

Exam Date - 25-08-22

पुस्तिका में पृष्ठों की संख्या-32
No. of Pages in Booklet -32
पुस्तिका में प्रश्नों की संख्या-180
No. of Questions in Booklet -180

BSAP-22

1000045

प्रश्न पुस्तिका संख्या /
Question Booklet No.

Paper Code : 01

SUBJECT : Biochemistry
(Broad Speciality)

समय: 3.00 घण्टे

Time: 3.00 Hours

अधिकतम अंक: 180

Maximum Marks: 180

प्रश्न-पत्र पुस्तिका के पेपर सील/ पॉलिथिन बैग को खोलने पर परीक्षार्थी यह सुनिश्चित कर लें कि प्रश्न पुस्तिका संख्या तथा ओ.एम.आर. उत्तर-पत्रक पर अंकित बारकोड समान हैं। इसमें कोई भिन्नता हो तो परीक्षार्थी वीक्षक से दूसरा प्रश्न-पत्रक प्राप्त कर लें। ऐसा सुनिश्चित करने की जिम्मेदारी अभ्यर्थी की होगी।

On opening the paper seal/ polythene bag of the Question Booklet the candidate should ensure that Question Booklet Number and Barcode of OMR Answer Sheet must be same. If there is any difference, candidate must obtain another Question Booklet from Invigilator. Candidate himself shall be responsible for ensuring this.

परीक्षार्थियों के लिए निर्देश

1. सभी प्रश्नों के उत्तर दीजिए।
2. सभी प्रश्नों के अंक समान हैं।
3. प्रत्येक प्रश्न का केवल एक ही उत्तर दीजिए।
4. एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा।
5. प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं, जिन्हें क्रमशः 1, 2, 3, 4 अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले अथवा बबल को उत्तर-पत्रक पर नीले बॉल प्वाइंट पेन से गहरा करना है।
6. **OMR** उत्तर-पत्रक इस परीक्षा पुस्तिका के अन्दर रखा है। जब आपको परीक्षा पुस्तिका खोलने को कहा जाए, तो उत्तर-पत्रक निकाल कर ध्यान से केवल नीले बॉल प्वाइंट पेन से विवरण भरें।
7. प्रत्येक गलत उत्तर के लिए प्रश्न अंक का 1/3 भाग काटा जायेगा। गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक से अधिक उत्तर से है। किसी भी प्रश्न से संबंधित गोले या बबल को खाली छोड़ना गलत उत्तर नहीं माना जायेगा।
8. मोबाइल फोन अथवा इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है, तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।
9. कृपया अपना रोल नम्बर ओ.एम.आर. पत्रक पर सावधानी पूर्वक सही भरें। गलत अथवा अपूर्ण रोल नम्बर भरने पर 5 अंक कुल प्राप्ताकों में से काटे जा सकते हैं।
10. यदि किसी प्रश्न में किसी प्रकार की कोई मुद्रण या तथ्यात्मक प्रकार की त्रुटि हो, तो प्रश्न के हिन्दी तथा अंग्रेजी रूपान्तरों में से अंग्रेजी रूपान्तर मान्य होगा।

चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराते हुए विविध नियमों-प्रावधानों के तहत कार्यवाही की जाएगी। साथ ही विभाग ऐसे अभ्यर्थी को भविष्य में होने वाली विभाग की समस्त परीक्षाओं से विवर्जित कर सकता है।

INSTRUCTIONS FOR CANDIDATES

1. Answer all questions.
2. All questions carry equal marks.
3. Only one answer is to be given for each question.
4. If more than one answers are marked, it would be treated as wrong answer.
5. Each question has four alternative responses marked serially as 1, 2, 3, 4. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using **BLUE BALL POINT PEN**.
6. The **OMR** Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully with **blue ball point pen** only.
7. **1/3 part of the mark(s) of each question will be deducted for each wrong answer.** A wrong answer means an incorrect answer or more than one answers for any question. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer.
8. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt as per rules.
9. Please correctly fill your Roll Number in O.M.R. Sheet. **5 Marks** can be deducted for filling wrong or incomplete Roll Number.
10. If there is any sort of ambiguity/mistake either of printing or factual nature, then out of Hindi and English Version of the question, the English Version will be treated as standard.

Warning : If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted. Department may also debar him/her permanently from all future examinations.

**इस परीक्षा पुस्तिका को तब तक न खोलें जब तक कहा न जाए।
Do not open this Test Booklet until you are asked to do so.**

1. During Nitric oxide synthesis by NO synthase enzyme, Arginine is converted to –
 - (1) Ornithine
 - (2) Citrulline
 - (3) Methionine
 - (4) None of the above
2. DNA Probe is radiolabelled by –
 - (1) In situ hybridization
 - (2) Southern blotting
 - (3) Restriction mapping
 - (4) Nick translation
3. Which is not a pre-analytical error?
 - (1) Selection of improper specimen collection tube
 - (2) Inadequate specimen
 - (3) Improper pipetting of specimen
 - (4) Hemolysis of serum
4. Increased anion gap is seen in –
 - (1) Lithium intoxication
 - (2) Plasma cell dyscrasias
 - (3) Nephrotic syndrome
 - (4) Ketoacidosis
5. Antioxidant enzyme protecting aerobic organisms against oxygen toxicity –
 - (1) SOD
 - (2) Catalase
 - (3) Peroxidase
 - (4) All of the above
6. Following are advantages of dietary fibers, except –
 - (1) Retention of water in faeces
 - (2) Slowing down of gastric emptying
 - (3) Decreases absorption of minerals
 - (4) Promotes peristalsis

