

Hall Ticket Number:

Booklet Code: A

**Department of Animal Sciences
ENTRANCE EXAMINATION February 2013
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 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 12 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.*
- *Candidate should write and darken the correct Booklet Code of the question paper in the OMR Answer Sheet, without which such OMR answer sheets cannot be evaluated. The defaulting candidates in marking the Booklet Code in the OMR sheet shall not have any claim on their examination and the University shall not be held responsible for the lapse on the part of the candidate/s.*

PART "A"

1. Hormone that brings out action by binding to intracellular receptor is

- | | |
|---------------|---------------|
| A) Calcitonin | B) Calcitriol |
| C) Prolactin | D) Oxytocin |

2. Calculate the length of the double stranded DNA molecule of molecular weight 3×10^7

- | | |
|------------------------|-----------------------|
| A) 16.50 μm | B) 8.50 μm |
| C) 33.0 μm | D) 50.0 μm |

3. Which one of the following compounds will be optically active?

- | | |
|---------------------------|---------------------------|
| A) 2-Propanoic acid | B) 3-Chloropropanoic acid |
| C) 2-Chloropropanoic acid | D) 3-Chloropropene |

4. Avian fauna represents a mixture of

- A) Palaearctic and Neotropical regions B) Palaearctic and tropical regions
C) Nearctic and Ethiopian regions D) Palaearctic and Nearctic regions

5. The electrical potential of a cell is

- A) An intensive property B) An extensive property
C) An isothermal property D) An isobaric property

6. The condition where vertebra has centrum concave at the anterior end and convex at the posterior end is called as

- A) Amphicoelous B) Opisthocoelous
C) Heterocoelous D) Procoelous

7. Which one of the following statements is false?

- A) Diethyl ether has been used as a general anesthetic B) Ethyl alcohol is present in all alcoholic beverages
C) Methyl alcohol is produced by fermentation of sugars D) Ethylene glycol is a common antifreeze for automobiles

8. The queen of *Apis mellifera* attracts males by pheromone produced by mandibular glands. The chemical composition of this pheromone is

- A) 9-oxodecenoic acid B) 4 methyl pyrrole-2-carboxylate
C) Organic sulphide D) Carboxylic acid

9. Terminal deoxynucleotidyl Transferase (TdT) is an enzyme that catalyses

- A) Addition of nucleotides to the 3' terminus of DNA molecules B) Addition of nucleotides to the 5' terminus of DNA molecules
C) Addition of phosphate group to the 5' terminus of DNA molecule D) Addition of nucleotides to the 3' and 5' terminus of DNA molecule

10. Keto-enol tautomerism is shown by

- A) Benzaldehyde B) Acetone
C) Benzophenone D) Acetic acid

11. The phenomenon where gonadal maturation is accelerated while the rest of the body develops normally is

- A) Neoteny B) Progenesis
C) Morphallaxis D) Epimorphosis

12. Which molecule has a nonzero dipole moment?

- A) Cl_2 B) CO_2
C) CCl_4 D) CHCl_3

13. The tallest living tree is

- A) Palm tree
B) Picus
C) Fern
D) Sequia

14. In which carbon of pyruvate the radioactivity would be found if glucose labeled both at C1 and C4 with ^{14}C is used as carbon source?

- A) At first carbon atom of pyruvate
B) At second carbon atom of pyruvate
C) Both at first and second carbon atoms of pyruvate
D) Both at second and third carbon atoms of pyruvate

15. Exogenous melatonin administration increases the chances of falling asleep when endogenous

- A) melatonin levels are low
B) melatonin levels are high
C) serotonin levels are low
D) serotonin levels are high

16. Markovnikov's addition of HBr is not applicable to

- A) Propene
B) 1-butene
C) 1-pentene
D) 2-butene

17. The central portion of the stem, useful for storage of food is

- A) Pith
B) Bundle cap
C) Endosperm
D) Endarch

18. Macula is characteristic feature of

- A) Retina
B) Eardrum
C) Otolith organ
D) Cerumen

19. 0.2g of an organic compound gave 20.7ml of nitrogen at 15°C and 760mm pressure when analysed by Duma's method. The percentage of nitrogen in the given compound is

