

## PU M Sc Biotechnology

### 1 of 100

109 PU\_2015\_303

Which one of the following binding constants represents the highest affinity?

- ☐  $K_d = 1 \times 10^{-9} \text{M}$
- ☐  $K_d = 1.5 \times 10^{-9} \text{M}$
- ☐  $K_a = 1 \times 10^7 \text{M}^{-1}$
- ☐  $K_a = 2 \times 10^8 \text{M}^{-1}$

### 2 of 100

163 PU\_2015\_303

Mitogens stimulate the growth and activation of:-

- ☐ Epithelial cells
- ☐ Vascular endothelial cells
- ☐ Fibroblasts
- ☐ All three options

### 3 of 100

168 PU\_2015\_303

Which of the following information about TNF is not true?

- ☐ It is a disease
- ☐ Tumor necrotic factor
- ☐ Belongs to Cytokines family
- ☐ TNF alpha and TNF beta

### 4 of 100

206 PU\_2015\_303

The diaphragm separates the:-

- ☐ Heart and the Lungs
- ☐ Heart and the Liver
- ☐ Chest and the Abdomen
- ☐ Liver and the Lungs

### 5 of 100

181 PU\_2015\_303

Allergies result from the production of \_\_\_\_\_ antibodies directed against an antigen.

- ☐ IgG
- ☐ IgE
- ☐ IgA
- ☐ IgM

**6 of 100**

159 PU\_2015\_303

The sites for gluconeogenesis are:-

- ☐ Skin and pancreas
- ☐ Intestine and lens of eye
- ☐ Lung and brain
- ☐ Liver and kidney

**7 of 100**

127 PU\_2015\_303

Biological Oxygen Demand is a measurement of:-

- ☐ Increase in nitrogen over a period of time
- ☐ Growth of microorganisms using oxygen
- ☐ Increase in oxygen over a period of time
- ☐ Dissolved oxygen consumed by aerobic bacteria for biomass degradation

**8 of 100**

142 PU\_2015\_303

The terminal electron acceptor during mitochondrial respiration is:-

- ☐ O<sub>2</sub>
- ☐ FAD<sup>+</sup>
- ☐ ATP
- ☐ NAD<sup>+</sup>

**9 of 100**

204 PU\_2015\_303

Which of the agricultural challenges below cannot be solved with transgenic techniques?

- ☐ Biotic stress killing the plant
- ☐ Public concern about having organic vegetables
- ☐ Heat stress killing the plant
- ☐ Public concern about the safety of synthetic herbicides

**10 of 100**

113 PU\_2015\_303

The cells of endosperm are:-

- ☐ Triploids
- ☐ Diploids
- ☐ Tetraploids
- ☐ Haploids

**11 of 100**

200 PU\_2015\_303

Which of the following is not directly associated with regulation of eukaryotic gene expression?

- ☐ methylation of histones
- ☐ methylation of DNA
- ☐ activation of caspases
- ☐ acetylation of histones

**12 of 100**

214 PU\_2015\_303

The common feature amongst nucleus, chloroplast and mitochondria is:-

- ☐ Flagella
- ☐ DNA
- ☐ Lamellae
- ☐ Cristae

**13 of 100**

184 PU\_2015\_303

Caspase is a:-

- ☐ Phosphatase
- ☐ Protease
- ☐ Kinase
- ☐ Glucosidase

**14 of 100**

111 PU\_2015\_303

Zymogen is:-

- ☐ Enzyme modulator
- ☐ Enzyme precursor
- ☐ Enzyme inhibitor
- ☐ Enzyme poison

**15 of 100**

101 PU\_2015\_303

Which one of the following genera fixes nitrogen non-symbiotically?

- ☐ *Nitrosomonas*
- ☐ *Nitrobacter*
- ☐ *Azotobacter*
- ☐ *Rhizobium*

**16 of 100**

105 PU\_2015\_303

Collagen is best described as:-

- ☐ A triple - helical fibrous protein
- ☐ An alpha - helical structural protein
- ☐ A coiled - coil found in hair
- ☐ A cross - linked globular protein

**17 of 100**

132 PU\_2015\_303

Protection of the body from infectious organisms is accomplished by which of these tissues?