7. What is administered intravenously in the C – peptide suppression test?
- (1) Insulin
 - (2) Glucagon
 - (3) Adrenaline
 - (4) Noradrenaline
8. Metabolic by-product obtained from epinephrine and norepinephrine –
- (1) β - Hydroxybutyric acid
 - (2) Hydroxyindole acetic acid
 - (3) Vanillylmandelic acid
 - (4) Indole acetic acid
9. Three fundamental variables measured in ABG analysis are –
- (1) pO_2 , pCO_2 , HCO_3
 - (2) pO_2 , pCO_2 , pH
 - (3) pO_2 , pH, HCO_3
 - (4) pCO_2 , pH, HCO_3
10. Elevated conjugated bilirubin in blood along with an increase in alkaline phosphatase levels are indicative of –
- (1) Neonatal jaundice
 - (2) Hepatitis of viral origin
 - (3) Haemolytic jaundice
 - (4) Obstructive jaundice
11. The correct pair of genetic code of amino acid is –
- (1) UAA – Glycine
 - (2) UAG – Methionine
 - (3) UGG – Tryptophan
 - (4) CUG – Phenylalanine
12. Benefit of Hybridoma technology is –
- (1) production of monoclonal antibodies
 - (2) separation of the desired protein from all other proteins
 - (3) generation of chimeric DNA molecules
 - (4) creation of genetically identical copies of the species

13. Inulin clearance test determines –
- (1) Renal plasma flow
 - (2) Glomerular filtration rate
 - (3) Renal tubular function
 - (4) Renal blood supply
14. The anticancer drug 'methotrexate' inhibits the enzyme –
- (1) Dihydrofolate reductase
 - (2) Xanthine oxidase
 - (3) Orotidylic acid decarboxylase
 - (4) Dihydroorotase
15. Acetyl – CoA when accumulated acts as –
- (1) allosteric activator of pyruvate carboxylase
 - (2) allosteric activator of pyruvate dehydrogenase
 - (3) allosteric inhibitor of hexokinase
 - (4) allosteric inhibitor of pyruvate carboxylase
16. Calmodulin has how many calcium binding sites?
- (1) 2
 - (2) 3
 - (3) 4
 - (4) 6
17. During blood collection the amount of heparin required to prevent coagulation is –
- (1) 0.1 mg / ml
 - (2) 0.2 mg / ml
 - (3) 1.0 mg / ml
 - (4) 2.0 mg / ml
18. Glucose uptake into muscle and adipose tissue is controlled by –
- (1) Glucagon
 - (2) Insulin
 - (3) Both
 - (4) None of the above

19. Wobble hypothesis explain which feature of genetic code?
- (1) Universality
 - (2) Specificity
 - (3) Degeneracy
 - (4) None of the above
20. What is the purpose of HAT medium in the preparation of monoclonal antibody?
- (1) Fusion of the two cell types
 - (2) Restricting the growth of unfused myeloma cells
 - (3) Restricting the growth of unfused spleen cells
 - (4) Restricting antibody production to the IgM class
21. Non coding sequences in a gene are called –
- (1) Introns
 - (2) Exons
 - (3) Anticodons
 - (4) None of the above
22. Gaucher's disease is due to the deficiency of the enzyme –
- (1) Ceramidase
 - (2) β - Galactosidase
 - (3) β - Glucosidase
 - (4) Sphingomyelinase
23. Which of the following is considered as a negative regulator of immune system?
- (1) Natural killer cells
 - (2) Regulatory T cells
 - (3) Helper T cells
 - (4) Cytotoxic T cells
24. The large eukaryotic rRNA genes, such as 18S and 28S RNA – encoding genes, are transcribed by which of the following RNA polymerases?
- (1) RNA polymerase I
 - (2) RNA – dependent RNA polymerase
 - (3) RNA polymerase III
 - (4) RNA polymerase II

25. Which ISO standard specifies requirements for quality and competence in medical laboratories?
- (1) ISO 14005:2019
 - (2) ISO 15189:2012
 - (3) ISO 22000:2018
 - (4) ISO 45001:2018
26. What is the allowed reference range for glucose in normal lumbar fluid?
- (1) 30 – 65 mg / 100 mL
 - (2) 50 – 80 mg / 100 mL
 - (3) 110 – 130 mg / 100 mL
 - (4) 110 – 150 mg / 100 mL
27. Cobalt is a component of the enzyme –
- (1) ribonucleotide reductase
 - (2) hexokinase
 - (3) RNA polymerase
 - (4) Carbonic anhydrase
28. The first pathophysiologic condition to be treated by gene therapy was a deficiency of –
- (1) Hypoxanthine – guanine phosphoribosyltransferase
 - (2) Purine nucleoside phosphorylase
 - (3) Adenosine deaminase
 - (4) Glucose – 6 phosphate dehydrogenase
29. Orotic aciduria type – I reflects a deficiency of which among the following?
- (1) Purine nucleoside phosphorylase and Formyl transferase
 - (2) Purine nucleoside phosphorylase and Adenosine deaminase
 - (3) Orotate phosphoribosyl transferase and orotidylic acid decarboxylase
 - (4) Orotate phosphoribosyl transferase and Dihydrofolate reductase
30. Which among the following is not of quantitative importance as a precursor of gluconeogenesis in humans?
- (1) Glycerol
 - (2) Propionate
 - (3) Lactate
 - (4) Glucogenic amino acids