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

20. Eskimos have shorter arms and legs in proportion to their trunk size. This is an example of

- A) Bergman's rule
B) Allen's rule
C) Gloger's rule
D) Jordan's rule

21. How many Faradays are required to reduce one mol of MnO_4^- to Mn^{2+} ?

- A) 1
B) 2
C) 3
D) 5

22. All of the following are proteins within the core nucleosome particle except

- A) H1
- B) H2A
- C) H2B
- D) H3

23. PCl_5 is 40% dissociated when the pressure is 2 atm. It will be 80% dissociated when pressure is approximately

- A) 0.2 atm
- B) 0.5 atm
- C) 0.3 atm
- D) 0.6 atm

24. Monotreme found only in Australia region

- A) *Echidna*
- B) *Dasyurus*
- C) *Perameles*
- D) *Tarsier*

25. Which of one the following compounds does not dissolve in concentrated H_2SO_4 on warming?

- A) n-Hexane
- B) Diethyl ether
- C) 1-Butene
- D) Aniline

PART "B"

26. Sucking mouth parts with stylets are characteristic of

- A) Bugs
- B) Butterflies
- C) Mosquitoes
- D) Cockroaches

27. Von Gierke's disease of liver and kidney is associated with

- A) Glucose-6 phosphate
- B) Phosphorylase
- C) Phosphofructokinase
- D) Glucosidase

28. Liquid oils can be converted to solid fats by

- A) Hydrogenation
- B) Saponification
- C) Hydrolysis
- D) Oxidation of double bonds

29. Negri bodies are found in cells infected with

- A) Paramyxo virus
- B) Vaccinia virus
- C) Fowl pox virus
- D) Rabies virus

30. Elevated phenylalanine is a clinical biochemical marker for
- A) Homocystinuria
B) Phenylketonuria
C) Propionic acidemia
D) Methylmalonic acidemia
31. The following structure acts as an organizer in Hydra
- A) Parasegment
B) Blastopore
C) Hypostome
D) Ampula
32. An RNA dependent RNA polymerase is likely to be present in the virion of a
- A) DNA virus that multiplies in the cytoplasm
B) DNA virus that multiplies in the nucleus
C) Minus-strand RNA virus
D) Plus-strand RNA virus
33. Archaeopteryx is a translational fossil between
- A) Snake and bird
B) Pelican and mammal
C) Frog and salamander
D) Dinosaur and bird
34. Polymer produced by *Erwinia tahitica* used for carpet printing
- A) Polytran
B) Xanthan
C) Zanflo
D) Pullutan
35. Introduction of transgene for transgenic manipulation can be done at the level of
- A) Only somatic line
B) Both somatic and germ line
C) Only germ line
D) Periplasm
36. Shallow water zone of intertidal area on the continental shelf is called as
- A) Neritic
B) Sublittoral
C) Abyssal
D) Bathyal
37. Which one of the following compounds on treatment with NaHCO_3 will liberate CO_2 ?
- A) Acetic acid
B) Ethylamine
C) Acetone
D) Ethylalcohol
38. A region with high biodiversity with most species being endemic in India has been identified
- A) East Himalayan region and Western ghat
B) South eastern ghat and Trans Himalayan region
C) North west India and Trans Himalayan region
D) North east India and Deccan Plateau

39. When the urodele *Proteus* of caves is exposed to light?
A) Skin turns paler
B) Skin darkens
C) Skin drops out
D) Skin thickens
40. Lysosomes break linkage between _____ in the bacterial cell wall
A) N-acetylmuramic acid and L-alanine
B) N-acetylmuramic acid and N-acetyl glucosamine
C) N-acetylmuramic acid and D-alanine
D) N-acetylmuramic acid and first amino acid in glycine chain
41. Use of cells or cellular components to produce a desired end product is
A) Biosynthesis
B) Biomass
C) Bioconversion
D) Bioprocess
42. Which one of the following compounds will give a positive test with Fehling's solution?
A) Formaldehyde
B) Acetone
C) Ethyl acetate
D) Acetic acid
43. The appearance of vestigial organs is because of their continuous
A) Usefulness
B) Experiment of nature
C) Natural selection
D) Uselessness
44. The following component is used in flavour enhancement produced from *Corynebacterium glutamicum*
A) Ethanol
B) Lysine
C) Acetone
D) Glutamic acid
45. The jaw suspension type in Elasmobranch is
A) Autostylic
B) Craniostylic
C) Amphistylic
D) Hyostylic
46. Chromosomal translocations are common in the following condition
A) Down's syndrome
B) Turner's syndrome
C) Cancer
D) AIDS
47. Cyclopentanol undergoes oxidation to give
A) Cyclopentene
B) Cyclopentanone
C) Cyclopentane
D) Cyclopentanal
48. Which one of the following gram-positive bacteria causes pharyngitis (sore throat)?
A) *Neisseria*
B) *Streptococcus*
C) *Staphylococcus*
D) *Mycobacterium*

49. Which one of the following most likely prevents extinction of a rare allele that is genetically lethal in homozygous condition?

