

DU MSc Genetics

Topic:- DU\_J18\_MSC\_GENETICS

**1) Which of the following statements about G proteins is FALSE?**

**[Question ID = 52123]**

1. They must be activated before the cell can make needed cAMP. [Option ID = 88487]
2. They become activated when bound to GDP. [Option ID = 88486]
3. They are involved in signal cascades. [Option ID = 88484]
4. They bind to and are regulated by guanine nucleotides. [Option ID = 88485]

**Correct Answer :-**

- They become activated when bound to GDP. [Option ID = 88486]

**2) Which one of the following statement about nitrogen fixation is correct?**

**[Question ID = 52072]**

1. Plants convert atmospheric nitrogen to ammonia [Option ID = 88281]
2. Mutant strains of rhizobium are able to secrete excess protein into the soil [Option ID = 88283]
3. The enzyme nitrogenase reduces  $N_2$  to form ammonia [Option ID = 88280]
4. Ammonia is converted to  $N_2$ , which is the form of nitrogen most easily absorbed by plants [Option ID = 88282]

**Correct Answer :-**

- The enzyme nitrogenase reduces  $N_2$  to form ammonia [Option ID = 88280]

**3) Which one of the following combination of scientist(s) and the experiment generated first conclusive evidence that DNA is the genetic material?**

**[Question ID = 52061]**

1. Watson and Crick who gave a model for the structure of DNA [Option ID = 88239]
2. Garrod, who postulated that Alkaptonuria, or black urine disease, is due to a mutation in the gene coding for important enzyme. [Option ID = 88237]
3. Beadle and Tatum, who used a mutational and biochemical analysis of the bread mold *Neurospora* to establish a direct link between genes and enzymes [Option ID = 88238]
4. Avery, MacLeod, and McCarty who repeated the transformation experiments and chemically characterized the transforming principle. [Option ID = 88236]

**Correct Answer :-**

- Avery, MacLeod, and McCarty who repeated the transformation experiments and chemically characterized the transforming principle. [Option ID = 88236]

**4) Which one of the following is the main contributor of the ascent of sap in the xylem vessels ?**

**[Question ID = 52073]**

1. Root pressure [Option ID = 88284]
2. Transpiration and cohesive forces [Option ID = 88285]
3. Capillary action [Option ID = 88286]
4. Atmospheric pressure [Option ID = 88287]

**Correct Answer :-**

- Transpiration and cohesive forces [Option ID = 88285]

**5) Which one of the following, studies the transcripts and proteins expressed by a genome?**

**[Question ID = 52071]**

1. Structural genomics [Option ID = 88277]
2. Comparative genomics [Option ID = 88276]
3. Proteo genomics [Option ID = 88278]
4. Functional genomics [Option ID = 88279]

**Correct Answer :-**

- Functional genomics [Option ID = 88279]

**6) Red hair is a recessive trait in humans. In a random mating population in Hardy-Weinberg equilibrium, approximately 9% of individuals are red-haired. What is the frequency of heterozygotes? [Question ID = 52140]**

1. 49% [Option ID = 88553]
2. 18% [Option ID = 88555]
3. 42% [Option ID = 88554]
4. 81% [Option ID = 88552]

**Correct Answer :-**

- 42% [Option ID = 88554]

**7) GTPase domain made up of alpha-helix and Beta pleated sheets in a certain relative orientation is an example of [Question ID = 52110]**

1. secondary structure [Option ID = 88433]
2. primary structure [Option ID = 88432]
3. quaternary structure [Option ID = 88435]
4. tertiary structure [Option ID = 88434]

**Correct Answer :-**

- tertiary structure [Option ID = 88434]

**8) The migration of a protein on an SDS polyacrylamide gel is best described as inversely proportional to the [Question ID = 52109]**

1. isoelectric point [Option ID = 88429]
2. log of carbohydrate content [Option ID = 88430]
3. log of molecular weight [Option ID = 88431]
4. negative charge [Option ID = 88428]

**Correct Answer :-**

- log of molecular weight [Option ID = 88431]

**9) Phenotypes such as beard in a woman is most likely a result of the malfunctioning of: [Question ID = 52080]**

1. Thyroid [Option ID = 88315]
2. Pituitary [Option ID = 88312]
3. Adrenal cortex [Option ID = 88313]
4. Adrenal medulla [Option ID = 88314]