- ☐ nerve
- ☐ blood
- ☐ cartilage
- ☐ muscle

**18 of 100**

156 PU\_2015\_303

Parallel venation is a characteristic of:-

- ☐ grasses
- ☐ legumes
- ☐ xerophytic plants
- ☐ parasitic plants

**19 of 100**

139 PU\_2015\_303

The junctions between nerve cells are known as \_\_\_\_\_.

- ☐ gap junctions
- ☐ villi
- ☐ synapses
- ☐ tight junctions

**20 of 100**

216 PU\_2015\_303

The term cistron, muton and recon were introduced by:-

- ☐ Mathew Meselson
- ☐ Thomas Hunt Morgan
- ☐ Seymour Benzer
- ☐ James Watson and Francis Crick

**21 of 100**

146 PU\_2015\_303

Phospholipids have hydrophilic and hydrophobic areas within the same molecule. This dual nature of the molecule is described by the term:-

- ☐ Amphipathic
- ☐ Non-polar
- ☐ Electrostatic
- ☐ Polar

**22 of 100**

172 PU\_2015\_303

Protein denaturants include:-

- ☐ Surfactants
- ☐ Acids
- ☐ Salt
- ☐ Base

**23 of 100**

151 PU\_2015\_303

A contaminated food was detected with cells of *Escherichia coli*. What may be the possible mode of contamination?

- ☐ Water
- ☐ Insects
- ☐ Aerosol
- ☐ Faecal

**24 of 100**

148 PU\_2015\_303

Which of the following takes part in opsonisation?

- ☐ Complement C3b
- ☐ Adjuvants
- ☐ Haptens
- ☐ Synergids

**25 of 100**

186 PU\_2015\_303

Which one of the following is an uncoupler of oxidative phosphorylation?

- ☐ DNA
- ☐ Dinitrophenol
- ☐  $\text{NaN}_2$
- ☐ Actinomycin-D

**26 of 100**

122 PU\_2015\_303

One of the following groups of compounds is secondary in origin in biological systems:-

- ☐ Organic acids
- ☐ Organic solvents
- ☐ Alkaloids
- ☐ Vitamins

**27 of 100**

158 PU\_2015\_303

The major protein responsible for the storage of iron:-

- ☐ Ferritin
- ☐ Ferredoxin
- ☐ Hemosiderin
- ☐ Transferrin

**28 of 100**

145 PU\_2015\_303

A mature messenger RNA is 336 nucleotides long, including the initiator and termination codons. The number of amino acids in the protein translated from this mRNA is:-

- ☐ 113
- ☐ 111
- ☐ 110
- ☐ 112

**29 of 100**

193 PU\_2015\_303

Enzyme required for removing RNA primer during DNA replication is:-

- ☐ DNA polymerase I
- ☐ DNA primase
- ☐ DNA polymerase III
- ☐ DNA ligase

**30 of 100**

161 PU\_2015\_303

Proteins synthesis takes place on structures called:-

- ☐ Ribosome
- ☐ Lysosome
- ☐ Golgibody
- ☐ Centriole

**31 of 100**

131 PU\_2015\_303

The blood cells that transport oxygen within the body are the \_\_\_\_.

- ☐ leukocytes
- ☐ erythrocytes
- ☐ macrophages
- ☐ platelets

**32 of 100**

202 PU\_2015\_303

Rice, corn, and wheat are:-

- ☐ Dicots
- ☐ Mosses
- ☐ Ferns
- ☐ Monocots

**33 of 100**

208 PU\_2015\_303

Nitrosomonas is:-

- ☐ Sulphur bacteria
- ☐ Nitrifying bacteria
- ☐ Ammonifying bacteria
- ☐ Denitrifying bacteria

**34 of 100**

118 PU\_2015\_303

Which one of the following group is amenable to artificial culturing in agar plates?