- A) New mutation
B) Genetic drift
C) Founder effect
D) Balanced polymorphism

50. At critical temperature of a liquid, surface tension is

- A) Zero
B) Infinite
C) Varies from liquid to liquid
D) Can't be measured

51. Radius and ulna are separate in

- A) Frog
B) Snake
C) Sphenodon
D) Man

52. For the ionic compounds that can ionize in a solution, the activity co-efficient is a measure of

- A) The ionization potential
B) The deviation of the behavior of a species from the expected
C) The ability of ionic species to form an equilibrium
D) The ionic atmosphere that exists in the solution

53. Gas gangrene is caused by which species of *Clostridium*?

- A) *botulinum*
B) *Fi*
C) *perfringens*
D) *difficile*

54. Which one of the following plants is biennial?

- A) Banana
B) Jack fruit
C) Carrot
D) Pineapple

55. Paurometabolous type of post embryonic development is a characteristic of

- A) Hymenoptera
B) Orthoptera
C) Lepidoptera
D) Diptera

56. All of the following would have a direct effect on the amount of precipitation in an area except

- A) Mountain ranges
B) Continental drift
C) Ocean currents
D) Evaporation from vegetation

57. Conjugate of H_2 is

- A) H^+
B) H_3^+
C) H^-
D) H_3^-

58. *Azotobacter* has a world wide distribution in soil having pH

- A) 2-5
B) 11-14
C) 5-8
D) 8-11

59. A mutation that gives an alerted phenotype even in the presence of a copy of the wild type gene is:

- A) Conditional mutation
- B) Recessive mutation
- C) Dominant mutation
- D) Complementation

60. Last step in Krebs cycle is the breakdown of

- A) Fumarate
- B) Malate
- C) Oxaloacetate
- D) Citrate

61. Notochord is formed from

- A) Chordamesoderm cells
- B) Endoderm
- C) Somatic cells
- D) Vegetal cells

62. Specific heat of aluminium is $0.214 \text{ cal/g}^\circ\text{C}$. Amount of heat required to raise the temperature of 40.0 g of Al from 20° to 30°C is

- A) 85.6 cal
- B) 3.2 cal
- C) 171.2 cal
- D) 342.4 cal

63. Nile perch (*Lates niloticus*) is a good example of

- A) Endangered endemic species
- B) Threatened migratory species
- C) Introduced predator
- D) Primary consumer

64. Microtubule polymerization can be best disrupted by

- A) Colchicine
- B) Cytochalasin
- C) Actinomycin
- D) Phalloidin

65. *Penicillium* is commonly known as

- A) White rust
- B) Black mold
- C) Green or blue mold
- D) Yellow mold

66. Effect of one gene on another in a way that one would hide the effect of another on a phenotype is called

- A) Pleiotropy
- B) Epistasis
- C) Homeostasis
- D) Hyperstasis

67. Ethylene and acetylene can be distinguished by using

- A) Bromine in CCl_4
- B) Tollen's reagent
- C) Baeyer's reagent
- D) Phenylhydrazine

68. One of the following is not a blood coagulation factor

- A) Proaccelarin
- B) Christmas factor
- C) Hagman factor
- D) Baker factor

69. Which one of the following is the site for T cell development?

- A) Spleen
B) Bone marrow
C) Thymus
D) Liver

70. What is the pH of a solution whose hydrogen ion concentration is 3.2×10^{-4} mol/L?

- A) 2.0
B) 2.5
C) 3.0
D) 3.5

71. Cyclomorphosis is a phenomenon where body form alters with change in

- A) Moisture
B) Hibernation
C) Aestivation
D) Temperature

72. The enzyme which dephosphorylates all types of DNA ends at 37°C is

- A) Acid phosphatase
B) Alkaline phosphatase
C) Tyrosine kinase
D) Thymidine dephosphorylase

73. Mucosal tissue bound to the periosteum of the maxillary and mandibular bones is

- A) Gingiva
B) Cementum
C) Serosa
D) Dentin

74. Following is an example of discontinuous distribution

- A) *Notodrilus*
B) *Artemia*
C) *Mytilus*
D) *Cuckoos*

75. Alkyl halides undergo

- A) Electrophilic substitution reactions
B) Electrophilic addition reactions
C) Nucleophilic substitution reactions
D) Nucleophilic addition reactions

