

## PU Ph D Microbiology

### 1 of 100

163 PU\_2015\_128

Maternal inheritance is due to genes present in:-

- mitochondria
- cytoplasm
- nucleolus
- lysosomes

### 2 of 100

164 PU\_2015\_128

Haploid chromosome number is 12. What is the number of monosomic:-

- 23
- 22
- 26
- 25

### 3 of 100

111 PU\_2015\_128

Cell cycle progression from one phase to another is primarily controlled by:-

- proteolysis of cyclin
- proteolysis of cyclin dependent kinase
- dephosphorylation of cyclin
- phosphorylation of cyclin

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185 PU\_2015\_128

The intervention by which a gadget e.g. an electrode may be accurately guided to a predefined region deep inside the brain is known as:-

- craniotomy
- stereotaxic surgery
- laparoscopy
- stereoscopy

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147 PU\_2015\_128

The mouse model for type II diabetes mellitus is:-

- SCID mouse
- Nude mouse
- NOD mouse

NZB mouse

### 6 of 100

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Pseudomycelium is found in:-

- rhizopus
- aspergillus
- mushroom
- yeast

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Sodium dodecyl sulphate, an anionic detergent commonly used in SDS-Polyacrylamide gel electrophoresis, works in facilitating electrophoretic separation of a mixture of proteins by its ability to bind to the:-

- positively charged amino acid side chains in proteins
- hydrophobic side chains in proteins
- negatively charged amino acid side chains in proteins
- peptide group in proteins

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115 PU\_2015\_128

When Hfr strain of *E. coli* is crossed with F- strain, recombinants obtained are:-

- rarely HFr+
- always F+
- rarely F+
- always HFr+

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The major contribution to the stability of Watson-Crick structure of DNA in aqueous solution comes from:-

- hydrogen bonds between Watson-Crick base pairs
- stacking interaction of bases
- counter-ion condensation on phosphates
- entropic contribution

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208 PU\_2015\_128

If the rate of product formation is approximately proportional to the rate of cell growth, then this pattern of product formation is referred to as:-

- Uncoupled

- Growth associated
- Metabolically uncoupled
- Non-growth associated

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203 PU\_2015\_128

Immobilization of microbial cells:-

- Increases apparent  $K_s$
- Has no effect on  $K_s$
- Decreases apparent  $K_s$
- Increases cell's affinity for the substrate

**12 of 100**

140 PU\_2015\_128

To produce plants that are homozygous for all traits, the best choice is:-

- cell suspension culture
- callus culture
- anther/pollen culture
- plant organ culture

**13 of 100**

118 PU\_2015\_128

Which one of the following statements is incorrect about Retroviruses?

- They have high mutation rates
- They are the only RNA viruses whose genome is produced by cellular transcription machinery
- They are the only (+) sense RNA viruses whose genome does not serve directly as mRNA immediately after infection
- Retroviruses are the only family of viruses to encode Reverse Transcriptase

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174 PU\_2015\_128

In eukaryotes, on completion of replication the lagging strand synthesis the last ribonucleotide of the RNA primer is removed by:-

- Primase
- DNA Polymerase
- FEN1
- RNase H

**15 of 100**

149 PU\_2015\_128

Morphogenetic competence in callus tissue is obtained by:-

- Somaclonal variation
- Habituation
- Dedifferentiation
- Vitrification

#### 16 of 100

135 PU\_2015\_128

Which of the following is a lipid with a signal transducing activity?

- Phosphatidyl inositol 4, 5- bisphosphate
- Phosphatidyl serine
- Phosphatidyl ethanolamine 5
- Phospholipase A2

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131 PU\_2015\_128

The amino acids with Phi and Psi values (-60, -40); (-59,-47) and (-80, 120) will be adopting which of the following conformation?