31. Connective tissue pigmentation 'Ochronosis' is associated with –
- (1) Tyrosinosis
 - (2) Phenylketonuria
 - (3) Alkaptonuria
 - (4) Hartnup disease
32. Which pair of information is correct?
- (1) B – DNA – 10 Base pairs each turn
 - (2) A – DNA – 12 Base pairs each turn
 - (3) Z – DNA – 11 Base pairs each turn
 - (4) All of the above
33. Histone proteins are very rich in amino acids –
- (1) Arginine and Lysine
 - (2) Histidine and Lysine
 - (3) Arginine and Proline
 - (4) Lysine and Methionine
34. Which chemokine receptor does HIV need for cell – specific binding?
- (1) CCR1
 - (2) CCR3
 - (3) CCR4
 - (4) CCR5
35. Xeroderma Pigmentosum (XP) is –
- (1) Nucleotide excision repair
 - (2) Mismatch repair
 - (3) Double strand break repair
 - (4) Base excision repair
36. The acceptor arm of t-RNA has sequence –
- (1) 3' – ACC
 - (2) 5' – ACC
 - (3) 3' – CCA
 - (4) 5' – CAC

37. Mutations in BRCA1 gene carriers have an 85% risk of developing –
- (1) Uterine cervical carcinoma
 - (2) Nephroblastoma
 - (3) Burkitt's lymphoma
 - (4) Breast cancer
38. Which vial / tube is used for collection of samples for D-dimer estimation?
- (1) EDTA
 - (2) Heparin
 - (3) Plain
 - (4) Sodium Citrate
39. Cardiomegalia glycogenica is seen in –
- (1) Pompe's Disease
 - (2) Forbes Disease
 - (3) Anderson's Disease
 - (4) McArdle's Disease
40. All are antioxidant, except –
- (1) Tocopherol
 - (2) Ascorbic Acid
 - (3) Zeaxanthin
 - (4) Calcitriol
41. Pyrimidine are metabolized to –
- (1) Uric acid
 - (2) Orotic acid
 - (3) Urocanic acid and uric acid
 - (4) β - alanine and β - aminoisobutyrate
42. Pollutant released in environment by welding and explosives is –
- (1) Nitrogen dioxide
 - (2) Halides
 - (3) Isocyanates
 - (4) Formaldehyde

43. Porphyria inherited as an autosomal recessive disorder –
- (1) Erythropoietic Protoporphyrria
 - (2) Congenital Erythropoietic Porphyria
 - (3) Porphyria cutanea tarda
 - (4) Variegate porphyria
44. Active coenzyme of pantothenic acid is –
- (1) Coenzyme A
 - (2) Pyridoxal phosphate
 - (3) Thiamine pyrophosphate
 - (4) Calcitriol
45. Which of the following acts an inhibitor of oxidative phosphorylation?
- (1) Rotenone
 - (2) Cyanide
 - (3) Oligomycin
 - (4) Antimycin
46. High concentration of ammonia inhibit which enzyme of TCA cycle?
- (1) Aconitase
 - (2) Isocitrate Dehydrogenase
 - (3) α - Ketoglutarate Dehydrogenase
 - (4) Succinate Dehydrogenase
47. Which among the following indicates the presence of Microalbuminuria?
- (1) 15 – 150 mg of albumin in 24 hours urine sample
 - (2) 50 – 150 mg of albumin in 24 hours urine sample
 - (3) 13 – 300 mg of albumin in 24 hours urine sample
 - (4) 30 – 300 mg of albumin in 24 hours urine sample
48. Which protein plays a role in the folding of mammalian proteins?
- (1) Leptin
 - (2) Adiponectin
 - (3) Hcpidin
 - (4) Hsp70

49. Effects of hypothyroidism includes all, except –
- (1) Diarrhoea
 - (2) Lethargy
 - (3) Weight gain
 - (4) Hypercholesterolemia
50. Mutations in mismatch repair (MMR) genes hMLH1 & hMSH2 could result in –
- (1) Hereditary nonpolyposis colorectal cancer
 - (2) Cervical cancer
 - (3) Merkel cell carcinoma
 - (4) Kaposi's sarcoma
51. Which of the following is wrongly matched?
- (1) Cholesterol – Vitamin D
 - (2) Phospholipids – Pauly's Test
 - (3) Ketone Bodies – Rothera's Test
 - (4) Chaulmogric Acid - Leprosy
52. True about cytochrome P450 enzymes –
- (1) Haemoprotein acts as mono – oxygenises
 - (2) Found in the endoplasmic reticulum or mitochondria
 - (3) The mitochondrial cyt P450 system uses NADPH – Linked flavoproteins
 - (4) All of the above
53. Leucine zipper motif is seen in proteins having leucine residues at every positions.
- (1) 6
 - (2) 7
 - (3) 8
 - (4) 9
54. Which inorganic element could be used as a second messenger?
- (1) magnesium
 - (2) iron
 - (3) copper
 - (4) calcium

