nucleus was first discovered in 1831 by

- A) Robert Hooke  
B) Robert Brown  
C) Rudolf Virchow  
D) Theodore Schwann

88. In humans, the eggs are

- A) Centrolecithal  
B) Macrolecithal  
C) Mesolecithal  
D) Alecithal

89. Mumps is a disease caused by

- A) Fungus  
B) Bacteria  
C) Virus  
D) Protozoa

90. Plants growing on sand are called as

- A) Chasmophytes  
B) Oxylophytes  
C) Lithophytes  
D) Psammophytes

91. Snakes first appeared in one of the following periods

- A) Palaeozoic period  
B) Archaeozoic period  
C) Mesozoic period  
D) Silurian period

92. Which of the following honey bees is commonly domesticated

- A) *Apis florea*  
B) *Apis indica*  
C) *Apis dorsata*  
D) *Apis mellifera*

93. Cystic fibrosis is a recessive trait disease. If a woman with cystic fibrosis marries a man without the disease and for whom there is no family history of disease, what is the probability of their girl child getting disease?

- A) 0  
B) 0.25  
C) 0.5  
D) 0.75

94. 0.2g of an organic compound gave 20.7ml of nitrogen at  $15^\circ\text{C}$  and 760mm pressure when analysed by the Duma's method. The percentage of nitrogen in the given compound is

- A) 14.26  
B) 16.26  
C) 12.26  
D) 10.26

95. Which one of the following is a mucopolysaccharide?

- A) Mannose  
B) Chitin  
C) Hyaluronic acid  
D) Fibrinogen

**96. Aluminium-air battery is also called**

- A) Flow-battery
- B) Leclanche cell
- C) Dry cell
- D) Fuel cell

**97. Pyorrhoea is a disease of**

- A) Nose
- B) Heart
- C) Gum
- D) Lungs

**98. The most common cystic fibrosis mutation consists of**

- A) A deletion
- B) A duplication
- C) A substitution
- D) An insertion

**99. Patagium is an evolutionary adaption called as**

- A) Volant adaptation
- B) Fossorial adaption
- C) Aquatica adaption
- D) Cursorial adaption

**100. Which one of the following is NOT a neurotransmitter?**

- A) GABA
- B) Norepinephrine
- C) Dopamine
- D) Neurotrophin

**For rough work**