- ☐ Rust fungi (Uredinales)
- ☐ Smuts fungi (Ustilaginales)
- ☐ Ectomycorrhizal fungi
- ☐ Vesicular Arbuscular Mycorrhizal fungi

**35 of 100**

176 PU\_2015\_303

Porcine insulin differs from human insulin by:-

- ☐ Three Amino Acids
- ☐ Two Amino Acids
- ☐ One Amino Acid
- ☐ Four Amino Acids

**36 of 100**

210 PU\_2015\_303

The mad cow disease (jakobCreutzfeld disease) is caused by certain:-

- ☐ Virus
- ☐ Bacterium
- ☐ Viroid
- ☐ Prion

**37 of 100**

164 PU\_2015\_303

Lethal dose of gamma radiations given to a living cell induce:-

- ☐ Both double strand breaks and damage to cell membrane
- ☐ Single strand breaks
- ☐ Damage to cell membrane
- ☐ Double strand breaks

**38 of 100**

103 PU\_2015\_303

Adenosine deaminase deficiency leads to:-

- ☐ Lesch-Nyhan syndrome
- ☐ Severe immunodeficiency disease
- ☐ Porphyria
- ☐ Gout

**39 of 100**

154 PU\_2015\_303

Pattern recognition molecules does not include:-

- ☐ LPS
- ☐ Oleic acid
- ☐ PAMPs
- ☐ Lipoteichoic acid

**40 of 100**

138 PU\_2015\_303

The first discovered antibiotic was \_\_\_\_\_.

- ☐ Keflex
- ☐ Penicillin
- ☐ AZT
- ☐ Zoltran



**41 of 100**

116 PU\_2015\_303

Water droplets assuming the spherical shape is due to:-

- ☐ Viscosity
- ☐ Water having low density
- ☐ Surface tension
- ☐ Density

**42 of 100**

179 PU\_2015\_303

Digitalis is:-

- ☐ Dried leaves of foxglove
- ☐ Dried root of foxglove
- ☐ Dried stem of foxglove
- ☐ Dried fruit of foxglove

**43 of 100**

115 PU\_2015\_303

Extra-chromosomal DNA is not found in:-

- ☐ Mitochondria
- ☐ Chloroplasts
- ☐ Plasmids
- ☐ Ribosomes

**44 of 100**

134 PU\_2015\_303

Who discovered X-Rays?

- ☐ Muller
- ☐ Wilhelm Conrad Rontgen
- ☐ Henri Becquerel
- ☐ Pierre & Marie Curie

**45 of 100**

183 PU\_2015\_303

The reactants of photosynthesis are:-

- ☐ CO<sub>2</sub> and H<sub>2</sub>
- ☐ CO<sub>2</sub> and H<sub>2</sub>O
- ☐ C and H<sub>2</sub>
- ☐ C and O<sub>2</sub>

**46 of 100**

191 PU\_2015\_303

The nitrogen bases which pair with two hydrogen bonds are:-

- ☐ Cytosine and adenine
- ☐ Adenine and cytosine
- ☐ Adenine and thymine
- ☐ Cytosine and guanine

**47 of 100**

124 PU\_2015\_303

Which one of the following is not true of Meiosis?

- ☐ Crossing over
- ☐ Reduction division resulting in 'n' number of chromosomes
- ☐ Pairing of homologous chromosomes
- ☐ Separation of chromatids during Anaphase I

**48 of 100**

166 PU\_2015\_303

Most frequently used amino acid for stabilization of the biopharmaceutical products is:-

- ☐ Proline
- ☐ Glycine
- ☐ Methionine
- ☐ Histidine

**49 of 100**

129 PU\_2015\_303

The Human growth hormone "hGH" is secreted by:-

- ☐ Thymus
- ☐ Pituitary gland
- ☐ Pancrease
- ☐ Hypothalamus

**50 of 100**

120 PU\_2015\_303

Alpha-ketoglutarate serves as one of the keto-substrate in the formation of:-

- ☐ nopaline
- ☐ histopine
- ☐ octopine
- ☐ agropine

**51 of 100**

107 PU\_2015\_303

The insertion of three nucleotides into an open reading frame cannot result in:-

- ☐ a missense mutation
- ☐ a frameshift mutation
- ☐ the destruction of a nonsense mutation
- ☐ a nonsense mutation

