

University of Palestine

Course No: BIPH 2315
Course Title: Pharmaceutical
Biotechnology
Date: 28/05/2018
No. of Questions: (5)
Time: TWO hours
Using Calculator (Yes)



Final Exam
Second Semester 2017/2018
Total Grade: 50 Marks

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Student No.: _____
Student Name: _____
College Name: _____
Dep./Specialist: _____
Using Dictionary (No)

Question (1) Define or briefly discuss the following:

(5 Marks)

1	Monoclonal antibody
2	The CD system
3	Antisense technology
4	Hematopoiesis
5	Ex Vivo gene therapy

Question (2) (A) Select and circle the correct answer from the following:(17 Marks)

1-	Human growth hormone (hGH) is a polypeptide hormone composed of			
(a)	091 amino acid residues	(b)	191 amino acid residues	
(c)	291 amino acid residues	(d)	391 amino acid residues	
2-	The number of disulfide bridge linked the hGH polypeptide is			
(a)	1	(b)	2	
(c)	3	(d)	4	
3-	Endogenous hGH, contained an N-terminal			
(a)	Methionine	(b)	Phenylalanine	
(c)	Alanine	(d)	Tyrosine	

4-	The primary sites for binding to the hGH receptor are determined by		
(a)	Helix 2 and Helix 4	(b)	Helix 4 and Helix 1
(c)	Helix 3 and Helix 1	(d)	Helix 3 and Helix 2
5-	The major site of synthesis of the IGFs is		
(a)	liver	(b)	Muscles
(c)	Bone	(d)	Pancreas
6-	All the following factors promoting increased GH secretion except		
(a)	Elevated blood glucose	(b)	Starvation
(c)	Exercise	(d)	Sleep
7-	A defect in a gene for the LDL receptor or receptor function causes		
(a)	Hypercholesterolemia	(b)	Hypocholesterolemia
(c)	Hyperammoniaemia	(d)	Hypoammoniaemia
8-	One of the following is DNA virus		
(a)	Murine leukemia virus (MuLV)		
(b)	Adeno-associated viruses (AAV)		
(c)	Human T-cell lymphotropic viruses (HTLV)		
(d)	Human immunodeficiency viruses (HIV)		
9-	All of the following are advantages of antisense ODN except		
(a)	Minimal toxicity	(b)	Highly specific of oligo duplexing,
(c)	Easily to manufacture oligos	(d)	Sensitivity to nucleases
10	The main advantages of lipofection		
(a)	Its reproducibility	(b)	Its high efficiency
(c)	Low toxicity	(d)	All of these
11-	Rituximab can be used to treat the following diseases except		
(a)	Autoimmune hemolytic anemia	(b)	Rheumatoid arthritis
(c)	Immune thrombocytopenic purpura	(d)	Cutaneous T-cell lymphoma
12-	Growth hormone act as		
(a)	Anabolic	(b)	Lipolytic
(c)	Diabetogenic	(d)	All of these
13-	GHBP arises by proteolytic cleavage of hGH receptors by a process called		
(a)	Ectodomain shedding	(b)	Endodomain shedding
(c)	Exodomain shedding	(d)	None of these
14-	hGH receptor activation involves dimerization of 1 molecule of hGH with		
(a)	One receptor molecule	(b)	Two receptor molecules
(c)	Three receptor molecules	(d)	Four receptor molecules
15-	To regulate erythrocyte production, Erythropoietin(EPO) requires		
(a)	Glycosylation	(b)	Deamination
(c)	Deamidation	(d)	Phosphorylation
16-	Darbepoetin alfa is erythropoietin analog with 5 amino acid change and		
(a)	1 additional N-linked carbohydrates	(b)	2 additional N-linked carbohydrates
(c)	3 additional N-linked carbohydrates	(d)	4 additional N-linked carbohydrates
17-	One of the following is fully human monoclonal antibody		
(a)	Gemtuzumab	(b)	Panitumumab
(c)	Rituximab	(d)	Iodine-131 (¹³¹ I) tositumomab
18-	Pegvisomant is a highly selective growth hormone (GH) receptor		
(a)	Antagonist used to treat acromegaly	(b)	Analog used to treat acromegaly
(c)	Antagonist used to treat dwarfism	(d)	Analog used to treat dwarfism

