RET/13/Test B

887 Biochemistry

Question Booklet No. .....

*(To be filled up by the candidate by **blue/black ball-point pen**)*

Roll No. | | | | | | | | | |

Roll No. (Write the digits in words) .....

Serial No. of OMR Answer Sheet .....

Day and Date .....

.....

(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only ***blue/black ball-point pen*** in the space above and on both sides of the ***Answer Sheet***)

1. Within 10 minutes of the issue of the Question Booklet, Please ensure that you have got the correct booklet and it contains all the pages in correct sequence and no page/question is missing. In case of faulty Question Booklet, bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. *A separate Answer Sheet is given. It should not be folded or mutilated. A second Answer Sheet shall not be provided.*
4. Write your Roll Number and Serial Number of the Answer Sheet by pen in the space provided above.
5. *On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.*
6. *No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and Roll No. and OMR sheet No. on the Question Booklet.*
7. *Any changes in the aforesaid-entries is to be verified by the invigilator, otherwise it will be taken as unfair means.*
8. *This Booklet contains 40 multiple choice questions followed by 10 short answer questions. For each MCQ, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet by pen as mentioned in the guidelines given on the first page of the Answer Sheet. For answering any five short Answer Questions use five Blank pages attached at the end of this Question Booklet.*
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed.* If you *do not wish to attempt* a question, leave all the circles in the corresponding row blank. Such question will be awarded zero marks).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *both OMR Answer Sheet and Question Booklet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

Total No. of Printed Pages : 15

FOR ROUGH WORK

Research Entrance Test – 2013

No. of Questions : 50

Time : 2 Hours

Full Marks : 200

Note : (i) This Question Booklet contains **40** Multiple Choice Questions followed by **10** Short Answer Questions.

(ii) Attempt as many MCQs as you can. Each MCQ carries **3 (Three)** marks. **1 (One)** mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question. If more than **one** alternative answers of MCQs seem to be approximate to the correct answer, choose the closest one.

(iii) Answer only **5** Short Answer Questions. Each question carries **16 (Sixteen)** marks and should be answered in **150-200** words. Blank **5 (Five)** pages attached with this booklet shall only be used for the purpose. Answer each question on separate page, after writing Question No.

1. Most of the land precipitation and evaporation on earth takes place over the :

   (1) land masses

   (2) oceans and seas

   (3) poles of the planet

   (4) subtropical latitudes

2. The downstream portion of a river :

   (1) generally becomes more sluggish

   (2) usually has turbulent flows

   (3) generally is of higher velocity, which is marked by reduced turbulence

   (4) has lower discharges than do upstream portions

3. Which of the following is not a fatty acid ?

   (1) Stearic acid (2) Palmitic acid

   (3) Oleic acid (4) Phenyl acetic acid

4. Which of the following compounds is not an antibiotic ?

   (1) Penicillin (2) Chloramine-T

   (3) Streptomycin (4) Chloramphenicol

5. The acceleration with which a particle moves in a straight line, according to the law $v^2 = 4a(x \sin x + \cos x)$, v being the velocity of the particle at a distance x from a fixed point, is :

   (1) 0 (2) $2\,ax \cos x$

   (3) $4\,ax \cos x$ (4) $2\,ax \sin x$

6. If $\begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix} A \begin{bmatrix} 0 & 2 \\ 1 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, then the matrix A is :

(1) $\begin{bmatrix} 3 & -4 \\ 3/4 & -1 \end{bmatrix}$

(2) $\begin{bmatrix} -13/4 & 3/2 \\ 5/4 & -1/2 \end{bmatrix}$

(3) $\begin{bmatrix} -17/4 & 3/4 \\ -7/4 & -1/4 \end{bmatrix}$

(4) $\begin{bmatrix} 5/4 & 11/4 \\ 3 & -9/4 \end{bmatrix}$

7. If the error in the measurement of radius of sphere is 0.3%, then the percentage error in the measurement of its volume is :

(1) 0.15%

(2) 0.6%

(3) 0.9%

(4) 0.03%

8. The resistance of series combination of two resistances is S. When they are joined in parallel, the total resistance is P. If S = nP, then the minimum possible value of n is :

(1) 3

(2) 4

(3) 2.1

(4) 0.89

9. Mitochondria are associated with the function of :

(1) cellular digestion

(2) circulation

(3) protein synthesis

(4) cellular respiration

10. In which parts of eyes, rods and cones are present ?

(1) Retina

(2) Iris

(3) Cornea

(4) Lens

11. Enzymes whose concentration in a cell is independent of any inducer is called as

(1) Ribozyme
(2) Abzyme
(3) Constitutive enzyme
(4) Inducive enzyme

12. Diabetes Mellitus is characterized by

(1) Increased tolerance to Carbohydrates
(2) Increased secretion of Insulin
(3) Decreased tolerance to Carbohydrates
(4) Decreased blood Glucose levels

13. Administration of Growth Hormone is followed by

(1) An increase in circulating free Fatty acids
(2) A decrease in circulating free Fatty acids
(3) A decrease in liver Glycogen
(4.) Stimulation of Glycolysis