55. Source of nitrogen atom at position 9 in purine ring is –
- (1) Aspartate
 - (2) Glycine
 - (3) Glutamine
 - (4) N5, N10 – methenyl tetrahydrofolate
56. Uptake of iodine by thyroid gland inhibited by –
- (1) Fluoride
 - (2) Perchlorate
 - (3) Bromide
 - (4) Chloride
57. Which of the following increases food intake?
- (1) Pancreatic polypeptide
 - (2) Ghrelin
 - (3) Cholecystokinin
 - (4) Leptin
58. Which enzyme is inhibited by the toxins ‘hypoglycin A and hypoglycin B’ on consumption of the unripe fruit of the ackee tree (*Blighia sapida*)?
- (1) L – gulonolactone oxidase
 - (2) glutathione peroxidase
 - (3) acyl – CoA dehydrogenase
 - (4) carnitine palmitoyltransferase - II
59. In Zellweger syndrome there is accumulation of –
- (1) Short chain fatty acids
 - (2) Long chain fatty acids
 - (3) Very long chain fatty acids
 - (4) Medium chain fatty acids
60. Competitive inhibitor of Peptidyl transferase is –
- (1) Streptomycin
 - (2) Puromycin
 - (3) Erythromycin
 - (4) Chloramphenicol

61. Which form of vitamin A regulates cell differentiation?
- (1) Retinol
 - (2) Retinal
 - (3) Retinoic Acid
 - (4) Beta – Carotene
62. Heme as prosthetic group is not found in –
- (1) Myoglobin
 - (2) Cytochrome oxidase
 - (3) Xanthine oxidase
 - (4) Catalase
63. Point mutations with haemoglobin Bristol and haemoglobin Sydney are example of –
- (1) Acceptable missense mutation
 - (2) Partially acceptable missense mutation
 - (3) Unacceptable missense mutation
 - (4) Nonsense mutation
64. Para-amino Hippurate clearance is an indicator of –
- (1) Glomerular filtration
 - (2) Renal plasma flow
 - (3) Tubular reabsorption
 - (4) Tubular secretion
65. The best test to diagnose pheochromocytoma is –
- (1) Urinary 17 – ketosteroids
 - (2) Dexamethasone suppression test
 - (3) Fractionated metanephrines and catecholamines in 24 hrs urine
 - (4) Low baseline cortisol levels
66. Mineral potentiates insulin action and influences carbohydrate, lipid and protein metabolism –
- (1) Chromium
 - (2) Cobalt
 - (3) Selenium
 - (4) Molybdenum

67. Which disease does not occur due to defective Nucleotide Excision Repair?
- (1) Bloom syndrome
 - (2) Xeroderma pigmentosum
 - (3) Cockayne syndrome
 - (4) Trichothiodystrophy
68. Physiological saline used for isotonic fluid replacement is composed of –
- (1) Sodium and chloride
 - (2) Sodium, chloride and dextrose
 - (3) Sodium, chloride and potassium
 - (4) Sodium, potassium and lactate
69. Cholesterol is precursor for the synthesis of all, except –
- (1) Bile Pigment
 - (2) Vitamin D
 - (3) Bile Acids
 - (4) Coprosterol
70. Pacemaker enzyme of the urea cycle is –
- (1) Arginase
 - (2) Carbamoyl phosphate synthetase - I
 - (3) Argininosuccinate synthetase
 - (4) Ornithine transcarbamoylase
71. Radiopharmaceutical used in lung imaging is –
- (1) Radioactive noble gas ^{133}Xe
 - (2) ^{111}In – labelled peptides
 - (3) ^{111}In – labelled monoclonal antibodies
 - (4) ^{67}Ga – citrate
72. The percentage of the absorbed nitrogen that is retained in the body is termed as –
- (1) Digestibility coefficient
 - (2) Net protein utilisation
 - (3) Biological value
 - (4) Chemical score

73. Conversion of norepinephrine to epinephrine requires the active form of –
- (1) Phenylalanine
 - (2) Tyrosine
 - (3) Glycine
 - (4) Methionine
74. The WHO has classified biomedical waste into categories.
- (1) 3
 - (2) 4
 - (3) 5
 - (4) 6
75. Lipogenesis is stimulated by –
- (1) Insulin
 - (2) Glucagon
 - (3) Epinephrine
 - (4) Corticosteroids
76. Example of protein conformational disease –
- (1) Huntington's disease
 - (2) Alzheimer's disease
 - (3) Creutzfeldt – Jakob disease
 - (4) All of the above
77. The pol gene of HIV genome codes for –
- (1) core proteins
 - (2) envelop proteins
 - (3) glycoproteins gp41 and gp120
 - (4) reverse transcriptase
78. Which of the following does not assess the detoxification and excretion function of Liver?
- (1) Prothrombin time
 - (2) Lidocaine clearance test
 - (3) Hippuric acid test
 - (4) Bromsulphthalein retention test