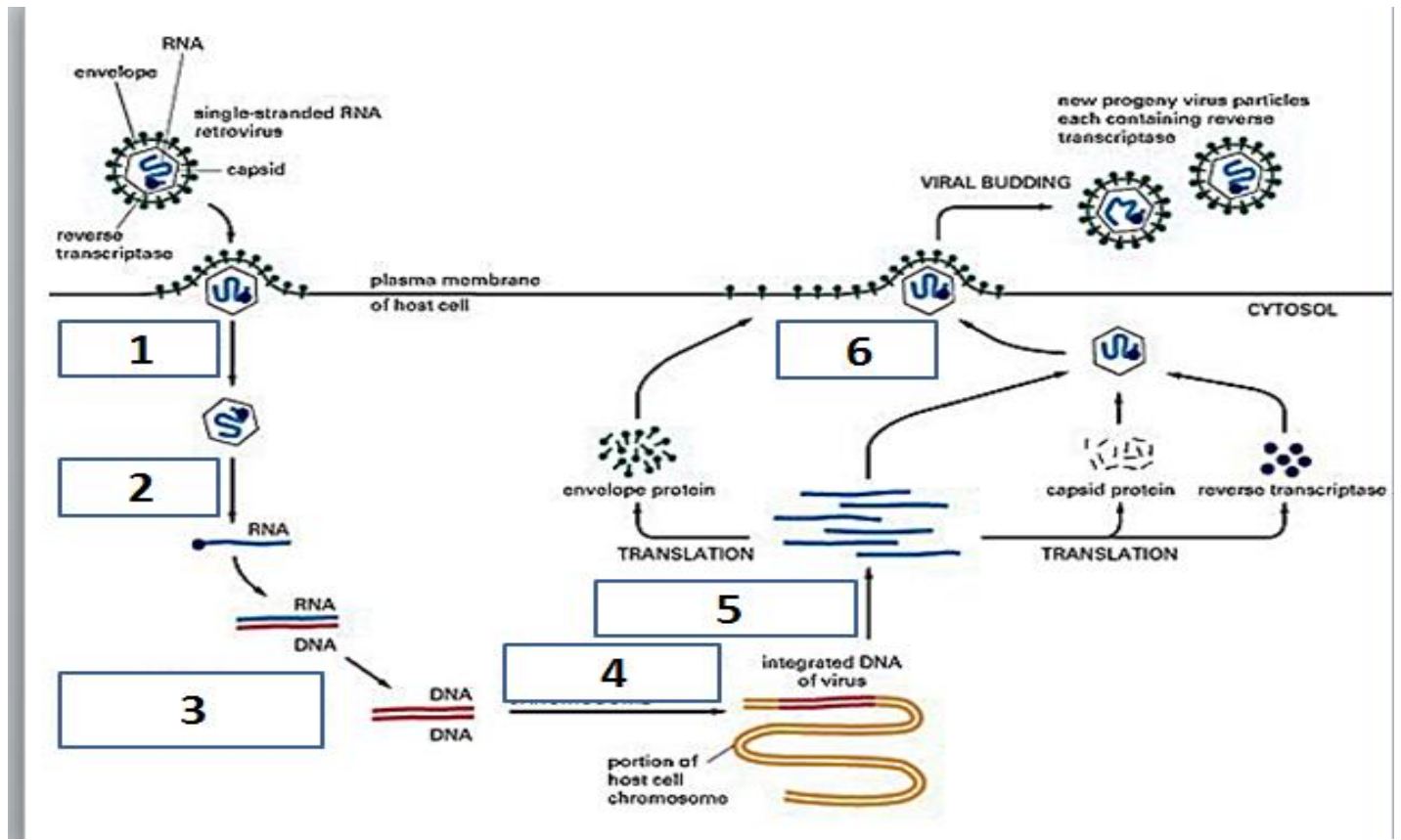
19-	Which of the following cells survive in HAT medium		
(a)	B-cells	(b)	Myeloma cells
(c)	Hybrid cells	(d)	None of these
20-	One of the following targeted vascular endothelial growth factor (VEGF)		
(a)	Trastuzumab (Herceptin)	(b)	Bevacizumab (Avastin)
(c)	Rituximab (Rituxan)	(d)	Ipilimumab
21-	Liquid formulations of rhGH contain excipients such as		
(a)	Mannitol or sodium chloride	(b)	Phenol or benzyl alcohol.
(c)	Poloxamer 188 or polysorbate 20	(d)	All of these
22-	Which of the following drugs is non-glycosylated G-CSF		
(a)	Fligrastim	(b)	Lenograstim
(c)	Trastuzumab	(d)	Infliximab
23-	The monoclonal antibodies Adalimumab and golimumab are		
(a)	Fully human IgG1	(b)	A Fab fragments linked to PEG
(c)	Chimeric IgG 1	(d)	Dimeric fusion protein
24-	Deletion of a hGH gene on the paternal allele of chromosome 15 causes		
(a)	Prader-Willi syndrome (PWS)	(b)	Noonan Syndrome
