

QP Code : 50137

(3 Hours)

[Total Marks : 100

SECTION – I

N.B : . Multiple choice Objective type : (40 questions)

(40x1=40 Marks)

All questions are compulsory.

1. All of the following constitute primary active transport EXCEPT
 - a) sodium-potassium pump
 - b) iodide pump
 - c) calcium pump
 - d) potassium hydrogen pump

- 2) All of the following regulatory enzymes but one are active in the dephosphorylated form
 - a) glycogen synthase
 - b) glycogen phosphorylase
 - c) acetyl CoA carboxylase
 - d) HMG-CoA reductase

- 3) All of the following are ligases EXCEPT
 - a) glycogen synthase
 - b) acetyl-CoA carboxylase
 - c) glutamine synthetase
 - d) PRPP synthetase

- 4) All of the following generate NADPH EXCEPT
 - a) HMP shunt
 - b) malic enzyme
 - c) alcohol dehydrogenase
 - d) cytosolic isocitrate dehydrogenase

- 5) Histidine load test is used in the laboratory to assess the deficiency status of vitamin
 - a) cyanocobalamin
 - b) pyridoxine
 - c) Folic acid
 - d) Thiamine

- 6) Binding of 2,3, - BPG to haemoglobin increases in all of the following conditions EXCEPT
 - a) life at high altitudes
 - b) obstructive pulmonary disease
 - c) fetal circulation during pregnancy
 - d) anemias

- 7) Defect in the enzyme uroporphyrinogen III synthase results in
 - a) acute intermittent porphyria
 - b) congenital erythropoietic porphyria
 - c) hereditary coproporphyria
 - d) variegate porphyria

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- 8) Transketolase requires the coenzyme
- A
 - NAD⁺
 - THF
 - TPP
- 9) Phospholipase A₂ is activated by all of the following EXCEPT
- corticosteroids
 - epinephrine
 - angiotensin-II
 - Ca⁺²
- 10) Methyl malonic acidemia occurs due to the deficiency of
- biotin
 - cyanocobalamin
 - folic acid
 - pyridoxine
- 11) All of the following are examples of primary databases for proteins and nucleic acids EXCEPT
- SWISS-PROT
 - GEN BANK
 - TREMBL
 - PROSITE
- 12) People, who are available, or who volunteer or who can be easily recruited are used in the sampling method called
- simple random
 - Cluster
 - systematic
 - convenience
- 13) Any characteristic or measure of population units is called
- parameter
 - statistic
 - datum
 - population
- 14) One of the following eicosanoids which induces the production of superoxide anion in neutrophil leucocytes is
- PGE₂
 - PGE₂α
 - LTD₄
 - LXA₄
- 15) The activity of LCAT is associated with
- LDL
 - VLDL
 - Chylomicrons
 - HDL
- 16) LDL receptor recognises the apoprotein
- apo A-I
 - apo C-II
 - apo B-100
 - apo B-48

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- 17) The aminoacids that do not undergo transamination are
- serine and methionine
 - lysine and threonine
 - arginine and histidine
 - alanine and aspartate
- 18) The sources of carbon and nitrogen atoms in a pyrimidine ring are
- asparagine, glutamate and CO_2
 - glutamate, glycine and aspartate
 - glutamine, cysteine and asparagine
 - aspartate, glutamine and HCO_3
- 19) Loss of taste sensation is seen in deficiency of
- copper
 - selenium
 - iron
 - zinc
- 20) The reducing equivalents for the conversion of ribonucleotides to deoxyribonucleotides are supplied by
- $\text{NADH} + \text{H}^+$
 - FADH_2
 - tetrahydrobiopterin
 - thioredoxin
- 21) Copper serves as a cofactor for all of the following enzymes EXCEPT
- superoxide dismutase
 - glutathione peroxidase
 - catalase
 - ALA synthase
- 22) All of the following conditions lead to hyponatremia EXCEPT
- vomiting and diarrhoea
 - burns
 - Addison's disease
 - Cushing's syndrome
- 23) The enzyme which has an intrinsic proof-reading activity is
- DNA topoisomerase
 - DNA helicase
 - RNA polymerase
 - DNA polymerase
- 24) The part of RNA polymerase which recognises the TATA box is
- α subunit
 - β subunit
 - sigma factor
 - Rho factor
- 25) The enzyme that forms diacylglycerol and inositol triphosphate is
- protein kinase C
 - protein kinase A
 - phospholipase B
 - phospholipase C