**52 of 100**

170 PU\_2015\_303

Haemoglobin shows:-

- ☐ Linear absorption curve for oxygen uptake
- ☐ Minimum oxygen saturation in arterial blood
- ☐ Non linear absorption curve for oxygen uptake
- ☐ Maximum oxygen saturation in veinal blood

**53 of 100**

174 PU\_2015\_303

Vancomycin is a:-

- ☐ Primary metabolite
- ☐ Popular microbe for industry
- ☐ Popular food supplement
- ☐ Glycopeptide

**54 of 100**

196 PU\_2015\_303

EcoRI is an:-

- ☐ Restriction enzyme
- ☐ Ligase
- ☐ Polymerase
- ☐ Gyrase

**55 of 100**

190 PU\_2015\_303

The first reaction in glycolysis is phosphorylation of glucose, which is catalyzed by:-

- ☐ Hexokinase
- ☐ Aldolase
- ☐ Caboxylase
- ☐ Triose isomerase

**56 of 100**

188 PU\_2015\_303

The key organic acid involved in amino acid formation in the TCA cycle is:-

- ☐  $\alpha$ -ketoglutaric acid
- ☐ Succinic acid
- ☐ Oxaloacetic acid
- ☐ Citric acid

**57 of 100**

141 PU\_2015\_303

The class of enzymes that are involved in triggering events in the cell cycle are called:-

- ☐ Nucleases
- ☐ Proteases
- ☐ Kinases
- ☐ Ligases

**58 of 100**

198 PU\_2015\_303

The 5'-3' exonuclease activity is associated with:-

- ☐ DNA pol III
- ☐ DNA pol IV
- ☐ DNA pol I
- ☐ DNA pol II

**59 of 100**

136 PU\_2015\_303

Which of these is required for aerobic cellular respiration?

- ☐ Carbon dioxide
- ☐ Sunlight
- ☐ Chlorophyll
- ☐ Oxygen

**60 of 100**

125 PU\_2015\_303

When pressure increases:-

- ☐ temperature decreases drastically
- ☐ temperature increases
- ☐ temperature decreases slightly
- ☐ temperature remains the same

**61 of 100**

251 PU\_2015\_303

Hybridoma is the:-

- ☐ Fusion of plant cell and microorganism
- ☐ Fusion of T cells and myeloma cell
- ☐ Fusion of plant and animal cell
- ☐ Fusion of B cells and myeloma cell

**62 of 100**

221 PU\_2015\_303

Living, unstained wild type cells and microorganisms can be best observed using:-

- ☐ Fluorescent Microscopy
- ☐ Phase contrast microscopy
- ☐ TEM
- ☐ Naked eye

**63 of 100**

247 PU\_2015\_303

One atomic mass unit equals:-

- ☐  $1.67 \times 10^{-27} \text{kg}$
- ☐  $1.67 \times 10^{-26} \text{kg}$
- ☐  $1.67 \times 10^{-28} \text{kg}$
- ☐  $1.67 \times 10^{-25} \text{kg}$

**64 of 100**

241 PU\_2015\_303

What is the average lifetime of erythrocytes after entering the blood?

- ☐ 200 days
- ☐ 120 days
- ☐ 10 days
- ☐ 360 days

**65 of 100**

255 PU\_2015\_303

Lichens are described as indicator of:-

- ☐ Soil pollution
- ☐ Water pollution
- ☐ Air pollution
- ☐ Agriculture productivity

**66 of 100**

233 PU\_2015\_303

Protoplast fusion could be encouraged by addition of:-

- ☐ Calcium chloride
- ☐ Nitrogen mustard
- ☐ Polyethelene glycol
- ☐ Ethidium bromide

**67 of 100**

239 PU\_2015\_303

Which of the following types of molecules is always found in prions?