(c)	Small for Gestational Age (SGA)	(d)	Turner Syndrome (TS)
25-	NPH insulin is prepared by cocrystallization insulin with		
(a)	Glutamine	(b)	Protamine
(c)	Histamine	(d)	Albumin
26-	Lantus®, a long-acting insulin formulation which is formulated at		
(a)	pH 2	(b)	pH 4
(c)	pH6	(d)	pH 8
27-	Which type of insulin has extra amino acids at position B31and B32		
(a)	Insulin glargine (Lantus®)	(b)	Insulin aspart (NovoRapid®)
(c)	Insulin lispro (Humalog®)	(d)	Insulin detemir (Levemir®)
28-	Preservative reduces the formation of the cyclic imide of the AsnB3		
(a)	Dibasic sodium phosphate	(b)	Phenol
(c)	Polysorbate 20	(d)	Sodium chloride
29-	An antibody digested by the enzyme papain yields		
(a)	One Fab fragment and one Fc fragment	(b)	Two Fab fragment and one Fc fragment
(c)	Three Fab fragment and one Fc fragment	(d)	Two Fab fragment and two Fc fragment
30-	To treat the Non-Hodgkin's lymphoma, the B lymphocyte must be		
(a)	CD20+	(b)	CD20-
(c)	CD30+	(d)	CD30-