79. ENCODE initiated by the National Human Genome Research Institute is –
- (1) Encyclopedia of DNA Elements
 - (2) Engineering and Computation of DNA Structural Elements
 - (3) European Consortium on Disease Epidemiology
 - (4) An effort to identify SNPs associated with common human diseases
80. True about prokaryotic transcription process –
- (1) Single RNA polymerase synthesises all RNA
 - (2) CAAT Box is promoter region
 - (3) RNA polymerase have 4 polypeptide unity
 - (4) All of the above
81. Which of the following is not true for bilirubin?
- (1) Functions at low levels as an antioxidant
 - (2) Transported to liver bound covalently to albumin
 - (3) Bilirubin and its derivatives are collectively termed as bile pigments
 - (4) It is commonly measured by Van Den Bergh reaction
82. Point out the application of the radioisotope Caesium - 137 –
- (1) Myocardial imaging
 - (2) Treatment of thyroid cancer
 - (3) Irradiation of blood / blood components to prevent transfusion associated graft – versus host disease
 - (4) Radioimmunoassay of drugs
83. Radionuclide compound used in Positron Emission Tomography (PET) –
- (1) Technetium
 - (2) Fluorodeoxyglucose
 - (3) Polonium
 - (4) Ibritumomab tiuxetan
84. Nature of enzyme reverse transcriptase is –
- (1) RNA dependent RNA polymerase
 - (2) RNA dependent DNA polymerase
 - (3) DNA dependent DNA polymerase
 - (4) DNA dependent RNA polymerase

85. Deficiency of B₁₂ vitamin manifested as –
- (1) Methyl malonic aciduria
 - (2) Megaloblastic anaemia
 - (3) Achlorhydria
 - (4) All of the above
86. Which is considered as the biochemical marker of lipid peroxidation?
- (1) Hydroperoxyl radical
 - (2) Peroxynitrite
 - (3) Malondialdehyde
 - (4) Superoxide anion radical
87. Medical technique that does not cause free radical accumulation in the body –
- (1) Ultrasound
 - (2) X – rays
 - (3) Mammography
 - (4) CAT Scans
88. Which among the following inhibits the activity of Cytochrome oxidase?
- (1) Cyanide
 - (2) 2, 4 – dinitrophenol
 - (3) Malonate
 - (4) Thermogenin
89. β – globulin which transports haemoglobin is –
- (1) Transferrin
 - (2) Haptoglobin
 - (3) Hemopexin
 - (4) Plasminogen
90. Which among the following is not a synthetic biomolecule?
- (1) 8 – Azaguanine
 - (2) S – adenosylmethionine
 - (3) 6 – Thioguanine
 - (4) 6 - Azauridine

91. Human telomeres contains repeated sequences –
- (1) TTAAGG
 - (2) TTAGGG
 - (3) TATAGG
 - (4) TAGTAG
92. Class of Immunoglobulin which facilitates immune response from B cells is –
- (1) IgG
 - (2) IgM
 - (3) IgA
 - (4) IgD
93. The discipline concerned with the collection, storage and analysis of biologic data is termed as –
- (1) Biotechnology
 - (2) Bioengineering
 - (3) Bioinformatics
 - (4) Biophysics
94. Absence of which enzyme leads to hereditary fructose intolerance?
- (1) Aldolase B
 - (2) Galactokinase
 - (3) Hepatic fructokinase
 - (4) Sorbitol dehydrogenase
95. Small volumes of viscous solutions such as protein are delivered by using –
- (1) Ostwald – Folin transfer pipette
 - (2) Sahli pipette
 - (3) Volumetric pipette
 - (4) Burette
96. 18S r – RNA is found in –
- (1) 60S ribosomal subunit
 - (2) 40S ribosomal subunit
 - (3) 50S ribosomal subunit
 - (4) 30S ribosomal subunit

97. The approximate incidence of classic galactosemia is –
- (1) 1 : 500
 - (2) 1 : 5,000
 - (3) 1 : 60,000
 - (4) 1 : 2,50,000
98. Which is not a feature of genetic code?
- (1) Degenerate
 - (2) Overlapping
 - (3) Unambiguous
 - (4) Universal
99. Elevated levels of CK – MB is considered a good indicator of myocardial damage when levels of CK – MB are –
- (1) greater than 02% of the total CK
 - (2) less than 02% of the total CK
 - (3) greater than or equal to 06% of the total CK
 - (4) equal to 02% of the total CK
100. Which transporter facilitates the uptake of glucose in liver?
- (1) SGLT1
 - (2) GLUT1
 - (3) GLUT2
 - (4) GLUT4
101. What stimulates gastric acid secretion?
- (1) Gastrin
 - (2) Histamine
 - (3) Acetyl choline
 - (4) All of the above
102. Osteogenesis imperfecta is due to the defect in collagen type –
- (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

103. Which single letter symbol denotes Phenylalanine?
- (1) P
 - (2) F
 - (3) R
 - (4) A
104. The correct pair of enzyme and gene in lac operon is –
- (1) β - Galactosidase – a gene
 - (2) β - Galactosidase – z gene
 - (3) β - Galactosidase – y gene
 - (4) β - Galactosidase – I gene
105. The function of DNA helicases is –
- (1) unwinding of DNA
 - (2) polymerization of deoxyribonucleotides
 - (3) sealing the single strand nick between the nascent chain and Okazaki fragments
 - (4) relieves torsional strain
106. Tumour marker associated with ovarian cancer –
- (1) CA – 125
 - (2) CA – 25
 - (3) CA – 19.9
 - (4) PSA
107. The correct temperature in three steps of PCR –
- (1) 95°C, 56°C, 72°C
 - (2) 95°C, 75°C, 56°C
 - (3) 95°C, 40°C, 37°C
 - (4) 95°C, 37°C, 72°C
108. Ligand for Low Density Lipoprotein –
- (1) Apo B-48
 - (2) Apo B-100
 - (3) Apo A
 - (4) Apo E

