Booklet code : A

H-14

Hall Ticket Number:

Department of Animal Biology

ENTRANCE EXAMINATION, February 2015

M.Sc Animal Biotechnology

Time: 2 hours **Maximum Marks: 100**

BOOKLET CODE: A

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.*
- *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. Osculum is related to

A) Silverfish
B) Sea anemone
C) Starfish
D) Sponge

2. The concentration of hydrogen ions in absolute ethanol is about

A) $1.58X10^{-10}$ M
B) $1.58X10^{-7}$ M
C) $1X10^{-9}$ M
D) $1X10^{-8}$ M

3. Polymorphous organelle of a eukaryotic cell is

A) Ribosomes
B) Lysosomes
C) Peoxisomes
D) Nucleosomes

4. Decreased levels of ..... causes vitamin K deficiency

A) Fibrin
B) Fibrinogen
C) Prothrombin
D) Thrombin

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5. Which one of the following virus is highly hemorrhagic?

A) Papilloma
B) Ebola
C) FMDV
D) Chikungunya

6. What is the concentration of the hydrogen ion in moles/litre, if pH of the solution is 7?

A) $2X10^{-7}$
B) $1X10^{-7}$
C) $5X10^{-7}$
D) $7X10^{-7}$

7. Osmoregulation in amoeba is under the control of

A) Plasmalemma
B) Pseudopodia
C) Contractile vacuole
D) Food vacuole

8. Wax is

A) A nonpolar solid
B) A long chain alcohol
C) A triglycerol
D) A salt of glycerol

9. An element having 8 protons, 8 neutrons and 8 electrons will weigh how many daltons?

A) 8
B) 16
C) 24
D) 32

10. Rhythmicity of heart is due to

A) AV node
B) Purkinje fibers
C) Bertini columns
D) SA node

11. Which one of classes of IgGs does not cross the placenta

A) IgG1
B) IgG2
C) IgG3
D) IgG4

12. Which one of the following hormones is the smallest peptide?

A) TRH
B) GnRH
C) GnIH
D) TSH

13. How many isomers are possible for hexane?

A) 4
B) 5
C) 6
D) 7

14. The cytoskeletal intermediate elements can be depolymerised by

A) Colchicine
B) Acid hydrolysis
C) Cytochalasin B
D) Tunicamycin

15. Paracrine factors important for commissural and retinal axon migration

A) Chordins
B) Ephrins
C) Netrins
D) Neurotrophins

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16. Aldehydes and ketones form hydrocarbons by

A) Rosenmund's reduction
B) Cannizzaro reaction
C) Clemmensen reduction
D) Stephen's reduction

17. Which one of the following is a Hemoflagellate parasite?

A) *Plasmodium*
B) *Wuchereria*
C) *Trypanosoma*
D) *Fasciola*

18. Thermogenesis is not associated with

A) Brown fat
B) Diapause
C) Ectotherms
D) Endotherms

19. In the Embden-Meyerhof pathway (EMP) 2-phosphoglyceric acid is converted into phosphoenol pyruvic acid in the presence of enzyme

A) Enolase
B) Phosphoglyceromutase
C) Phosphoglyceric acid kinase
D) Phosphohexose isomerase

20. Plane polarized light is affected by

A) Identical molecules
B) All polymers
C) Chiral molecules
D) All biomolecules

21. Which one of the following will show maximal absorption at 260nm?

A) Double stranded DNA at 37°C
B) Double stranded DNA heated to 90°C
C) Double stranded DNA heated to 90°C and allowed to cool slowly
D) Double stranded DNA mixed with proteins

22. A triple bond consists of

A) 2 sigma bonds and 1 pi bond
B) 3 sigma bonds
C) 1 sigma bond and 2 pi bonds
D) 3 pi bonds

23. In which animal heart is not ventral in position?

A) Fish
B) Frog
C) Crab
D) Lamprey

24. Which one of the following is a nucleophile?

A) $AlCl_3$
B) H_3O^+
C) BF_3
D) CN^-

25. An extra embryonic membrane essential for gas exchange during development of amniote embryo is

A) Amnion
B) Allantois
C) Chorion
D) Yolk sac

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PART "B"