**Correct Answer :-**

- Adrenal cortex [Option ID = 88313]

**10) In bacteria, partial diploids for a specific gene can be generated by**

**[Question ID = 52087]**

1. Conjugation using a Hfr strain [Option ID = 88342]
2. Conjugation using a F' [Option ID = 88343]
3. Generalized transduction [Option ID = 88341]
4. Transformation of chromosomal DNA [Option ID = 88340]

**Correct Answer :-**

- Conjugation using a F' [Option ID = 88343]

**11) In terms of *lac* operon regulation, what happens when *E. coli* is grown in medium containing both glucose and lactose?**

**[Question ID = 52117]**

1. Both CAP and *lac* repressor are bound to the DNA [Option ID = 88460]
2. CAP is bound to the DNA but the *lac* repressor is not [Option ID = 88461]
3. *Lac* repressor is bound to the DNA but CAP is not [Option ID = 88462]
4. Neither CAP nor the *lac* repressor are bound to the DNA [Option ID = 88463]

**Correct Answer :-**

- Neither CAP nor the *lac* repressor are bound to the DNA [Option ID = 88463]

**12) The degree of genetic relatedness between offspring and their parents is [Question ID = 52141]**

1. is one quarter [Option ID = 88559]
2. same as that between siblings [Option ID = 88558]
3. Lower than that between siblings [Option ID = 88557]
4. Higher than that between siblings [Option ID = 88556]

**Correct Answer :-**

- same as that between siblings [Option ID = 88558]

**13) 1 map unit or centimorgan (cM) is equal to [Question ID = 52122]**

1. 100% recombination [Option ID = 88483]
2. 1% recombination [Option ID = 88481]
3. 10% recombination [Option ID = 88482]
4. 0.1% recombination [Option ID = 88480]

**Correct Answer :-**

- 1% recombination [Option ID = 88481]

**14) Two genes X and Y are linked in cis. The genes are 20cM apart. If an individual with the genotype XxYy is test crossed what percentage of the progeny will have the genotype XxYy? [Question ID = 52150]**

1. 40 [Option ID = 88594]
2. 20 [Option ID = 88593]
3. 80 [Option ID = 88595]
4. 10 [Option ID = 88592]

**Correct Answer :-**

- 40 [Option ID = 88594]

**15) Two genes 'A' and 'B' are located on two different chromosomes of a diploid cell. If an individual heterozygous for the two genes is test-crossed what percentage of the progeny will be homozygous for at least one of the genes? [Question ID = 52132]**

1. 100 [Option ID = 88523]
2. 75 [Option ID = 88522]
3. 50 [Option ID = 88521]
4. 25 [Option ID = 88520]

**Correct Answer :-**

- 75 [Option ID = 88522]

**16) Two genes are located 70cM apart in the same chromosome. The percentage of recombination between the two genes would be: [Question ID = 52136]**

1. 35% [Option ID = 88537]
2. 70% [Option ID = 88536]
3. anywhere between 50% and 70% [Option ID = 88539]
4. ≤50% [Option ID = 88538]

**Correct Answer :-**

- ≤50% [Option ID = 88538]

**17) A second mutation in the same gene restores the wild-type phenotype. This phenomenon is referred to as [Question ID = 52147]**

1. intragenic suppression [Option ID = 88582]
2. reversion [Option ID = 88581]
3. intergenic complementation [Option ID = 88580]
4. epistasis [Option ID = 88583]

**Correct Answer :-**

- intragenic suppression [Option ID = 88582]

**18) During growth and division of *E. coli*, the daughter strand is recognized due to [Question ID = 52066]**

1. Nicks in newly synthesized DNA [Option ID = 88257]
2. Hemi-methylation of newly synthesized DNA [Option ID = 88256]
3. Double stranded breaks in newly synthesized DNA [Option ID = 88258]

4. DNA damage in newly synthesized DNA [Option ID = 88259]

**Correct Answer :-**

- Hemi-methylation of newly synthesized DNA [Option ID = 88256]