- Extended-extended-loop
- Helix-helix-extended
- Loop-loop-coil
- Helix-coil-extended

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136 PU\_2015\_128

Which one of the following antibiotics attaches to 50S ribosome and inhibits peptidyl-transferase activity?

- Penicillin
- Trimethoprim
- Amphotericin
- Chloramphenicol

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198 PU\_2015\_128

Driving force for a membrane process is only the concentration difference in the case of:-

- Microfiltration
- Dialysis
- Ultrafiltration
- Reverse osmosis

#### 20 of 100

187 PU\_2015\_128

Biodiesel is produced by:-

- Transesterification
- Fermentation
- High pressure oxidation
- Esterification

**21 of 100**

186 PU\_2015\_128

Hybridization between species followed by polyploidy or chromosome doubling is known as:-

- Aneuploid
- Haploid
- Autopolyploid
- Allopolyploid

**22 of 100**

119 PU\_2015\_128

Which one of the following organisms is used in Ames test?

- E. coli*
- Streptococcus aureus*
- Salmonella typhimurium*
- Pseudomonas aerogenosa*

**23 of 100**

148 PU\_2015\_128

Which of the following stages of embryos is used for transfer into cows?

- Mid morula stage
- Blastocyst stage
- Late morula stage
- Very early morula stage

**24 of 100**

190 PU\_2015\_128

DNA polymerase processivity:-

- is a measure of thermal stability of the enzyme
- is a measure of the number of nucleotides joined before the polymerase dissociates
- is determined by the ability of the enzyme to also have nuclease activity
- is a measure of rate of elongation of newly synthesized strands

**25 of 100**

130 PU\_2015\_128

Which of the following statements is correct for a reaction  $A + B \rightleftharpoons AB$ ?

- Lower the value of the equilibrium constant, stronger is the binding between A and B
- This is a third order reaction
- Larger the value of the equilibrium constant, stronger is the binding between A and B
- Larger the value of the equilibrium constant, weaker is the binding between A and B

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137 PU\_2015\_128

The amino acid sequence of a novel membrane protein contains four immunoglobulin like domains and six fibronectin like repeats. This protein is most likely a:-

- G-protein
- cell adhesion molecule
- transcription factor
- hormone responsive ion channel

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146 PU\_2015\_128

A set of closely related genes or genetic markers that are inherited as a single unit is:-

- haplotype
- haploid
- gene families
- cistron

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Numerical taxonomy involves:-

- Overall relationship
- Phylogenetic relationship
- Phenetic relationship
- Molecular taxonomy

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200 PU\_2015\_128

In which type of elution technique, there is no change in gradient with respect to time?

- Stepwise elution technique
- Isocratic elution technique
- Exponential elution technique
- Linear elution technique

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The bioprocess model that differentiates cells on the basis of morphology and / or size distribution is:-

- Segregated model
- Non-segregated model
- Unstructured model
- Structured model

**31 of 100**

201 PU\_2015\_128

One of the these purification steps requires initial high ionic strength in sample:-

- Hydrophobic interaction chromatography
- Ion exchange chromatography
- Preparative chromatography
- Chromatofocusing

**32 of 100**

172 PU\_2015\_128

Auto immune disease which is systemic in nature is:-

- graves disease
- addisons disease
- auto immune haemolytic anaemia
- rheumatoid arthritis

**33 of 100**

171 PU\_2015\_128

Bacteria responsible for "surface taint" or putridity of butter is:-

- Cladosporium*
- Pseudomonas putrefaciens*
- mucor*
- Lactococcus lactis*

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Vitrification of cultured explants caused by:-

- low light irradiance, high temperature and intensivesterilization
- high pH, low temperature and high micronutrient concentration
- higher agar, high nutrients and low pH
- high auxin, low temperature and high light irradiance

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197 PU\_2015\_128

Optimum bead loading for cell disruption in a bead mill is:-

- 75-85%
- 55-65%
- 60-70%
- 40-50%

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134 PU\_2015\_128

Regulation of fatty acid biosynthesis occurs at the enzymatic step catalyzed by:-

- carnitine acyltransferase I
- acetyl CoA carboxylase
- citrate synthase
- pyruvate carboxylase

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209 PU\_2015\_128

Which of the following does not apply to triplex DNA?