26. Which one of the following substance is normally not present in the urine of a healthy person?

A) Na^+ B) $(PO_4)^{3-}$
C) Urea D) Glucose

27. If there is a single pair of alleles that determine the number of toes for an animal and homozygous dominant individuals have 8, heterozygous have 7 and homozygous recessive ones have 6, the inheritance pattern would be

A) Genome imprinting B) Intermediate expression
C) Pleiotropy D) Complex trait

28. The order of stability of carbonium ions is

A) Tertiary> secondary> primary B) Secondary> tertiary>primary
C) Primary>secondary>tertiary D) Primary>tertiary>secondary

29. A solution with pH5 is ..... than a solution having pH7

A) 10 times more basic B) 10 time more acidic
C) 100 times more acidic D) 5 times more basic

30. Which one of the orbital's is nearest to the nucleus?

A) 4f B) 5d
C) 6s D) 7p

31. Which one of the following is not a second messenger?

A) Inositol 1,4,5 triphosphate B) Phospholipase C
C) Diacyl glycerol D) cGMP

32. The peppered moths have occurred as a result of

A) Natural selection B) Evolution
C) Mutation D) Industrialisation

33. During Southern blotting procedure, DNA probe is normally heated at 65°C for five minutes prior to the addition of hybridization mix. This is to

A) Allow DNA to recognize complementary sequence B) Eliminate non-specific interactions
C) Prevent binding of proteins D) Enable efficient annealing

34. Pigmented layer which prevents scattering of the light rays in eye is

A) Cornea B) Choroid
C) Fovea D) Sclera

35. In mitochondrial genomes, ... is a stop codon

A) UGA B) AUA
C) AGA D) UAA

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36. Reduction of acetaldehyde with H_2/Ni gives

A) Ethyl alcohol
B) Acetic acid
C) Ethylene
D) Ethane

37. Which one of the following endocrine gland hormones regulate protein, fat and carbohydrate metabolism?

A) Adrenal
B) Thymus
C) Pancreas
D) Pineal

38. The intermolecular force of attraction between non-polar molecules is called

A) H- bonding
B) Dispersion forces
C) Interionic attraction
D) Adhesive forces

39. If an *E. coli* mutant expresses an altered non-functional LacI repressor molecule, there will be

A) Constitutive expression of β-galactosidase
B) Inducible expression of β-galactosidase upon addition of lactose
C) Expression of β-galactosidase only in the absence of lactose
D) Constitutive expression of a non-functional β-galactosidase

40. The molecule with greatest dipole moment

A) CH_3Cl
B) CH_3Br
C) CH_3F
D) CH_3I

41. Corals are formed by

A) Coelentrates
B) Molluscs
C) Echinoderms
D) Poriferans

42. When Corpus luteum degenerates

A) Circulating levels of estrogen and progesterone rapidly declines
B) Circulating levels of estrogen and progesterone rapidly increases
C) Ovulation takes place
D) FSH and LH secretion from pituitary declines

43. Length of the following decreases during muscular contraction

A) Sarcomere
B) Thick filament
C) Thin filament
D) A band

44. Pearl mother layer is

A) Prismatic layer
B) Nacre
C) Mantle
D) Periostracum layer

45. The end product of protein metabolism is

A) Urea
B) Ammonia
C) Glutamine
D) Uric acid

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46. Unit of viscosity is

A) Poise
B) Dyne/cm
C) Juole/m^2
D) Joule

47. Telomeres are rich in

A) Adenine
B) Thymine
C) Guanine
D) Cytosine

48. Which one is the best suitable definition for a "niche"?

A) The place where an organism lives
B) The role of an organism in an ecosystem
C) Organisms and their environment
D) Behaviour of a species in a specific environmental condition