76. Following organism is used in Ore leaching

- A) *Thiobacillus*
B) *Tricoderma*
C) *Clostridium*
D) *Saccharomyces*

77. Neutrophils are attracted to an infected area by

- A) IgM
B) Vascular permeability
C) Phagocytosis of IgE coated bacteria
D) Aggregation of complement molecules

78. Which one of the following is a woody climber?

- A) *Cycas*
B) *Gnetum*
C) *Adiantum*
D) *Pinus*

79. One of the following is a dermal bone

- A) Supraoccipital B) Basioccipital
C) Turbinal D) Vomer

80. Individuals with "Laron syndrome" an autosomal recessive disorder show

- A) Elevated level of circulating growth hormone B) Lower level of circulating growth hormone
C) Elevated level of aldosterone D) Lower level of aldosterone

81. The major product of acid-catalysed dehydration of 2-butanol is

- A) 2-Butene B) 2-Butyne
C) 1-Butene D) 1-Butyne

82. Mammals produce concentrated urine because of the presence of

- A) Loop of Henle B) Columns of Bertin
C) Renal pyramids D) Distal tubules

83. Influenza virus belongs to the family

- A) Flaviviridae B) Coronaviridae
C) Orthomyxoviridae D) Arenaviridae

84. Father and mother are apparently normal but carriers, the daughter succumbs to carrier based hereditary disease. What is the probability of grand children getting affected by the disease, if son-in-law is completely normal?

- A) 25% B) 0%
C) 75% D) 50%

85. The mode of nutrition in which organisms like bacteria, algae and diatoms form the food of protozoa is

- A) Holophytic B) Holozoic
C) Saprophytic D) Saprozoic

86. Osmosis results from

- A) An increase in entropy B) A decrease in entropy
C) A decrease in enthalpy D) A decrease in internal energy

87. Species transplant experiments are one way of determining

- A) The distribution of species in a specified area B) The strength of interspecific interactions in an area
C) The abundance of species in a specific area D) The strength of intraspecific interactions in an area

88. Maximum rate of photosynthesis occurs in

- A) Red light B) Green light
C) White light D) Red and blue light

89. Infection of host cell by HIV is mediated through
- A) Opsonisation
B) Phagocytosis
C) Adhesion
D) Engulfing
90. Which one of the following is not a property of thiols?
- A) They are all solids
B) They can be oxidized to disulphides
C) They have foul odours
D) They are weak acids
91. Molecules smaller than 1 nm can be visualized by
- A) X-ray diffraction
B) Electron microscopy
C) X-ray microscopy
D) Polarisation microscopy
92. The following is an amphibian animal
- A) *Agelenopsis*
B) *Allocaenia*
C) *Ambystoma*
D) *Chelodina*
93. Exchange of segments between non-homologous chromosomes is called as
- A) Translocation
B) Recombination
C) Inversion
D) Crossing over
94. Which one of the following has the highest bond energy?
- A) C-N
B) O=O
C) C=C
D) C=O
95. Which one of the following is not associated with chronic myeloid leukemia?
- A) African Y chromosome
B) Chromosome 9
C) Chromosome 22
D) Philadelphia chromosome
96. Linoleate is an 18 carbon fatty acid of membrane lipids. The position of double bonds in this molecule occur at positions
- A) $\Delta 5, \Delta 11$
B) $\Delta 9, \Delta 12$
C) $\Delta 8, \Delta 14$
D) $\Delta 5, \Delta 14$
97. Cilia of pelecypod gills exhibit
- A) Pendular movement
B) Flexural movement
C) Undulating movement
D) Funnel form movement
98. Which one of the following is least soluble in water?
- A) CH_3OH
B) $\text{CH}_3\text{CH}_2\text{OH}$
C) CH_3SH
D) $\text{HOCH}_2\text{CH}_2\text{OH}$

99. All of the following act to increase species diversity except

- A) Keystone predators
- B) Migration of population
- C) Competitive exclusion
- D) Patchy environment

100. If bacteriophage is infected to the *E. coli* culture growing in the medium containing radiolabeled methionine, which part of the phage particle gets radioactivity?

- A) Nucleic acid
- B) Protein
- C) Protein and Nucleic acid
- D) Phage progeny do not get radioactivity

For rough work