14. In human, normal blood Glucose level per 100 ml of blood is

(1) 50-80 mg
(2) 80-120 mg
(3) 100-150 mg
(4) 120-180 mg

15. The conversion of Glucose into Glycogen is promoted by the hormone

(1) Estrogen
(2) Insulin
(3) Thyroxine
(4) Epinephrine

16. Who gave the name protein?

(1) William Harvey
(2) Gregor John Mendal
(3) Darwin
(4) Berzelius and Moulder

17. Which one of the followings is a major plasma protein?

(1) Ceruloplasmin
(2) Albumin
(3) Transferrin
(4) Ferritin

18. Interleukin-2 is produced by

(1) Monocytes
(2) T - Helper cells
(3) B-Lymphocytes
(4) Macrophages

19. Which of the followings is the major function of lymphoid system?
(1) Phagocytosis
(2) Inflammation
(3) Acquired Immunity
(4) Innate Immunity

20. The relationship between a sequence of DNA and the sequence of the corresponding protein is called
(1) Operon (2) Cistron (3) Gene (4) Genetic Code

21. Semiconservative replication of the DNA was proved by
(1) Watson and Crick
(2) Griffith
(3) Mc Selson and Stahl
(4) Chargaff

22. Which of the following can not be synthesized by genetic engineering?
(1) Proteins (2) Enzymes (3) Nucleic acids (4) Carbohydrates

23. The term Insertion sequence is related to
(1) Pseudogenes (2) Transposon (3) Split gene (4) Orphans

24. 26kDa Protein, which is synthesized in greater amount in plants subjected to Water deficit, is termed
(1) Osmotin (2) Cadaverine (3) Mimosine (4) Ubiquitn

25. Phytochelatins are
(1) -SH rich Peptides found in plants
(2) High molecular weight Proteins of plant origin
(3) Low molecular weight regulatory Proteins
(4) Protein receptor found on plant cell membranes

26. The enzyme Nitrate Reductase is localized in plants predominantly in
(1) Chloroplasts
(2) Peroxisomes
(3) Cytosol
(4) Membrane Vesicles

27. When Oxygen molecules bind to individual subunits of Hemoglobin molecule, the binding pattern indicates
(1) Positive cooperativity among Hb subunits
(2) Negative cooperativity among Hb subunits
(3) Half site reactivity of Hb subunits
(4) Hyperbolic binding of O_2 with Hb

28. Polymerase chain reaction was developed by
(1) Watson and Crick
(2) Har Govind Khorana
(3) Albert Smith
(4) Kary Mulis

29. The first immunoglobulin synthesized by the fetus is
(1) IgA (2) IgG (3) IgM (4) IgE

T O

30. Beri-Beri is caused by deficiency of
(1) Thiamine (2) Niacin (2) Ascorbic Acid (4) Pyridoxine

31. Interferons are
(1) Antiviral proteins
(2) Antibacterial proteins
(3) Antifungal proteins
(4) Anticancer protein

32. AIDS virus contains
(1) Single strand of RNA
(2) Double stranded RNA
(3) Double stranded DNA
(4) Single strand of DNA

33. Filaria is caused by
(1) Bacteria (2) Virus (3) Helminths (4) Protozoa

34. RNA polymerase II is localized into
(1) Nucleus
(2) Cytoplasm
(3) Nucleolus
(4) Endoplasmic reticulum

35. Meselson-Stahl demonstrated that
(1) DNA replication is random
(2) DNA replication is semiconservative
(3) DNA replication is conservative
(4) DNA replication is rapid on lagging strand

36. In liver, the glycogen breaks down to glucose but in muscle it breaks down to
(1) Glucose (2) Fructose (3) Mannose (4) Lactic acid

37. Calmodulin is a
(1) Copper binding protein
(2) Calcium binding protein
(3) Magnesium binding protein
(4) Nucleic acid

38. Which of the following is not a reducing sugar?

(1) Galactose (2) Sucrose

(3) Maltose (4) Lactose

39. Which of the following is not an essential fatty acid?

(1) Palmitic acid (2) Linoleic acid

(3) Linolenic acid (4) Arachidonic acid

40. Which of the following is a suicidal enzyme?

(1) Glucokinase (2) LDH

(3) Cyclooxygenase (4) GOT

Attempt any five questions. Write answer in 150-200 words. Each question carries 16 marks. Answer each question on separate page, after writing Question Number.

1. Write a short note on structure and composition of bacterial cell wall.

2. Discuss the importance of mierotubules in the cell.

3. What do you understand by Acid-base balance ? Explain with suitable examples.

4. Give a brief note on Beer-Lambert's law.

5. What are Pseudogenes and Split genes?

6. Write a brief note on Gene walking and Foot printing.

7. What are the molecular effects of Auxin in regulation of cell extension?

8. What are the main difference between Immunogenicity and Antigenicity? Discuss the factors that are involved in influencing Immunogenicity.

9. Describe the importance of Enzymes in health and diseases with suitable examples.

10. Discuss the detoxification of Xenobiotics by micro-organisms.

FOR ROUGH WORK