- It forms at neutral or acidic pH
- It is triple stranded in nature
- It requires only Hoogsteen hydrogen bonding
- It requires Watson-Crick hydrogen bonding

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Anticancer vitamin is:-

- Phylloquinone
- Pyridoxine
- Retinol
- Thiamine

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Testosterone hormone necessary for spermatogenesis is secreted by:-

- cowpers gland
- sertoli cells
- spermatozoa
- leydig cells

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213 PU\_2015\_128

The antibiotic that resembles the 3' end of the charged tRNA molecule is:-

- Kanamycin
- Puromycin
- Tetracycline
- Steptomycin

41 of 100

173 PU\_2015\_128

Which of the statements about translation is FALSE?

- Fusidic acid prevents the release of EFG- GDP from the ribosome.
- Puromycin leads to premature release of the polypeptide chain.
- IF-3 preferentially binds to 30S ribosomes.
- During translocation in the "hybrid sites" model, the tRNA attached to the nascent polypeptide chain is in the P site of the small subunit and the A site of the large subunit.

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117 PU\_2015\_128

Which one of the following viruses does not replicate in the cytoplasm of host cells?

- Rhabdoviruses, e.g., rabies virus
- Picornaviruses, e.g., poliovirus
- Poxviruses, e.g., vaccinia virus
- Hepadnaviruses, e.g., hepatitis B virus

43 of 100

204 PU\_2015\_128

For running a Continuous Stirred Tank Reactor, critical dilution rate is:-

- Higher than the washout rate
- Equal to the washout rate
- Unpredictable
- Less than the washout rate

44 of 100

116 PU\_2015\_128

Archea is considered as a separate group from bacteria and eukaryotes, based on:-

- 16S rRNA gene sequence
- EFTu sequence
- genome sequence
- 23S rRNA gene sequence

**45 of 100**

199 PU\_2015\_128

The oxygen solubility in a bioreactor depends upon:-

- Both Agitation and Aeration
- Agitation
- Aeration
- Viscosity and surface tension

**46 of 100**

160 PU\_2015\_128

Is known as the "father of Phycology" in India:-

- M.O.P. lyenger
- R.N. Singh
- J.C Bose
- B.P. Pal

**47 of 100**

210 PU\_2015\_128

A C-terminal KDEL motif will most often ensure:-

- the protein to be folded by hsc70
- secretion of the protein
- ER-retention of the protein
- the protein to be degraded by the ubiquitinproteasome pathway

**48 of 100**

206 PU\_2015\_128

. Supercritical fluid (SCF) extraction is much better than normal solvent extraction. This is because:-

- SCF is non-toxic
- Diffusivity is much higher than normal solvent
- SCF viscosity is higher than normal solvent and hence extraction is better
- Handling of SCF is much easier

**49 of 100**

161 PU\_2015\_128

The first genetically modified plant produced in 1982 was:-

- brinjal
- tomato
- cotton
- tobacco

**50 of 100**

132 PU\_2015\_128

A BSA stock solution is diluted 10 folds with phosphate buffer. The absorbance of the solution in a quartz cuvette of pathlength 1 mm at 281.5 nm is 0.330. If the extinction coefficient of the protein is 0.66 ml/mg.cm, the concentration of the stock protein solution would be:-

- 20 mg/ml
- 33 mg/ml
- 50 mg/ml
- 5 mg/ml

**51 of 100**

205 PU\_2015\_128

The physical significance of specific growth rate constant is:-

- Gram of cells formed per unit time
- Fraction per unit growth of microorganism per unit time
- Grams of cell formed per grams cell mass per unit time
- Rate at which the organism is growing