**19) In a typical gene cloning experiment, by mistake a researcher introduced the DNA of interest within ampicillin resistant gene instead of *lac z* gene. The competent cells were allowed to take up the plasmid and then plated in the media containing ampicillin, X-gal and IPTG and subjected to blue-white screening. Considering all plasmids were recombinant which one of the following statements correctly describes the outcome of the experiment?**

**[Question ID = 52096]**

1. All of the bacteria would grow and give white colonies. [Option ID = 88379]
2. The bacteria which took up the plasmids would grow and give blue colonies. [Option ID = 88376]
3. The bacteria which took up the plasmids would not grow. [Option ID = 88377]
4. The bacteria which took up the plasmids would form white colonies. [Option ID = 88378]

**Correct Answer :-**

- The bacteria which took up the plasmids would not grow. [Option ID = 88377]

**20) In a four-point (ABCD) cross between Hfr and F<sup>-</sup> strains of *E. coli*, the pair-wise frequencies of recombination fell in the following order :**

$$AB > AC > AD$$

**The most probable order of these genes on the bacterial chromosome would be:**

**[Question ID = 52088]**

1. ABDC [Option ID = 88347]
2. ABCD [Option ID = 88344]
3. ADCB [Option ID = 88346]
4. ACDB [Option ID = 88345]

**Correct Answer :-**

- ADCB [Option ID = 88346]

**21) The RNA components of ribosomes are synthesized in the \_\_\_\_\_. [Question ID = 52116]**

1. nucleolus [Option ID = 88458]
2. endoplasmic reticulum [Option ID = 88459]
3. nucleus [Option ID = 88457]
4. Cytoplasm [Option ID = 88456]

**Correct Answer :-**

- nucleolus [Option ID = 88458]

**22) Within the aqueous environment of an animal cell, sugars are stored as polymers rather than as monomers. If the sugars were stored as monomers instead of polymers, which of the following properties would be LEAST affected?**

**[Question ID = 52099]**

1. pH [Option ID = 88391]
2. Freezing point [Option ID = 88388]
3. Boiling point [Option ID = 88389]
4. Viscosity [Option ID = 88390]

**Correct Answer :-**

- pH [Option ID = 88391]

**23) The key difference between dominance and epistasis is: [Question ID = 52144]**

1. dominance deals with two alleles; epistasis deals with two genes [Option ID = 88568]
2. dominance fits with Mendel's laws; epistasis is an exception to independent assortment [Option ID = 88571]
3. epistasis is a case of incomplete dominance [Option ID = 88569]
4. dominance expresses a relationship between two alleles; epistasis involves three or more [Option ID = 88570]

**Correct Answer :-**

- dominance deals with two alleles; epistasis deals with two genes [Option ID = 88568]

**24) The end product of glycolysis of a glucose molecule is: [Question ID = 52093]**

1. 2 Pyruvate, NADH<sub>2</sub> and 2 ATP [Option ID = 88364]
2. Pyruvate, NADH<sub>2</sub> and ADP [Option ID = 88366]
3. 2 Pyruvate, 2NADH<sub>2</sub> and ATP [Option ID = 88365]
4. Pyruvate, 2H<sup>+</sup>, 2e<sup>-</sup> and 4 ATP [Option ID = 88367]

**Correct Answer :-**

**25) During eukaryotic cell division, metaphase to anaphase transition is regulated by degradation of [Question ID = 52095]**

1. Cyclin B1 [Option ID = 88372]
2. Aurora A kinase [Option ID = 88374]
3. CDK1 [Option ID = 88373]
4. Polo-like kinase [Option ID = 88375]

**Correct Answer :-**

- Cyclin B1 [Option ID = 88372]

**26) Fluorescence recovery after photobleaching in live cells is used to determine [Question ID = 52105]**

1. Co-localization of proteins [Option ID = 88412]
2. Diffusion of proteins [Option ID = 88414]
3. Distance between two organelles [Option ID = 88413]
4. Nucleic acid compactness [Option ID = 88415]

**Correct Answer :-**

- Diffusion of proteins [Option ID = 88414]

**27) Monozygotic twin studies in humans are useful because: [Question ID = 52155]**

1. twins have a greater likelihood of being heterozygous for a given trait [Option ID = 88613]
2. more refined estimates can be made regarding location of the genes on chromosomes [Option ID = 88612]
3. they allow a true estimate of the environmental influences on phenotypic variation [Option ID = 88614]
4. they allow a true estimate of the genetic influence on phenotypic variation [Option ID = 88615]