109. Cloning vectors used in recombinant DNA technology –
- (1) Plasmids and Cosmids
 - (2) Plasmid, Cosmids and Bacteriophages
 - (3) Plasmids, Cosmids and Yeast artificial chromosome
 - (4) Plasmids, Cosmids, Bacteriophages and Yeast artificial chromosome
110. True about pentose phosphate pathway –
- (1) It occurs in the mitochondria
 - (2) Oxidative phase generates NADPH
 - (3) Oxidative phase generates ribose precursor
 - (4) All of the above
111. DNA finger printing is based on the presence in DNA of variable number of –
- (1) Palindromic sequence
 - (2) Restriction fragments
 - (3) Tandem repeats
 - (4) None of the above
112. Amino acid having a secondary amino group is –
- (1) Tyrosine
 - (2) Proline
 - (3) Lysine
 - (4) Glycine
113. Which enzyme protects DNA from aging?
- (1) Deoxyribonuclease
 - (2) Telomerase
 - (3) Topoisomerase
 - (4) DNA polymerase
114. Which of the following disease is characterised by conjugated hyperbilirubinemia?
- (1) Crigler – Najjar syndrome I
 - (2) Crigler – Najjar syndrome II
 - (3) Dubin – Johnson syndrome
 - (4) Gilbert syndrome

115. Enzyme catalyses the formation of a phosphodiester linkage between the DNA synthesized by DNA polymerase III –
- (1) DNA Ligase
 - (2) DNA topoisomerase
 - (3) DNA Helicase
 - (4) Phosphodiesterase
116. Which among the following produces a potential carcinogen 'Aflatoxin'?
- (1) Salmonella
 - (2) Escherichia coli
 - (3) Retroviruses
 - (4) Aspergillus flavus
117. CD4 cells produce –
- (1) Cytokines
 - (2) Macrophage chemotactic factors
 - (3) Haemopoietic growth factors
 - (4) All of the above
118. Which of the following enzyme activity is not increased in starvation?
- (1) Glycogen phosphorylase
 - (2) Pyruvate carboxylase
 - (3) Glucokinase
 - (4) Phosphoenolpyruvate carboxykinase
119. Human topoisomerase is inhibited by –
- (1) Adriamycin
 - (2) Ciprofloxacin
 - (3) Novobiocin
 - (4) Nalidixic acid
120. Which of the following is NOT an isoenzyme of isocitrate dehydrogenase?
- (1) NAD – dependent mitochondrial isocitrate dehydrogenase
 - (2) NADP – dependent mitochondrial isocitrate dehydrogenase
 - (3) NADP – dependent cytosolic isocitrate dehydrogenase
 - (4) NAD – dependent cytosolic isocitrate dehydrogenase

121. Acetyl CoA carboxylase is activated by –
- (1) Malonate
 - (2) Thioesterase
 - (3) 3 – ketoacyl synthase
 - (4) Citrate
122. In eukaryotic replication following occurs –
- (1) Presence of multiple origins of replication
 - (2) Five DNA polymerases are involved
 - (3) DNA polymerase and poses proof reading activity
 - (4) All of the above
123. Initial precursor for acetylcholine is –
- (1) Tryptophan
 - (2) Lysine
 - (3) Glycine
 - (4) Serine
124. Kwashiorkor is characterized by –
- (1) Diarrhoea
 - (2) Oedema
 - (3) Lethargy
 - (4) All of the above
125. Glycolysis in erythrocytes terminates to product –
- (1) Pyruvate
 - (2) Lactate
 - (3) Acetyl CoA
 - (4) None of the above
126. Denaturation of proteins leads to –
- (1) Loss of native form
 - (2) Loss of biological activity
 - (3) Loss of secondary and tertiary structure
 - (4) All of the above

127. Which is not a feature of severe Xanthine oxidase deficiency?
- (1) hypouricemia
 - (2) hyperuricemia
 - (3) xanthinuria
 - (4) xanthine lithiasis
128. Which of the following DNA polymerases functions to fill gap following the DNA replication in E coli?
- (1) I
 - (2) II
 - (3) III
 - (4) DnaG
129. Darkening of faeces upon standing in air is due to the oxidation of –
- (1) Uroporphyrinogen
 - (2) Urobilinogen
 - (3) Coproporphyrinogen
 - (4) Protoporphyrinogen
130. Emphysema in non – smokers can be caused due to the deficiency of –
- (1) Collagen
 - (2) Alpha -1- Antitrypsin
 - (3) Both (1) and (2)
 - (4) None of the above
131. Sickle cell anaemia is an example of which type of mutation?
- (1) Silent mutation
 - (2) Missense mutation
 - (3) Nonsense mutation
 - (4) Frame shift mutation
132. Hormones used therapeutically for treatment of inflammatory and immune diseases –
- (1) Progesterone
 - (2) Glucocorticoid
 - (3) Insulin
 - (4) Thyroxine