**52 of 100**

214 PU\_2015\_128

Mitochondria are involved in the following except:-

- TCA cycle
- Fatty acid biosynthesis
- ATP production
- Glycosylation

**53 of 100**

110 PU\_2015\_128

Yellow mosaic of legumes is caused by Mung bean yellow mosaic virus which belongs to:-

- Geminiviruses group
- Potyvirus group
- Potexvirus group
- Carlavirus group 3

**54 of 100**

189 PU\_2015\_128

The most preferred choice for development of hybrid plants from a male sterile line would be:-

- Anther culture
- Meristem culture
- Ovary culture

- Pollen culture

### 55 of 100

212 PU\_2015\_128

Nickel Nitrioloacetic acid columns are used in \_\_\_\_\_ chromatography.

- Size exclusion
- Affinity
- Reverse phase
- Ion exchange

### 56 of 100

138 PU\_2015\_128

In a population of 200 individuals which is at equilibrium, the frequency of one of the alleles under study is 0.11. What is the expected frequency of heterozygous individual?

- 0.89
- 0.842
- 0.0979
- 0.1958

### 57 of 100

139 PU\_2015\_128

Increased genetic diversity following extended time in a tissue culture is a problem called:-

- temporal modification
- somaclonal variation
- gene alteration
- culture shock

### 58 of 100

113 PU\_2015\_128

Resting membrane potential of a biological membrane is close to the theoretical Nernst potential for the ions that are:-

- least abundant
- impermeable
- permeable
- most abundant

### 59 of 100

211 PU\_2015\_128

5-Methylcytosines are common sites for mutations because they:-

- prevent discrimination between the daughter and parental strand
- are not recognized by the proofreading activity of DNA polymerase

- can deaminate to thymidine
- can mispair with adenine

**60 of 100**

112 PU\_2015\_128

Elevation of intracellular inositol triphosphate (IP<sub>3</sub>) results in the release of Ca<sup>2+</sup> from which of the following organelles?

- Mitochondria
- Smooth endoplasmic reticulum
- Golgi-complex
- Peroxisome

**61 of 100**

247 PU\_2015\_128

An enzyme that induces double strand breaks in DNA and rejoins them is called:-

- DNA polymerase
- DNA ligase
- Restriction endonuclease
- DNA gyrase

**62 of 100**

224 PU\_2015\_128

Exclusive Economic Zone is a sea zone which stretches from the seaward edge of the state's territorial sea out to:-

- 50 nautical miles from its coast
- 200 nautical miles from its coast
- 10,000 nautical miles from its coast
- 1000 nautical miles from its coast

**63 of 100**

221 PU\_2015\_128

Inanimate habitats colonized by organisms are called:-

- Neuston
- Epibiotic
- Pelagic
- Seston

**64 of 100**

246 PU\_2015\_128

Full expression of the lac operon requires:-

- lactose and cAMP

- cAMP
- allolactose and cAMP
- lactose

**65 of 100**

248 PU\_2015\_128

Which of the following best describes interferon's suspected mode of action in producing resistance to viral infection?

- It stimulates humoral immunity
- It stimulates cell-mediated immunity
- Its action is related to the synthesis of a protein that inhibits translation or transcription
- Its direct antiviral action is related to the suppression of messenger RNA formation

**66 of 100**

222 PU\_2015\_128

El Nino is defined by:-

- Temperature anomaly which occurs approximately every 100 years
- prolonged differences in Pacific Ocean surface temperatures (+ 0.5 °C) when compared with the average value
- warming or cooling of at least 5 °C averaged over the eastcentral tropical Pacific Ocean
- Warming or cooling for a period of 48 h in Pacific ocean to demonstrate the climatic effect

**67 of 100**

241 PU\_2015\_128

Activation of genes in euchromatic regions is an outcome of \_\_\_\_\_ of histone N-terminal tails.

