VERSION CODE
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K I I T U N I V E R S I T Y
K I I T E E – 2 0 1 1
QUESTION BOOKLET

Answer Sheet No.							

M.Sc Biotechnology/M.Sc. Applied Microbiology

Important Instructions

1. Use only **Blue/Black** Ball Point Pen to Fill up the Particulars on the Question Booklet and Answer Sheet, for marking the responses on the Answer Sheet and for writing the short answers on Question Booklet. Use of Pencil is strictly prohibited.
2. Immediately Fill in the Particulars asked on this page & on the answer sheet very carefully. Write the Application number and Roll Number, asked in the Answer Sheet very neatly and darken the respective circle.
3. Write the Answer Sheet Number on the Attendance Sheet, and on the Question Booklet as mentioned in the Answer Sheet.
4. Open the seal of the Question Booklet after getting necessary instructions from the invigilator. This Question Booklet contains 24 pages.
5. After opening the seal, check all the pages of the question booklet. If there is any discrepancy, report to the invigilator immediately for change of question booklet.
6. This question Booklet consists of **120** multiple choice questions each carrying **+4** for correct response, **-1** for incorrect response and **0** for no response.
7. The Test is of **two hours** duration.
8. Handle the Question Booklet and Answer Sheet with care.
9. Don't do any rough work or writing work on Answer Sheet. All calculations / writing works are to be done in the space provided for the purpose in the Question Booklet itself, marked 'Space for Rough Work'.
10. On demand, show the admit card to the invigilator.
11. The candidates are governed by the Rules and Regulation of the University with regard to their conduct in the Examination Hall / Room.
12. Candidates are not allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, electronic device, electronic / manual calculator, drawing instruments (such as scale, compass etc.) or any other material except the Admit Card and Ball Point Pens inside the Examination Hall / Room.
13. No Part of the Question Booklet and Answer Sheet shall be detached / folded or defaced under any circumstances.
14. Before handing over the Question Booklet and Answer Sheet to the invigilator, confirm that your Question Booklet & Answer Sheet have been signed by the Invigilator.
15. On completion of the test, handover the Answer Sheet to the invigilator. At no circumstances, you will be allowed to leave the examination hall / room without handing over the Answer Sheet to the Invigilator.

Name of the Candidate _____ Roll No. _____

Examination Centre _____

Candidate's Signature Invigilator's Signature

BIOLOGY

1. Which of the following does not play a role in blood coagulation?

   (A) Calcium ions (B) Fibrinogen (C) Vitamin D (D) Vitamin K

2. The total member of nitrogenous bases in human genome is estimated to be

   (A) 3.5 million (B) 35 thousand (C) 35 billion (D) 3.1 billion

3. Validity of Mendel's law of segregation is established only when

   (A) Two F1 hybrids are crossed

   (B) One parent is crossed with F1 hybrid

   (C) Two pure breeding contrasting characters are crossed

   (D) None of the above

4. The sperm penetrates the ovum mainly

   (A) Mechanically (B) Chemically

   (C) Electrostatically (D) Thermally

5. Progesterone is secreted by

   (A) Corpus luteum (B) Corpus albicans

   (C) Lydia's cells (D) Gratian cells

6. Nitrogen fixing symbiont of *Azolla* is

   (A) *Azotobacter* (B) *Anabaena*

   (C) *Agrobacterium* (D) *Chlorella*

7. Glomerular filtrate is

   (A) Blood minus blood corpuscles and plasma protein

   (B) Blood minus blood corpuscles

   (C) Urine

   (D) Mixture of water, ammonia and corpuscles

CHEMISTRY

51. In CsCl crystal structure, each Cs^+ ion is surrounded by

(A) $4Cl^-$ (B) $6Cl^-$ (C) $8Cl^-$ (D) $12Cl^-$

52. Bohr model can explain

(A) The spectrum of hydrogen atom only

(B) The solar system

(C) The spectrum of hydrogen molecule

(D) The spectrum of an atom or an ion containing only one electron

53. Which of the following compounds has the highest pH when dissolved in water

(A) CH_3COONa (B) NH_4Cl (C) NaCN (D) NaCl

54. $CaCO_3$ (s) = CaO (s) + CO_2 (g)

The number of degrees of freedom for the above equilibrium reaction is

(A) 0 (B) 1 (C) 2 (D) 3

55. The molar conductivity of a strong electrolyte varies

(A) Linearly with concentration

(B) Linearly with the square root of concentration

(C) Inversely with concentration

(D) As the square of the concentration

56. A 0.2 M solution of sugar is isotonic with a solution of common salt. Both the solutions have the same volume and are at the same temperature. The concentration of the common salt solution is

(A) 0.1 M (B) 0.2 M (C) 0.3 M (D) 0.4 M

57. The oxidation state of Sulphur atoms in $Na_2S_2O_3$ are

(A) +2, -6 (B) +2, +2 (C) +2, +6 (D) -2, +6

MATHEMATICS

81. Which of the following is not a true statement?

(A) { x: x is real number and $x^2 - 1 = 0$ }

(B) { x: x is real number and $x^2 = 2x + 1$}

(C) $X \cap Y = \Phi$ implies $X = \Phi$ and $Y = \Phi$

(D) $X \cup Y = \Phi$ implies $X = \Phi$ and $Y = \Phi$

82. An equivalence relation is a relation if it is:

(A) Reflexive and symmetric but not transitive

(B) Symmetric and transitive but not reflexive

(C) Reflexive and transitive but not symmetric

(D) Reflexive, symmetric and transitive

83. The domain of the function $\sqrt{\left\{\log\left(\frac{12}{x^2 - x}\right)\right\}}$ is

(A) [-3,0] $\cup$ [1,4] (B) [-3, 0] $\cup$ (1,4)

(C) [-3, 0) $\cup$(1,4] (D) (-3,0) $\cup$ (1,4)

84. $1+\log_e 3+\frac{(\log_e 3)^2}{2!}+....$ is

(A) 3 (B) 4

(C) 2 (D) None of these

85. The sum of the series, $1+\frac{2^3}{2!}+\frac{3^3}{3!}+\text{L to}\infty$ is

(A) e (B) 3e (C) 5e (D) 7e

PHYSICS

101. The moment of inertia of a body having mass m and at a perpendicular distance R from the axis of rotation is?

(A) mR^2 (B) $7/5\ mR^2$ (C) $mR^2/2$ (D) $mR^2/4$

102. Excess pressure over an air bubble inside water is?

(A) 2T/R (B) 4T/R (C) $4T^2/R$ (D) 4TR

103. Sound wave is longitudinal wave because?

(A) It consists of a compression and refraction and do not show polarization

(B) It consists of a compression and refraction and shows polarization

(C) It consists of a crest and trough

(D) None of the above

104. An electric cell is a device which converts?

(A) Mechanical energy into electric energy

(B) Chemical energy into electrical energy

(C) Heat energy into electrical energy

(D) Light energy into electric energy

105. Part of the kinetic energy associated with the rotation of ring

(A) 2 (B) 1/2 (C) 3/2 (D) 2/5

106. A lens of μ= 1.5 and focal length 15cm is dipped into water of refractive index 4/3. What will be its focal length?

(A) 42 cm (B) 60 cm (C) 30 cm (D) 40 cm

107. The relation between half life period T and the decay constant (λ) is given by ?

(A) $T = 0.6931/\lambda$ (B) $T = \lambda /0.6931$

(C) $T = \lambda + 0.6931$ (D) $T = \lambda \times 0.6931$