**Correct Answer :-**

- they allow a true estimate of the environmental influences on phenotypic variation [Option ID = 88614]

**28) Plasmid vectors used in cloning experiments often contain a fragment encoding the N-terminal 146 amino acids of β-galactosidase gene because:**

**[Question ID = 52067]**

1. It enables the plasmid vector to replicate in *E. coli* host cells [Option ID = 88263]
2. It facilitates the ligation of the insert into the vector [Option ID = 88262]
3. It allows selection of *E. coli* host cells that contain plasmid in which the insert has been ligated [Option ID = 88261]
4. It allows selection of *E. coli* host cells that contain the plasmid [Option ID = 88260]

**Correct Answer :-**

- It allows selection of *E. coli* host cells that contain plasmid in which the insert has been ligated [Option ID = 88261]

**29) Calvin cycle represents one of the following phenomenon: [Question ID = 52074]**

1. Oxidative carboxylation [Option ID = 88290]
2. Dark respiration [Option ID = 88289]
3. Reductive carboxylation [Option ID = 88291]
4. Dark phosphorylation [Option ID = 88288]

**Correct Answer :-**

- Reductive carboxylation [Option ID = 88291]

**30)**

**When water is sprinkled on a red-hot iron plate, the drops become spherical and do not vaporize at once because: [Question ID = 52063]**

1. A layer of water vapour is formed between the plate and the drops which prevent heat conduction [Option ID = 88246]
2. At this place the temperature of the hot plate falls [Option ID = 88244]
3. Water molecules aggregate into drops [Option ID = 88247]
4. Boiling point of water rises [Option ID = 88245]

**Correct Answer :-**

- A layer of water vapour is formed between the plate and the drops which prevent heat conduction [Option ID = 88246]

**31) The initial mechanism for repairing nucleotide errors in DNA during replication is \_\_\_\_\_. [Question ID = 52113]**

1. thymine dimers [Option ID = 88447]
2. nucleotide excision repair [Option ID = 88446]
3. DNA polymerase proofreading [Option ID = 88445]
4. mismatch repair [Option ID = 88444]

**Correct Answer :-**

- DNA polymerase proofreading [Option ID = 88445]

**32) Why is it that inhaling nitric oxide reduces blood pressure only in lung tissue and not elsewhere in the body? Because [Question ID = 52077]**

1. nitric oxide cannot cross plasma membranes [Option ID = 88301]
2. nitric oxide cannot enter the bloodstream [Option ID = 88303]
3. other body tissues use a different signalling molecule [Option ID = 88300]
4. nitric oxide breaks down quickly and thus cannot travel far [Option ID = 88302]

**Correct Answer :-**

- nitric oxide breaks down quickly and thus cannot travel far [Option ID = 88302]

**33) A non-competitive inhibitor of an enzyme-catalyzed reaction: [Question ID = 52062]**

1. reduces  $K_M$  and increases  $V_{max}$  [Option ID = 88242]
2. no effect on  $K_M$  and reduces  $V_{max}$  [Option ID = 88241]
3. reduces  $K_M$  and reduces  $V_{max}$  [Option ID = 88243]
4. increases  $K_M$  and increases  $V_{max}$  [Option ID = 88240]

**Correct Answer :-**

- no effect on  $K_M$  and reduces  $V_{max}$  [Option ID = 88241]

**34) Removal of gene activity of A from a linear pathway results in higher than normal levels of transcripts from gene B. A reasonable hypothesis would be that:**

**[Question ID = 52075]**

1. Gene B must act upstream to gene A [Option ID = 88292]
2. Increase in transcript B abundance is an experimental error [Option ID = 88295]
3. Gene A has no relation to transcript of gene B [Option ID = 88293]
4. Gene B acts downstream to gene A and is regulated by A directly or indirectly [Option ID = 88294]

**Correct Answer :-**

- Gene B acts downstream to gene A and is regulated by A directly or indirectly [Option ID = 88294]

**35) A condition where the genotypic ratio obeys Mendelian laws while the phenotypic ratio does not is referred as: [Question ID = 52149]**