49. Lock and Key hypothesis of enzyme action was given by

A) Kuhne
B) Emil Fischer
C) Buchner
D) Koshland

50. Desalinating of the sea water is done by

A) Reverse osmosis
B) Osmosis
C) Filteration
D) Evaporation

51. Developmental changes that occur when different parts of an organism grow at different rates is known as

A) Allometry
B) Heterometry
C) Heterochrony
D) Hetrotypy

52. Which one of the following radiations have maximum wavelength?

A) UV
B) Radiowave
C) X-ray
D) IR

53. A symbiotic relationship that is beneficial to one partner and neither beneficial nor harmful to other partner is

A) Pleiotropism
B) Commensalism
C) Mutalism
D) Polyphenism

54. Which one of the following reactions is required during DNA replication by DNA polymerase III?

A) 3'-5' exonuclease activity
B) 3'-5' endonuclease activity
C) 5'-3' exonuclease activity
D) 5'-3' endonuclease activity

55. The round worm Ascaris is a

A) Ectoparasite
B) Free living parasite
C) Sedentary parasite
D) Commensal parasite

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56. β-oxidation happens in

A) Mitochondria and peroxisomes
B) Mitochondria and lysosomes
C) Lysosomes and peroxisomes
D) Mitochondria and ribosomes

57. Which term refers to the total set of genes possessed by an organism?

A) Gene pool
B) Genes
C) Genotype
D) Alleles

58. In allergic reactions, mast cells get activated upon binding to

A) IgG
B) IgE
C) IgM
D) IgA

59. Which one of the following is true for action potential?

A) Serves as long distance signal
B) Serves as short distance signal
C) Spreads through the membrane in a diminishing fashion
D) Does not spread through the membrane

60. Tryptophan can be best identified by

A) Electrophoresis
B) UV spectroscopy
C) NMR
D) Gel filtration

61. The temperature of one mole of helium gas is increased by 1°, the increase in internal energy is

A) 7 cal
B) 5 cal
C) 3.5 cal
D) 3 cal

62. If a father's genotype is AB and mother's genotype is AO what is the probability that they will have a child with phenotype of type A blood group?

A) 75%
B) 25%
C) 100%
D) 50%

63. Which one of the following provides direct input to alpha motor neurons?

A) Basal nuclei
B) Brain stem
C) Crebellum
D) Optic lobe

64. Standard molar enthalpy of formation of 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 CO and O_2
D) The standard molar enthalpy of combustion of carbons

65. Antiviral substance produced by many vertebrates in response to viral infection is

A) Virion
B) Interferon
C) Antivirin
D) Antigen

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66. The basis for Darwin's theory of "origin of species" was

A) Mutation
B) Natural selection
C) Variations
D) Hybridisation

67. The compound whose 0.1M solution is basic is

A) Ammonium acetate
B) Ammonium chloride
C) Ammonium sulphate
D) Sodium acetate

68. Okazaki fragments are related to

A) Transcription
B) Replication
C) Transformation
D) Reverse transcription/translation

69. The bond angle associated with the hybrid orbitals of a carbon involved in a triple bond is

A) 180°
B) 120°
C) 109°
D) 45°

70. Which one of the following is not used as a viral vector?

A) Lentivirus
B) Vaccinia virus
C) Baculovirus
D) Papilloma virus

71. Glycoprotein coat around mammalian egg is

A) Cumulus oophorus
B) Corona radiata
C) Zona pellucida
D) Zona radiata

72. Ethylene oxide reacts with HBr to give

A) 1-Bromoethanol
B) Ethyl bromide
C) 2- Bromoethanol
D) Ethylene glycol

73. Tyndal effect is not observed in

A) Suspension
B) Starch solution
C) Gold solution
D) NaCl solution

74. How many different types of gametes will be produced by an individual having arbitary genotype of AAbbCCDdEeFf?

A) Four
B) Six
C) Eight
D) Ten

75. When using *E. coli* as the expression host for expressing mammalian proteins, cDNA is used instead of genomic DNA. The reason for this is

A) It is easier to clone cDNA than genomic DNA of comparable size
B) It is easier to isolate RNA than DNA
C) The intronic sequences in mammalian DNA cannot be removed by bacteria
D) The cDNA contains information needed for optimal expression of the protein

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76. In glycolysis, ultimately

