

2016.

Set No. : 1

Question Booklet No.

RET / 16 / TEST-B

633

Biochemistry-I.M.S.

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

Roll No.

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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 30 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 change 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 pages 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 : 20

4.

RET/16/TEST-B

633/Biochemistry-I.M.S.

ROUGH WORK

रफ़ कार्य

Research Entrance Test-2016

No. of Questions : 50

प्रश्नों की संख्या : 50

Time : 2 Hours

समय : 2 घण्टे

Full Marks : 200

पूर्णाङ्क : 200

Note: (1) This Question Booklet contains **40** Multiple Choice Questions followed by **10** Short Answer Questions.

इस प्रश्न पुस्तिका में **40** वस्तुनिष्ठ व **10** लघु उत्तरीय प्रश्न हैं।

- (2) 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.

अधिकाधिक वस्तुनिष्ठ प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक वस्तुनिष्ठ प्रश्न **3 (तीन)** अंकों का है। प्रत्येक गलत उत्तर के लिए **1 (एक)** अंक काटा जायेगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा। यदि वस्तुनिष्ठ प्रश्नों के एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

- (3) 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.

केवल **5 (पाँच)** लघुउत्तरीय प्रश्नों के उत्तर दें। प्रत्येक प्रश्न **16 (सोलह)** अंकों का है तथा उनका उत्तर **150-200** शब्दों के बीच होना चाहिए। इसके लिए इस पुस्तिका में लगे हुए सादे **5 (पाँच)** पृष्ठों का ही उपयोग आवश्यक है। प्रत्येक प्रश्न का उत्तर एक नए पृष्ठ से, प्रश्न संख्या लिखकर शुरू करें।

- 01.** Which of the following is not synthesized in postganglionic sympathetic neuron ?
- | | |
|--------------------|-----------------|
| (1) L-DOPA | (2) Dopamine |
| (3) Norepinephrine | (4) Epinephrine |
- 02.** Which of the following drug is a tranquilizer ?
- | | |
|-------------|--------------------|
| (1) LSD | (2) Atropine |
| (3) Lithium | (4) Chlorpromazine |
- 03.** Hysterectomy is the removal of ?
- | | |
|------------|------------|
| (1) Kidney | (2) Uterus |
| (3) Ovary | (4) Testis |
- 04.** Which of the following is not essential for normal biosynthesis of thyroid hormone :
- | | |
|-------------------|--------------|
| (1) Iodine | (2) ferritin |
| (3) Thyroglobulin | (4) TSH |
- 05.** Select the best statement for Lymphocytes :
- | |
|---|
| (1) are unaffected by hormones |
| (2) all originate from the bone marrow |
| (3) are part of the body's defense against cancer |
| (4) convert to monocytes in response to antigen |
- 06.** Basic principle involved in the clinical thermometer (mercury thermometer) is :
- | |
|--|
| (1) Thermal expansion of liquid |
| (2) Thermal expansion of gas above the liquid in the thermometer |
| (3) Capillary action |
| (4) None of the above |

- 07.** The compound which serves as antioxidant in living systems and plays a key role in detoxification is :
- (1) glutathione (2) glutamate
(3) proline (4) tetrahydrofolate
- 08.** Which of the following vitamins regulates Ca^{2+} metabolism ?
- (1) Vitamin A (2) Thiamine
(3) Ascorbic acid (4) Vitamin D
- 09.** An example of antioxidant enzyme is :
- (1) Superoxide dismutase
(2) Choline oxidase
(3) Phenylalanine ammonia lyase
(4) Alcohol dehydrogenase
- 10.** The organ of the body mainly damaged in hepatitis is :
- (1) Heart (2) Liver
(3) Kidney (4) Eye
- 11.** In blood samples taken for measurement of glucose, glycolysis is inhibited by taking the sample into tube containing :
- (1) EDTA (2) Fluoride
(3) EGTA (4) Chloride

- 12.** Levels of VLDL and LDL increase in blood due to high intake of :
- (1) Glucose diet
 - (2) Fructose diet
 - (3) Lactose diet
 - (4) Starch diet
- 13.** The fraction which is separated early during differential centrifugation of tissue lysate is :
- (1) Nuclear fraction
 - (2) Mitochondrial fraction
 - (3) Microsomal fraction
 - (4) Ribosomal fraction
- 14.** Poly (A) translate into :
- (1) Polyproline
 - (2) Polylysine
 - (3) Polyalanine
 - (4) Polyglycine
- 15.** The Anfinsen's dogma states that :
- (1) Primary structure directs in vivo folding
 - (2) Secondary structure directs in vivo folding
 - (3) Tertiary structure directs in vivo folding
 - (4) Quaternary structure directs in vivo folding
- 16.** Deamination of cytosine produces :
- (1) Uracil
 - (2) Inosine
 - (3) Thymine
 - (4) Adenine

17. Which amino acid is most likely to be found in the interior of a protein ?
- (1) Glutamic Acid (2) Lysine
(3) Histidine (4) Leucine
18. NAD⁺-dependent dehydrogenases are assayed at :
- (1) 260nm (2) 280nm
(3) 340nm (4) 600nm
19. Which of the following DNA mutations results in insertion of an inappropriate stop codon ?
- (1) Frameshift mutation (2) Nonsense mutation
(3) Missense mutation (4) Silent mutation
20. Alpha-linolenic acid is :
- (1) Omega-3 fatty acid (2) Omega-6 fatty acid
(3) Saturated fatty acid (4) Trans fatty acid
21. Which of these promotes class-switching of antibodies ?
- (1) Interferon Gamma (2) Tumour Necrosis factor
(3) Interleukin 1 (4) Interleukin 4
22. Which of these is a marker for B cells ?
- (1) CD59 (2) CD19 (3) CD28 (4) CD25