(B) From the name “tositumomab and ¹³¹I tositumomab,” what can one learn about the type of drug and origin?

Question (3) Complete and answer the following :

(10 Marks)

(A) The following diagram shows the life cycle of retroviruses used in gene therapy. Below this diagram write the steps of these viruses life cycle as indicated by numbers in each box.



1	
2	
3	
4	
5	
6	

(B) What was the disease target for the first gene therapy clinical trial? What vector was selected for gene transfer?

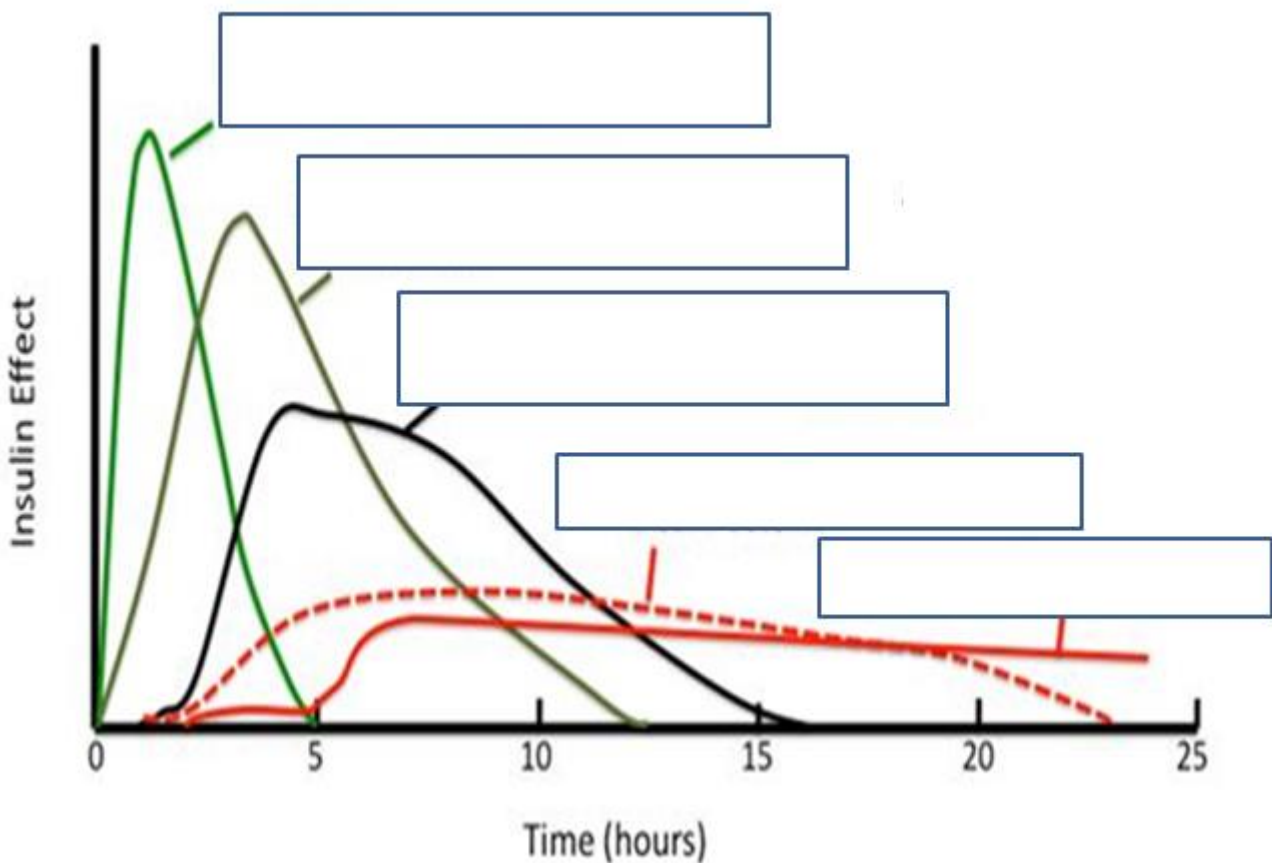
Question (4)

(10 Marks)

(A) Compare between the gene therapy and conventional therapy:

	Gene Therapy	Conventional Therapy
Materials		
Delivery		
Mechanisms		
Duration of Effect		
Ethics		

(B) The following figure shows the formulation types of insulin versus time of acting, in the boxes write the type of formulation with example on each:



Question (5) Answer the following questions : (8 Marks)

- 1 Growth hormone is known or presumed to act directly upon which tissues?**

- 2 List 2 advantages and 2 disadvantages associated with using retroviruses as the vector in gene therapy.**

- 3 What is blood DOPING and What are the most widely known types of blood DOPING.**

- 4 Explain why patients develop anti-erythropoietin antibodies when PS-80 used as stabilizer in EPREX instead of HSA.**

End of Questions
Good Luck