133. Which enzyme activity increases during fasting state?
- (1) Glycogen phosphorylase
 - (2) Glycogen synthase
 - (3) Peptidyl transferase
 - (4) Methyl transferase
134. Principal building block of fatty acids is –
- (1) Succinyl CoA
 - (2) Acetyl CoA
 - (3) Butyryl CoA
 - (4) Malonyl CoA
135. The tissue which is incapable of utilizing ketone bodies is -
- (1) Skeletal muscles
 - (2) Cardiac muscles
 - (3) Liver
 - (4) Brain
136. Photosensitivity is seen in all, except –
- (1) Acute Intermittent porphyria
 - (2) Congenital erythropoietic porphyria
 - (3) Porphyria Cutanea tarda
 - (4) Protoporphyrin
137. Catabolism of odd chain fatty acids produces –
- (1) Only Acetyl CoA
 - (2) Only Butyryl CoA
 - (3) Acetyl CoA and Butyryl CoA
 - (4) Acetyl CoA and Propionyl CoA
138. Tricarboxylic acid cycle has role in –
- (1) Gluconeogenesis
 - (2) Lipogenesis
 - (3) Interconversion of amino acids
 - (4) All of the above

139. Main substrates for energy production in brain are –
- (1) Glucose, Fatty Acids, Alcohol
 - (2) Amino Acid, Lactate, Glycerol
 - (3) Ketone Bodies, Alcohol, Lactate
 - (4) Glucose, Amino Acids, Ketone Bodies
140. Which porphyria is inherited in an autosomal recessive genetic mode?
- (1) Acute intermittent porphyria
 - (2) Porphyria cutanea tarda
 - (3) Variegate porphyria
 - (4) Congenital erythropoietic porphyria
141. Equation that define the relationship between pH, pKa, Concentration of salt and acid in a buffer is expressed as –
- (1) $\text{pH} = \text{pKa} + \text{Log} [\text{Base}] / [\text{Acid}]$
 - (2) $\text{pH} = \text{pKa} + \text{Log} [\text{Acid}] / [\text{Base}]$
 - (3) $\text{pKa} = \text{pH} + \text{Log} [\text{Base}] / [\text{Acid}]$
 - (4) $\text{pKa} = \text{pH} + \text{Log} [\text{Acid}] / [\text{Base}]$
142. True statement about ALA synthase –
- (1) Key regulatory enzyme of heme synthesis
 - (2) It occurs in two forms
 - (3) It belongs to class transferase
 - (4) All of the above
143. Which protein is deficient in Duchenne Muscular Dystrophy?
- (1) Integrin
 - (2) Tubulin
 - (3) Fibronectin
 - (4) Dystrophin
144. Molecule acting as a donor of sulfate in sulfation reaction –
- (1) S – adenosylmethionine
 - (2) S – adenosylhomocysteine
 - (3) Phosphoadenosine – 3 – phosphosulfate
 - (4) Phosphoadenosine – 5 – phosphosulfate

145. Metabolically active UDP – glucuronic acid participates in –
- (1) generating citrate
 - (2) cholesterol synthesis
 - (3) synthesis of mucopolysaccharides
 - (4) transport of lipids
146. Immune response is suppressed by –
- (1) B Cells
 - (2) Helper T Cells
 - (3) Natural Killer Cell
 - (4) Regulatory T Cells
147. Which of the following acts as an irreversible non – competitive inhibitor?
- (1) Tamiflu
 - (2) Disulfiram
 - (3) Dicumarol
 - (4) Statins
148. Which amino acid is not found in proteins?
- (1) Alanine
 - (2) Histidine
 - (3) Leucine
 - (4) Homocysteine
149. During pregnancy, transient gestational hyperthyroidism may be induced by –
- (1) Oxytocin
 - (2) Cortisol
 - (3) Aldosterone
 - (4) Human chorionic gonadotropin
150. The enzyme deficient in hyperammonemia type II is –
- (1) Argininosuccinase
 - (2) Carbamoyl phosphate synthetase
 - (3) Arginase
 - (4) Ornithine transcarbamoylase

151. Reason for the down regulation of LDL receptors is –
- (1) High intake of triacylglycerol in the diet
 - (2) Increased intake of polyunsaturated fatty acids in the diet
 - (3) Increased dietary cholesterol
 - (4) Elevated progesterone levels
152. Fragments of newly synthesised DNA are sealed by the enzymes –
- (1) DNA topoisomerases
 - (2) DNA ligases
 - (3) Reverse transcriptase
 - (4) DNA polymerase I
153. Choose the reference intervals for Thyroid stimulating hormone in a neonate till 4 days after birth –
- (1) 0.4 – 4.2 mIU / L
 - (2) 0.3 – 4.5 mIU / L
 - (3) 2.0 – 4.8 mIU / L
 - (4) 1.0 – 39.0 mIU / L
154. True about mitochondrial DNA –
- (1) It has high rate of mutation
 - (2) It is circular in nature
 - (3) It is inherited from mother
 - (4) All of the above
155. Albinism is due to a deficiency of –
- (1) Tyrosine aminotransferase
 - (2) Homogentisate oxidase
 - (3) Tyrosinase
 - (4) Fumarylacetoacetate hydrolase
156. Hormone which is a single peptide is –
- (1) Luteinizing hormone
 - (2) Follicle – stimulating hormone
 - (3) Prolactin
 - (4) Thyroid – stimulating hormone