- phosphorylation
- methylation
- deacylation
- hyperacetylation

**68 of 100**

220 PU\_2015\_128

Marine sediments derived from erosion of rocks are:-

- Lithogenous sediments
- Limnologic sediments
- Biogenous sediments
- Magnetic sediments

**69 of 100**

226 PU\_2015\_128

Higher version of BLOSUM can be used to detect:-

- Unrelated sequences
- Partially related sequences
- Closely related sequences
- Distantly related sequences

#### 70 of 100

243 PU\_2015\_128

3' Overhangs of 2-bp length are found in:-

- genome-length RNA of CaMV
- short RNA fragments involved in RNA silencing
- Taq polymerase-amplified DNA fragments
- subgenomic RNAs of RNA viruses

#### 71 of 100

227 PU\_2015\_128

TBLASTX matches a DNA query sequence, translated into all six reading frames, against a DNA database with:-

- No gaps allowed
- Gaps depending on the database
- Gaps allowed
- Gaps depending on the input sequence

#### 72 of 100

249 PU\_2015\_128

The most sensitive method of detecting infection by cytomegalovirus (CMV) in the new born is:-

- detection of IgM antibody by immunofluorescence
- identification of characteristic cells in gastric secretions
- isolation of the virus
- direct detection of antigen by ELISA

#### 73 of 100

228 PU\_2015\_128

Changing which of the following BLAST parameters would tend to yield fewer search results?

- Raising the threshold value
- Turning off the low complexity filter
- Changing the expected value from 1 to 10
- Changing the scoring matrix from PAM30 to PAM70

#### 74 of 100

244 PU\_2015\_128

Matrix Attachment Regions are involved in:-

- transport of spliced mRNA from the nucleus to the cytoplasm
- genomic compartmentalization creating chromatin domains favourable for transcription
- specific attachment of pathogens to the cell surface
- formation of clathrin-coated vesicles

75 of 100

225 PU\_2015\_128

A lithoautotroph:-

- can be bacterial or eukaryotic cell.
- derives energy from reduced compounds of mineral origin
- requires light for producing
- is always an extremophile

76 of 100

245 PU\_2015\_128

The biosafety problem due to spread of transgenes from transgenic plants to its wild relatives can be avoided by:-

- elimination of markers using Cre/*lox* system
- developing transgenic plants with herbicide markers
- Posi-Tech selection using non-antibiotic markers like *pmi*
- developing transplastomic lines

77 of 100

240 PU\_2015\_128

5' RACE is often necessary to:-

- label 5'end of DNA with a dye
- add sequences at 5' end to facilitate annealing of a specific primer
- delete sequences from 5' end of the DNA strand
- clone 5' region of genes from mRNA

78 of 100

223 PU\_2015\_128

Probiotics in aquaculture are regularly used to:-

- improve the water quality of the pond
- increase the size and weight of fish
- for vaccinating the fish against general bacterial infection
- improve the fecundity of fish



**79 of 100**

229 PU\_2015\_128

The Ramachandran map of a protein representation allows you to identify:-

- The most stable structure
- The secondary structure elements
- The sterically disallowed conformations
- The tertiary allowed structure

**80 of 100**

242 PU\_2015\_128

Integration of phage lambda genome into *E. Coli* chromosome is by:-

- red gene mediated recombination
- random integration by the function of  $\lambda$  element in the chromosome
- site specific recombination
- COS sites

**81 of 100**

286 PU\_2015\_128

The  $\alpha$ -helical motifs of gene regulatory proteins generally bind to:-

- sugar-phosphate backbone of A-DNA
- major groove of A-DNA
- minor groove of B-DNA
- major groove of B-DNA

**82 of 100**

271 PU\_2015\_128

Which of these techniques is used by geneticists to map human genes?