- 23.** All are true about G-protein coupled receptors except :
- (1) G-protein coupled receptors are largest superfamily of cell surface receptors
 - (2) They typically have six helices that transverse the membrane
 - (3) G protein act as inhibitory and excitatory because of difference in alpha subunit
 - (4) The function of GPCR is to transduce signals that induce a cellular response to the environment
- 24.** An example of a tumour suppressor gene is :
- (1) myc (2) fos (3) Ras (4) Rb
- 25.** Vitamin B12 acts as co-enzyme to which one of the following enzyme ?
- (1) Isocitrate dehydrogenase
 - (2) Homocysteine methyl transferase
 - (3) Glycogen synthase
 - (4) Glucose-6 phosphata dehydrogenase
- 26.** The lipoprotein with fastest electrophoretic mobility and lowest triglyceride content is :
- (1) VLDL (2) IDL (3) LDL (4) HDL

27. Proteins targeted for destruction in eukaryotes are covalently linked to :
- | | |
|--------------|---------------|
| (1) Clathrin | (2) Pepsin |
| (3) Laminin | (4) Ubiquitin |
28. Which of the following substance is responsible for carcinoid syndrome ?
- | | |
|---------------|----------------|
| (1) Serotonin | (2) Tryptamine |
| (3) Tyramine | (4) Histamine |
29. Which of the following elements is known to enhance the body's ability to handle oxidative stress ?
- | | |
|---------------|--------------|
| (1) Calcium | (2) Iron |
| (3) Potassium | (4) Selenium |
30. All of the following tissues are capable of using ketone bodies except :
- | | |
|---------------------|--------------------|
| (1) Brain | (2) Renal cortex |
| (3) Red blood cells | (4) Cardiac Muscle |
31. The buffering capacity of a buffer is maximum at pH equal to :
- | | | | |
|---------|---------|-----------|----------|
| (1) 0.5 | (2) pka | (3) pka+1 | (4) 2pka |
|---------|---------|-----------|----------|
32. All is true about glutathione except :
- | |
|--|
| (1) It is a tripeptide |
| (2) It converts hemoglobin to methemoglobin |
| (3) It conjugates xenobiotics |
| (4) It scavenges free radicals and superoxide ions |

33. The following separation technique on the molecular size of the protein :
- (1) Thin-layer chromatography
 - (2) Isoelectric focusing
 - (3) Gel Filtration chromatography
 - (4) Chromatography on a diethylaminoethyl (DEAE) cellulose column
34. A competitive inhibitor of an enzyme :
- (1) Increases k_m without affecting V_{max}
 - (2) Decreases k_m without affecting V_{max}
 - (3) Increases V_{max} without affecting k_m
 - (4) Decreases both V_{max} and k_m
35. Which of the following enzyme is stable at acid pH ?
- | | |
|-------------|----------------------|
| (1) Pepsin | (2) Chymotrypsin |
| (3) Trypsin | (4) Carboxypeptidase |
36. Dinitrophenol causes :
- (1) Inhibition of ATP synthase
 - (2) Inhibition of electron transport
 - (3) Uncoupling of oxidation and phosphorylation
 - (4) Accumulation of ATP

37. Phenylalanine is the precursor of the following molecules, except :

- | | |
|--------------|-----------------|
| (1) Tyrosine | (2) Epinephrine |
| (3) Thyroxin | (4) Melatonin |

38. Sources of the nitrogen in the urea cycle are :

- | | |
|---------------------------|---------------------------|
| (1) Aspartate and ammonia | (2) Glutamate and ammonia |
| (3) Arginine and ammonia | (4) Uric acid and ammonia |

39. If urine sample darkens on the standing, the most likely condition is :

- | | |
|-------------------------------|------------------|
| (1) Phenylketonuria | (2) Alkaptonuria |
| (3) Maple syrup urine disease | (4) Tyrosinemia |

40. Pyruvate can be converted directly into all the following except :

- | | |
|--------------------------|-------------|
| (1) Phosphoenol pyruvate | (2) Alanine |
| (3) Acetyl CoA | (4) Lactate |

Short Answer Questions

Note: 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.

01. Metabolism of ketone bodies.
02. RNA interference.
03. Gene Cloning.
04. Application of HPLC.
05. Inhibitors of respiratory chain.
06. Super -secondary structure of protein.
07. Real-time PCR.
08. Ubiquitin-Proteasome System.
09. Regulation of intracellular calcium.
10. Post-translational modification of protein.

Question No.

Page for Short Answer

Question No.

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ROUGH WORK

रफ़ कार्य

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633/Biochemistry-I.M.S.

ROUGH WORK

रफ़ कार्य

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली-काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 30 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा। केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान पर लिखें।
5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।
6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्नपुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्नपुस्तिका पर अनुक्रमांक और ओ० एम० आर० पत्र संख्या की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिए आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।
9. प्रत्येक प्रश्न के उत्तर के लिए केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो संबंधित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ कार्य के लिए प्रश्न-पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा उत्तर-पुस्तिका के अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ एम आर उत्तर-पत्र परीक्षा भवन में जमा कर दें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।