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- 26) The enzyme which serves as a marker to check the sub-cellular fractionation of nucleus during ultracentrifugation is
- hexokinase
 - DNA polymerase
 - glutamate dehydrogenase
 - glucose -6-phosphatase
- 27) DNA chips are useful in all of the following EXCEPT
- detection of genes causing inflammatory diseases.
 - detection and screening of single nucleotide polymorphisms
 - identification of genes responsible for the development of nervous system
 - for the confirmation of DNA cloning results
- 28) Thyroid-stimulating hormone (TSH) promotes all the following actions EXCEPT
- organification of iodine
 - proteolysis of thyroglobulin
 - protein synthesis
 - lipolysis
- 29) The key process underlying the synthesis of a large number of distinct antibodies is called
- gene amplification
 - gene rearrangement
 - alternate mRNA splicing
 - gene regulation at the level of translation
- 30) The effects of insulin on lipid metabolism include all the following EXCEPT
- inhibits fatty acid synthesis
 - decreases lipolysis
 - inhibits ketone body production
 - favours triacylglycerol synthesis
- 31) A tool used to scan for point mutations is
- Single strand confirmation polymorphism
 - heteroduplex analysis
 - protein truncation test
 - Ames test
- 32) The antibiotic which inhibits peptidyl transferase is
- puromycin
 - erythromycin
 - chloramphenicol
 - tetracycline
- 33) The enzyme defect in alkaptonuria is
- tyrosinase
 - homogentisate oxidase
 - tyrosine transaminase
 - maleylacetoacetate isomerase
- 34) Glucogenic amino acids form all the following metabolites EXCEPT
- acetyl CoA
 - succinyl CoA
 - oxaloacetate
 - pyruvate

- 35) "Tophi" is the term used to refer to
- uric acid kidney stones
 - inflammatory arthritis
 - urate crystal deposition in soft tissues
 - nodules in liver
- 36) Sulphur is present in all of the following vitamins EXCEPT
- Biotin
 - pyridoxine
 - thiamine
 - lipoic acid
- 37) Depression of the respiratory centre by the use of an overdose of anaesthetics may cause
- metabolic acidosis
 - metabolic alkalosis
 - respiratory acidosis
 - respiratory alkalosis
- 38) The enzymes which are elevated in acute pancreatitis are
- ALT and AST
 - serum amylase and lipase
 - CK and LDH
 - GGT and ALP
- 39) Placental ALP serves as a tumor marker for
- lung seminoma
 - multiple myeloma
 - pheochromocytoma
 - choriocarcinoma
- 40) Enzyme used as a DNA probe is
- peptidyl transferase
 - reverse transcriptase
 - RNA polymerase
 - DNA polymerase

SECTION – II

Answer any three :

(3x10=30 Marks)

- a) Describe clearance tests
- b) Describe enzyme immobilization and its applications
- c) Explain the principle and applications of affinity chromatography
- d) Describe the cytokine receptors
- e) Describe the vectors used in recombinant DNA technology

SECTION – III

Answer any two :

(3x15=30 Marks)

- 1) Describe in detail the production of monoclonal antibodies.
Add a note on their uses.
- 2) Describe the different methods of measurement of radioactivity.
Add a note on applications of radioisotopes in biological sciences.
- 3) Explain in detail principles, techniques, methodology and applications of plant tissue culture.
- 4) Explain in detail the different methods of DNA sequencing.

-x-x-x-x-x-