1 Mark Questions

1. Which one of the following does not inhibit protein biosynthesis?
   (a) Puromycin (b) Chloramphenicol
   (c) Cycloheximide (d) Oligomycin

2. The activation of the complement components occurs *via* three distinct pathways. Which of the following component(s) is specific to the 'Alternate Pathway'?
   (a) Factor B and D
   (b) Mannose binding protein
   (c) C-1qr-2S-2
   (d) C-2

3. Which one of the following enzyme fixes CO_2 into organic form?
   (a) Ribulose 5-phosphate kinase
   (b) Ribulose 1, 5-bisphosphate carboxylase
   (c) Pyruvate dehydrogenase
   (d) Carbonic anhydrase

4. Cytochrome-c is normally found in the inner mitochondrial membrane. It is released into the cytoplasm during
   (a) apoptosis (b) necrosis
   (c) cell differentiation (d) cell proliferation

5. Horseradish peroxidase and alkaline phosphatase are the two enzymes commonly utilized as reagents in ELISA, because these enzymes
   (a) are coloured proteins
   (b) are very small
   (c) have high turnover number
   (d) bind to ELISA plates

6. The polarity of water molecule is due to
   (a) its tetrahedral structure
   (b) bonding electrons being attracted more to oxygen
   (c) bonding electrons being attracted more to hydrogen
   (d) its weak electrolytic property

7. Cyanide poisoning is due to its direct inhibition of
   (a) electron transport chain
   (b) fatty acid biosynthesis
   (c) fatty acid oxidation
   (d) nucleic acid biosynthesis

8. In humans, the largest energy reserve is
   (a) liver glycogen
   (b) muscle glycogen
   (c) blood glucose
   (d) adipose tissue triacylglycerol

9. A mixture of four protein of pIs 11, 7, 5 and 3 are loaded on DEAE anion-exchange column equilibrated with low ionic strength buffer of pH 8. Which of the four proteins would be expected to be retained on the column?
   (a) Protein with pI 11 but not the others
   (b) Proteins with pIs 11 and 7 but not 5 and 3
   (c) Proteins with pIs 7, 5 and 3
   (d) Protein with pI 7 but not the other

10. Valinomycin, a cyclic peptide antibiotic, facilities the transport of which one of the following ion?
    (a) K^+ (b) Ca^{2+}
    (c) Na^+ (d) H^+

2 Marks Questions

11. Match the group I with group II and choose the correct option.

Group I	Group II
A. Basophils	1. Perforin
B. T-cells	2. Phagocytosis
C. B-cells	3. Albumin
D. Neutrophils	4. Macroglobulin
	5. Fc receptors for IgE
	6. Plasma cells

Codes

	A	B	C	D
(a)	5	1	6	2
(c)	3	4	5	1

	A	B	C	D
(b)	1	2	3	4
(d)	2	6	1	3

12. Two purified DNA samples A and B contain equal number of base pairs. Each of these DNA samples has one site each for *Eco* RI and *Bam* HI restriction enzymes. Complete digestion with both the enzymes yielded 3 DNA bands and 2 DNA bands respectively for A and B upon electrophoresis of the digestion products. Which one of the following explains the observation?

(a) A is circular DNA and B is linear
(b) B is circular DNA and A is linear
(c) A is circular DNA and B could be linear or circular
(d) B is circular DNA and A could be linear or circular

13. In the following enzyme catalyzed reaction, which follows Michaelis-Menten kinetics

$$E + S \underset{k_{-1}}{\overset{k_1}{\rightleftharpoons}} ES \xrightarrow{k_2} E + P$$

K_m is equal to

(a) $k_{-1}/(k_1 \cdot k_2)$ (b) $(k_1 \cdot k_2)/k_{-1}$
(c) $k_1/(k_2 + k_{-1})$ (d) $(k_2 + k_{-1})/k_1$

14. Match the items in group I with those in group II.

Group I	Group II
A. Progesterone	1. Peptide
B. Dopamine	2. Fatty acid
C. Vasopressin	3. Carbohydrate
D. Prostaglandin	4. Catecholamine
	5. Eicosanoid
	6. Steroid

Codes

	A	B	C	D
(a)	3	4	1	2
(c)	3	5	4	1

	A	B	C	D
(b)	6	4	1	5
(d)	6	5	1	4

15. Three samples of antibodies were electrophoresed under denaturing and reducing conditions on a 15% acrylamide gel, followed by staining with Coomassie blue dye. Samples 1, 2 and 3 showed two, three and four stainable respectively. Which one of the following conclusions can be made from these observations?

(a) Sample 1 is IgG, 2 is IgA and 3 is IgM
(b) Sample 1 is IgA, 2 is IgM and 3 is IgG
(c) Sample 1 is IgG, 2 is IgM and 3 is IgA
(d) Sample 1 is IgA, 2 is IgG and 3 is IgM

16. Four identical PCR reactions were carried out in tubes named I, II, III and IV. Besides the usual mix of dNPTs, each of the tubes respectively contained $\gamma - {}^{32}P$ dATP, $\beta - {}^{32}P$ dATP, $\alpha - {}^{32}P$ dATP and $\alpha - {}^{32}P$ rNTP. Which one of the tubes will have radiolabelled PCR product?

(a) Tube I (b) Tube II
(c) Tube III (d) Tube IV

17. Match the following groups.

Group I	Group II
A. Polynucleotide kinase	1. ATPase
B. Fluoride	2. GTPase
C. Ras	3. Transketolase
D. *Lac* operon	4. Enolase
	5. 5′ end of DNA
	6. 3′ end of DNA
	7. Only positive regulation
	8. Positive and negative regulation

Codes

	A	B	C	D
(a)	5	4	2	8
(c)	4	2	1	6

	A	B	C	D
(b)	6	3	1	7
(d)	1	7	5	3

18. Collagen, α-keratin and tropomyosin have common structural features. They are

A. disulphide bridges to neighboring proteins.
B. repeating sequences of amino acids
C. high β-sheet content.
D. superhelical coiling.

(a) A and B (b) B and C
(c) B and D (d) A and C

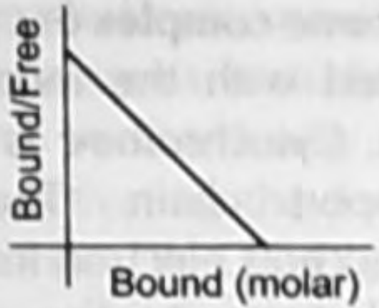
19. Match of following groups and select the correct option.

Group I	Group II
A. Tyrosine hydroxylation	1. Thyroxine
B. Tyrosine iodination	2. T-cell receptor
C. Tyrosine phosphorylation	3. DOPA
D. Tyrosine oxidation	4. Oestradiol receptor
	5. Epinephrine
	6. Melanin
	7. Endorphin
	8. Serotonin

Codes

	A	B	C	D
(a)	1	6	5	4
(b)	5	7	4	8
(c)	2	5	3	4
(d)	3	1	2	6

20. Scatchard analysis of ligand-receptor interaction yielded the graph shown below. The affinity of the ligand-receptor interaction can be obtained from



(a) *Y*-intercept
(b) *X*-intercept
(c) slope of the line
(d) product of *X*-intercept and *Y*-intercept