A) Protein is converted to glucose
B) Glucose is converted to fructose
C) Glucose is converted to Pyruvic acid
D) Starch is converted to glucose

77. The smallest virus is

A) Coliphage lambda virus
B) Wound tumor virus
C) Foot and mouth disease virus of cattle
D) Tobacco mosaic virus

78. Which one of the following is <u>incorrect</u> about diphteria toxin?

A) It inhibits translation by binding to IF2 and IF3
B) It inhibits translation by binding to eEF2
C) It inhibits translation by binding to eIF2
D) It exerts its effect by ADP ribosylation

79. The terminal portion of the *Drosophila* embryo which includes the brain is

A) Acron
B) Cephalon
C) Animal cap
D) Telson

80. A hollow sphere of cells which forms during embryonic development of amphibians is

A) Zygote
B) Blastula
C) Morula
D) Gastrula

81. The magnitude of a loud rock concert ranges between

A) 10-20 Decibel
B) 50-60 Decibel
C) 110-130 Decibel
D) 150-180 Decibel

82. Norepinephrine is

A) Secreted by adrenal cortex
B) Secreted by adrenal medulla
C) Secreted by motor neurons
D) Binds to muscarinic or nicotinic receptors

83. Which one of the phyla is diploblastic?

A) Rotifera
B) Mollusca
C) Nematode
D) Cnidaria

84. In Kreb's cycle ATP is released between

A) Fumarate→malate
B) Citrate→Isocitrate
C) Succinyl CoA →succinate
D) Oxalpacetate→citrate

85. The first vaccine was developed by

A) Louis Pasteur
B) Edward Jenner
C) Carl Landsteiner
D) Joseph Meister

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86. Acetylcholinesterase

A) Is stored in vesicles in the terminal button
B) Is inhibited by organophosphates
C) Is a chemical transmitter at neuromuscular junction
D) Is neurotransmitter at neuromuscular junction

87. Down's syndrome is due to

A) XXY
B) Trisomy of 21
C) Philadelphia chromosome
D) Trisomy of 18

88. Formation of fat begins in the body when

A) Blood sugar level is constant
B) Glucose is converted into glycogen
C) Liver and muscles cannot store any more glycogen
D) Glucose combine with glycerol

89. Which one of the following is not directly triggered by exposed collagen in an injured vessel?

A) Initial vascular spasm
B) Platelet aggregation
C) Activation of clotting cascade
D) Activation of plasminogen

90. Which term describes the total number of organism of the same species?

A) Habitat
B) Population
C) Community
D) Groups

91. Coenzyme is

A) A carbohydrate that controls enzymatic activity
B) A nucleic acid
C) A vitamin that acts with an enzyme
D) An inorganic compound

92. Which one of the following is <u>not</u> a cartilaginous fish

A) Sharks
B) Rays
C) Skates
D) Carps

93. Phase change from gas to solid is called

A) Sublimation
B) Deposition
C) Fusion
D) Vapourisation

94. 1-Bromobutane reacts with alcoholic KOH to mainly give

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

95. Organs which perform various functions but are derived from common ancestral structure are known as

A) Analogous
B) Homologous
C) Orthologous
D) Paralogous

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96. Movement of substances against their concentration gradient in the living systems is called

A) Osmosis
B) Diffusion
C) Brownian movement
D) Active transport

97. In a certain cactus, prickly spines can be two pronged or one pronged. If a true breeding one pronged cactus is crossed with a true breeding two pronged cactus, the F1 generation has a mixture of spines-some are two pronged and some are one pronged. This is an example of

A) Polygenic trait
B) Incomplete dominance
C) Co-dominance
D) Autosomal dominant

98. Maintenance of biodiversity is a prerequisite for

A) Ecological stability
B) Genetic stability
C) Zoological species diversity
D) Botanical species diversity

99. Grignard reagents do not show any reaction with

A) Alkoxyalkanes
B) Alkanones
C) Alkyl alkanoates
D) Acyl halides

100. Cholesterol is a

A) Derived lipid
B) Phospholipid
C) Glycolipid
D) Simple lipid

For rough work