Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.PHARM/SEM-5/PT-504/2009-10

2009

PHARMACEUTICAL CHEMISTRY
(BIOCHEMISTRY)

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i) The non-protein portion of haemoglobin consists of

      a) 4 pyrrol ring linked through ferric molecule

      b) a ferrous complex of protoporphyrin IX

      c) 4 heme units surrounding a ferric atom

      d) 3 heme units surrounding a ferric atom.

   ii) Initiating codon for protein synthesis is

      a) GUA b) UAG

      c) AUG d) UAA.

   iii) Iron in the form ferritin is stored in the

      a) liver d) bone marrow

      c) intestine d) spleen.

iv) Which one of the following is a nonsense codon ?

a) GGU b) AGA

c) AUG d) UAA.

v) Which of the following is precusor for synthesis of isoleucine ?

a) Threonine b) Pyruvate

c) Both (a) and (b) d) None of these.

vi) After donating activated methyl group *s*-adenosylmethionine is converted into

a) methionine

b) *s*-adenosylhomocysteine

c) *s*-adenosylhomoserine

d) *s*-adenosylcysteine.

vii) Which of the following enzyme catalyses the formation of alanine from pyruvate ?

a) Alanine synthase

b) Alanine formase

c) Alanine aminotransferase

d) None of these.

viii) The value of ΔG^0 in the reduction of nitrogen (N_2) to ammonia (NH_3) is

a) – 43·5 kJ/mole b) – 33·5 kJ/mole

c) – 23·5 kJ/mole d) – 53·5 kJ/mole.

ix) What is the polarity of phosphodiester bond in DNA ?

a) > 3' – 5' b) > 5' – 3'

c) > 1' – 3' d) > 3' – 1'

x) Non-coding intervening sequence of gene is

a) intron b) exon

c) cistron d) none of these.

xi) During repair mechanism damaged base of DNA is recognized by

a) DNA ligase b) DNA polymerase

c) DNA glycosylase d) none of these.

xii) Enzyme responsible for sealing the nicks of newly synthesized DNA is

a) DNA ligase b) DNA polymerase

c) DNA gyrase d) none of these.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Enumerate the steps involved in the metabolism of methionine into α-ketobutyrate. 5

3. Write a short note on tryptophan operon. 5

4. Briefly explain the role topoisomerases in DNA replication. 5

5. a) What is post-transcriptional modification in eukaryotes ?

   b) Name two chemical mutagens and describe how they cause mutation. $2\frac{1}{2} + 2\frac{1}{2}$

6. Explain Okazaki fragments and TATA - box. 3 + 2

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. Write explanatory notes on

   a) Incorporation of sulphur into organic compound.

   b) Release of sulphur from organic compound. $2 \times 7\frac{1}{2}$

8. Define the terms ammonotelic, ureotelic and uricotelic with examples. Construct the urea cycle pathway and mention its necessity. Explain how the metabolic disorders of urea cycle can be overcome. 1 + 1 + 1 + 7 + 5

9. a) Describe catabolic repression in Lac Operon.

   b) Design an experiment to prove DNA replication is semi-conservative.

   c) Explain clover leaf model of *t*-RNA. 5 + 5 + 5

10. a) What is the normal level of bilirubin in blood ?

    b) Explain hyperbilirubinemia.

    c) Enumerate the process of porphyrin biosynthesis.

    1 + 2 + 12

11. a) Write short note on carcinogenesis.

    b) Explain briefly transcription in prokaryotes. 6 + 9