- ☐ Protein
- ☐ DNA
- ☐ Lipid
- ☐ Carbohydrate

**68 of 100**

223 PU\_2015\_303

Ribosome display method is used to detect:-

- ☐ DNA-RNA interactions
- ☐ Protein-DNA interactions
- ☐ Protein-RNA interactions
- ☐ Protein-protein interactions

**69 of 100**

258 PU\_2015\_303

Locomotor organelle of *Amoeba* is:-

- ☐ Pseudopodia
- ☐ Flagella
- ☐ Cilia
- ☐ Pili

**70 of 100**

257 PU\_2015\_303

The loss of an electron by a molecule is called:-

- ☐ Induced fit
- ☐ Enthalpy
- ☐ Reduction
- ☐ Oxidation

**71 of 100**

229 PU\_2015\_303

A mutation deleting an upstream activating sequence for a single gene would be expected to be:-

- ☐ polar
- ☐ silent
- ☐ *cis*-dominant
- ☐ *trans*-dominant

**72 of 100**

235 PU\_2015\_303

The largest fragment of foreign DNA could be maintained in which of the following vector?

- ☐ Phage
- ☐ Cosmid
- ☐ YAC
- ☐ Plasmid

**73 of 100**

249 PU\_2015\_303

The process by which viruses bring about bacterial recombination is termed:-

- ☐ Induction
- ☐ Transduction
- ☐ Transformation
- ☐ Conjugation

**74 of 100**

227 PU\_2015\_303

Di-nitrophenol (DNP) uncouples mitochondrial electron transport from oxidative phosphorylation by:-

- ☐ dissociating the F<sub>0</sub> and F<sub>1</sub> units of the ATP synthase complex
- ☐ inhibiting cytochrome oxidase
- ☐ binding irreversibly to ubiquinone
- ☐ dissipating the proton gradient

**75 of 100**

245 PU\_2015\_303

The random movement of particles in solution towards a uniform distribution is termed:-

- ☐ Facilitated diffusion
- ☐ Repulsion
- ☐ Diffusion
- ☐ Osmosis

**76 of 100**

225 PU\_2015\_303

All of the following are proteins within the core nucleosome particle except:-

- ☐ H2A
- ☐ H3
- ☐ H1
- ☐ H2B

**77 of 100**

253 PU\_2015\_303

Protein which plays a significant role in ageing is:-

- ☐ Myosin
- ☐ Collagen
- ☐ Actin
- ☐ Elastin

**78 of 100**

237 PU\_2015\_303

Acid-Fast staining is used to identify:-

- ☐ Mycobacterium
- ☐ Bacillus
- ☐ Penicillium
- ☐ Pseudomonas

**79 of 100**

231 PU\_2015\_303

Where do the protons accumulate in mitochondria?

- ☐ intermembrane space
- ☐ outer membrane
- ☐ inner membrane
- ☐ matrix

**80 of 100**

243 PU\_2015\_303

Tiny cluster of microscopic particles of less than 100 nm are called:-

- ☐ Nanoparticles
- ☐ Macroparticle
- ☐ Mineral particles
- ☐ Microparticles



**81 of 100**

293 PU\_2015\_303

Antibodies or immunoglobulins are made up of:-

- ☐ lipoproteins
- ☐ phospholipids
- ☐ nucleoproteins
- ☐ glycoproteins

**82 of 100**

277 PU\_2015\_303

The portion of the cardiac glycosides to which a sugar molecule is bonded are:-

- ☐ carbohydrates
- ☐ proteins
- ☐ membranes
- ☐ steroids

**83 of 100**

297 PU\_2015\_303

The helices in the  $\alpha$  supersecondary structure are held together primarily by:-

- ☐ Favorable R group interactions
- ☐ Charge – charge interactions
- ☐ Covalent cross links
- ☐ Main chain hydrogen bonding

**84 of 100**

283 PU\_2015\_303

Cotton Bollworm namely *Helicoverpa armigera* belong to the order:-

- ☐ Arthropoda
- ☐ Lepidoptera
- ☐ Diptera
- ☐ Coleoptera

**85 of 100**

269 PU\_2015\_303

Sulfa drugs resemble *p*-aminobenzoate and acts as a competitive inhibitor and therefore are used as antibiotics. Which pathway do sulfa drugs act upon?