157. In the given partial sequence of mRNA, a mutation of the template DNA results in a change in codon 91 to UAA. Point out the associated mutation –

88 89 90 91 92 93 94
GUC GAC CAG UAG GGC UAA CCG

- (1) silent
 - (2) missense
 - (3) nonsense
 - (4) frameshift
158. Enzyme catalysing the conjugation of glutathione to electrophilic xenobiotics is –
- (1) Glutathione S – transferase
 - (2) Glutathione oxidase
 - (3) Glutathione reductase
 - (4) Glutathione peroxidase
159. Richest source of antioxidants is –
- (1) Blue berries
 - (2) Carrot
 - (3) Milk
 - (4) Egg
160. In eukaryotes RNA polymerase I is responsible for synthesis of –
- (1) mRNA
 - (2) SnRNA
 - (3) Ribosomal RNA
 - (4) t-RNA
161. Von Gierke disease is characterised by all, except –
- (1) Hypoglycaemia
 - (2) Ketosis
 - (3) Hyperlipemia
 - (4) Hyperammonemia
162. Next generation sequencing helps to detect –
- (1) Mutations in oncogene
 - (2) Infection by viral pathogens
 - (3) Chromosomal aneuploidy
 - (4) Study drug resistance by bacteria

163. Enzymes catalyzing removal of post translational modifications in histones are called –
- (1) code readers
 - (2) code writers
 - (3) code erasers
 - (4) code promoters
164. In potassium deficiency following is observed –
- (1) Metabolic Acidosis
 - (2) Respiratory Acidosis
 - (3) Metabolic Alkalosis
 - (4) Respiratory Alkalosis
165. Failure of concentrating capacity of urine is assessed by –
- (1) Urea Clearance
 - (2) Water deprivation test
 - (3) Specific gravity of urine after giving water
 - (4) Creatinine level in urine
166. Hexokinase is allosterically inhibited by –
- (1) Glucose 6 – phosphate
 - (2) Fructose 6 – phosphate
 - (3) Fructose 2, 6 – diphosphate
 - (4) Excess ATP
167. Allopurinol is a drug of choice to treat gout as it acts by –
- (1) Catabolise uric acid
 - (2) Increase excretion of Uric Acid
 - (3) Inhibits formation of Uric Acid
 - (4) Converts Uric acid to Urea
168. Which amino acids participate in creating biosynthesis?
- (1) Glutamate, cysteine and glycine
 - (2) Glutamate, alanine and methionine
 - (3) Arginine, methionine and glycine
 - (4) Aspartate, methionine and cysteine

169. Precursor of the thyroid hormone is –
- (1) Threonine
 - (2) Tyrosine
 - (3) Tryptophan
 - (4) Glutamine
170. During DNA replication, the sequence 5' – TpApGpAp – 3' would produce which of the following complementary structures?
- (1) 5' – TpCpTpAp – 3'
 - (2) 5' – ApTpCpTp – 3'
 - (3) 5' – GpCpGpAp – 3'
 - (4) 3' – TpCpTpAp – 5'
171. Which is not a part of the laboratory first aid kit?
- (1) 2% (w/v) sodium carbonate solution
 - (2) 5% (v/v) acetic acid solution
 - (3) 2% (w/v) sodium hypochlorite solution
 - (4) 8% (w/v) magnesium hydroxide solution
172. What is the ratio of iodide in thyroid to iodide in serum (T:S ratio) in humans who are consuming normal iodine diet?
- (1) 2:1
 - (2) 2.5:1
 - (3) 25:1
 - (4) 250:1
173. Post – transcriptional modifications of mRNA occurs in –
- (1) Cytosol
 - (2) Nucleus
 - (3) Endoplasmic reticulum
 - (4) Golgi apparatus
174. Two peptides having role in the regulation of water and electrolyte balance –
- (1) Angiotensin and Glutathione
 - (2) Bradykinin and Kallidin
 - (3) Oxytocin and Vasopressin
 - (4) Angiotensin and Vasopressin

175. Troponin are involved in contraction of which muscles?
- (1) Skeletal muscle and Cardiac muscle
 - (2) Smooth muscle and Skeletal muscle
 - (3) Smooth muscle and Cardiac muscle
 - (4) Cardiac muscle only
176. Utilization of acetoacetate in extra hepatic tissues requires which of the following?
- (1) Acetyl – CoA
 - (2) Palmitoyl – CoA
 - (3) Succinyl – CoA
 - (4) Malonyl – CoA
177. Effector function perform by Immunoglobulins –
- (1) Complement activation
 - (2) Cell mediated cytotoxicity
 - (3) Allergy and hypersensitivity
 - (4) All of the above
178. Proteins in diet enhances iron absorption due to amino acid –
- (1) Glycine
 - (2) Serine
 - (3) Cysteine
 - (4) Arginine
179. Gangliosides derived from glucosylceramide contain in addition one or more molecules of which of the following?
- (1) Glycerol
 - (2) Sialic acid
 - (3) Hyaluronic Acid
 - (4) Diacylglycerol
180. Number of coenzymes utilised in the conversion of pyruvate to acetyl CoA by oxidative decarboxylation are –
- (1) Two
 - (2) Three
 - (3) Four
 - (4) Five

Space for Rough Work