- complementation analysis
- somatic cell hybridization
- diploid cross
- tetrad analysis

**83 of 100**

298 PU\_2015\_128

Apart from gas transport Hemoglobin plays an important role in:-

- bone marrow regeneration
- blood buffering
- globin synthesis
- red cell morphology

**84 of 100**

289 PU\_2015\_128

The complete denaturation of a protein leads to a loss of the following structure(s):-

- primary and secondary
- secondary and tertiary
- primary
- primary and tertiary

**85 of 100**

297 PU\_2015\_128

Which one of the following microbes removes oil spills by digesting hydrocarbons?

- Helicobacter* sp
- Staphylococcus* sp
- Trichoderma* sp
- Pseudomonas* sp

**86 of 100**

270 PU\_2015\_128

Carnitine is required for:-

- renal function
- fatty acid synthesis
- sterol synthesis
- fatty acid oxidation

**87 of 100**

269 PU\_2015\_128

Silk fibroin displays:-

- alpha helix
- antiparallel-  $\beta$  pleated sheets
- parallel  $\beta$  sheet
- loop structure

**88 of 100**

288 PU\_2015\_128

A peptide bond:-

- occurs most commonly in *cis* configuration
- is stable in strong acids
- has a partial double bond character
- is cleaved by agents that denature proteins, such as organic solvents and high concentrations of urea

**89 of 100**

295 PU\_2015\_128

Ultraviolet radiation causes DNA damage by formation of:-

- guanine dimer
- thymidine dimer
- cytidine dimer
- adenine dimer

**90 of 100**

290 PU\_2015\_128

HeLa cell line is derived from which type of carcinoma?

- cervical
- colon
- brain
- lung

**91 of 100**

273 PU\_2015\_128

What is the pH of  $10^{-8}$  M solution of HCl?

- 7.00
- 7.99
- 6.99
- 8.99

**92 of 100**

272 PU\_2015\_128

How many milliliters of 0.05 N HCl are required to neutralize eight grams of NaOH?

- 5050
- 5000
- 4000
- 4500

**93 of 100**

296 PU\_2015\_128

Autoreactive cells are present in our immune system due to:-

- breakdown of host immunity
- increased tolerance
- peripheral deletion
- defective thymic selection

**94 of 100**

265 PU\_2015\_128

If a man of blood group AB marries a woman of blood group A whose father was of blood group O, to what different blood groups can this man and woman expect their children to belong?

- AB, O
- A, O, B
- A, AB
- A, AB, B

**95 of 100**

267 PU\_2015\_128

Which one of the following amino acids interrupts  $\alpha$ - helices, and also disrupts  $\beta$ -sheets?

- Pro
- His
- Phe
- Cys

**96 of 100**

285 PU\_2015\_128

What would be the likely explanation for the existence of pseudogenes?

- gene duplication and mutation events
- gene duplication
- mutation events
- unequal crossing over

**97 of 100**

268 PU\_2015\_128

Which of the following statements concerning the Edman degradation method is incorrect?

- Once the PTH amino acid is separated from the original peptide, a new cycle of sequential degradation can begin
- Phenyl isothiocyanate is coupled to the carboxy-terminal residue
- Under mildly acidic conditions, the modified peptide is cleaved into a cyclic derivative of the terminal amino acids and a shortened peptide (minus the first amino acid)
- Phenyl isothiocyanate is coupled to the amino-terminal residue

**98 of 100**

274 PU\_2015\_128

Z DNA helix

- is favoured by an alternating GC sequence
- tends to be formed at 3' end of genes

- is the primary form in any living organism
- formation is inhibited by methylation of bases

**99 of 100**

287 PU\_2015\_128

Which of the following ionizes at physiological pH?

- glycine
- alanine
- histidine
- purine

**100 of 100**

266 PU\_2015\_128

Cytotoxic T cells generally recognise antigen in association with:-

- class II MHC determinants
- class I MHC determinants
- HLA-DR determinants
- class III MHC determinants