- ☐ Purine biosynthesis
- ☐ Peptidoglycan biosynthesis
- ☐ Folic acid biosynthesis
- ☐ Lipid biosynthesis

**86 of 100**

291 PU\_2015\_303

Water acts as a substrate in:-

- ☐ Osmosis
- ☐ Photosynthesis
- ☐ Transpiration
- ☐ Fertilization

**87 of 100**

281 PU\_2015\_303

The net gain of ATP in glycolysis is:-

- ☐ 8
- ☐ 38
- ☐ 2
- ☐ 4

**88 of 100**

275 PU\_2015\_303

Gause's hypothesis/principle is not related to:-

- ☐ No competition
- ☐ Niche specialization
- ☐ Principle of competitive exclusion
- ☐ Inter-specific competition

**89 of 100**

279 PU\_2015\_303

Which of the following is semisynthetic antibiotic?

- ☐ Penicillin G
- ☐ Penicillin
- ☐ Streptomycin
- ☐ Ampicillin

**90 of 100**

287 PU\_2015\_303

Quantitative trait refers to a trait controlled by:-

- ☐ Oligo gene
- ☐ No gene
- ☐ Multiple genes
- ☐ Cytoplasmic genes

**91 of 100**

299 PU\_2015\_303

Mitochondrial lipogenesis requires:-

- ☐ Acetyl CoA carboxylase
- ☐ Biotin
- ☐ NADPH
- ☐ Bicarbonate

**92 of 100**

271 PU\_2015\_303

Vitamins are essential to the human diet because they act as:-

- ☐ cofactors
- ☐ neurotransmitters
- ☐ coenzymes
- ☐ hormones

**93 of 100**

261 PU\_2015\_303

Methanogens do not use one of the following as food source:-

- ☐ Methanol
- ☐ Formic Acid
- ☐  $H_2 + CO_2$
- ☐ Acetic acid

**94 of 100**

289 PU\_2015\_303

Which one of the following types of RNA serves as precursor of mRNA and other RNAs?

- ☐ hnRNA
- ☐ scRNA
- ☐ snRNA
- ☐ tRNA

**95 of 100**

273 PU\_2015\_303

Penicillin-G is an antibiotic that inhibits peptidoglycan synthesis thereby blocking cell wall synthesis. If a gram positive bacterium is kept in an isotonic solution with an inhibitory concentration of penicillin, which of the following observation will be true?

- ☐ They will cease to grow, but remain alive
- ☐ They will be unable to synthesize cell wall and therefore get lysed
- ☐ They will be unable to synthesize cell wall but grow normally
- ☐ Penicillin will be unable to diffuse through the cell wall

**96 of 100**

263 PU\_2015\_303

What is the difference between apoptosis and necrosis?

- ☐ Apoptosis is cell death due to damage that occurs during embryogenesis; necrosis is cell death due to damage that occurs during adulthood
- ☐ Apoptosis is a programmed cellular destruction; necrosis is cell death due to damage
- ☐ Apoptosis is a property of differentiated cells; necrosis only occurs to undifferentiated cells
- ☐ Apoptosis is death of a differentiated cell; necrosis is the death of an undifferentiated cell

**97 of 100**

265 PU\_2015\_303

What is the full name of NDM-1?

- ☐ New-Delhi Metallo- $\beta$ -lactam-1
- ☐ Non-Delhi Metallo- $\beta$ -lactamase-1
- ☐ New-Delhi Metallo- $\beta$ -lactamase-1
- ☐ Non-Delhi Metallo- $\beta$ -lactam-1

**98 of 100**

285 PU\_2015\_303

Jumping genes were discovered by:-

- ☐ Bradford
- ☐ Sanger
- ☐ Barbara Maclintok
- ☐ Watson & Crick

**99 of 100**

295 PU\_2015\_303

A lysogen is:-

- ☐ Presence of colicin-producing plasmid in bacteria causing self-lysis
- ☐ Specific strains of *E.coli* which can produce restriction enzyme and self-protect against bacteriophage infection
- ☐ An extract obtained after lysis of bacterial cell by bacteriophage
- ☐ A bacteriophage DNA inserted into chromosome of bacterial cell

**100 of 100**

267 PU\_2015\_303

One of the following that is not useful in the diagnosis of HIV infection is:-

- ☐ antibodies by enzyme-linked immunosorbent assay
- ☐ polymerase chain reaction
- ☐ CD4:CD8 ratio
- ☐ CD2:CD4 ratio