1. test cross [Option ID = 88590]
2. back cross [Option ID = 88591]
3. epistasis [Option ID = 88589]
4. incomplete dominance [Option ID = 88588]

**Correct Answer :-**

- incomplete dominance [Option ID = 88588]

**36) In human, cell cycle is regulated by all of the following EXCEPT: [Question ID = 52126]**

1. Ubiquitinylation of proteins [Option ID = 88496]
2. Synthesis of cyclin proteins [Option ID = 88498]
3. Proteolysis of Cdk's [Option ID = 88497]
4. Proteolysis of cyclin proteins [Option ID = 88499]

**Correct Answer :-**

- Proteolysis of Cdk's [Option ID = 88497]

**37) If a cell makes both a signalling molecule and the receptor for that signalling molecule, what is this mode of signalling termed? [Question ID = 52081]**

1. Endocrine [Option ID = 88317]
2. Juxtacrine [Option ID = 88319]
3. Autocrine [Option ID = 88318]
4. Paracrine [Option ID = 88316]

**Correct Answer :-**

- Autocrine [Option ID = 88318]

**38) In meiosis, an inversion in one member of a pair of homologous chromosomes will most likely lead to: [Question ID = 52138]**

1. Chromosomes with duplications and deficiencies [Option ID = 88545]
2. Increased recombination frequency in the inverted region [Option ID = 88546]
3. Nondisjunction of the affected chromosome [Option ID = 88544]
4. Mispairing of the affected chromosome with a non-homologous chromosome [Option ID = 88547]

**Correct Answer :-**

- Chromosomes with duplications and deficiencies [Option ID = 88545]

**39) In which of the following regions of a eukaryotic gene will a point mutation most likely have a major negative impact on the function of the encoded protein? [Question ID = 52108]**

1. The third nucleotide of a codon in the first exon [Option ID = 88426]
2. The first nucleotide of a codon in the first exon [Option ID = 88427]
3. The TATA box in the promoter [Option ID = 88424]
4. The 5'UTR [Option ID = 88425]

**Correct Answer :-**

- The first nucleotide of a codon in the first exon [Option ID = 88427]

**40) In an experiment, clones of a plant is grown in a field. The plants were observed to be of different heights. When a graph is plotted for frequency of plants (Y-axis) against different heights( X-axis). A bell shaped curve was obtained. From the above it can be concluded that the observed variation in height is due to [Question ID = 52143]**

1. It being a polygenic trait [Option ID = 88564]
2. environment influencing different genotypes differently [Option ID = 88567]
3. Variation in genotype [Option ID = 88566]
4. Environmental effect [Option ID = 88565]

**Correct Answer :-**

- Environmental effect [Option ID = 88565]

**41) A cross between two independent mutants of Drosophila with vestigial wings results in all the F<sub>1</sub> progeny being wild type. This is because of:**

**[Question ID = 52154]**

1. Dominance [Option ID = 88608]
2. Suppression [Option ID = 88611]
3. Complementation [Option ID = 88610]
4. Epistasis [Option ID = 88609]

**Correct Answer :-**

- Complementation [Option ID = 88610]

**42) In *E. coli* different subsets of genes are transcribed under different stress conditions such as heat shock or nitrogen starvation. RNA polymerase achieves this by employing different sets of**

**[Question ID = 52115]**

1. beta subunit [Option ID = 88454]
2. alpha subunit [Option ID = 88455]
3. omega subunit [Option ID = 88453]
4. sigma subunit [Option ID = 88452]

**Correct Answer :-**

- sigma subunit [Option ID = 88452]

**43) Somatic cell hybridisation between man and mouse cells results in**

**[Question ID = 52069]**

1. Loss of mouse chromosomes [Option ID = 88268]
2. Loss of human chromosomes [Option ID = 88269]
3. Chromosome fusions [Option ID = 88270]
4. Chromosomal aberrations [Option ID = 88271]

**Correct Answer :-**

- Loss of human chromosomes [Option ID = 88269]

**44) Identify the correct match between the animal (flatworm, earthworm, roundworm) and its body cavity type (acoelomate, coelomate, pseudocoelomate): [Question ID = 52084]**

1. Roundworm – pseudocoelomate; Earthworm – coelomate; Flatworm – acoelomate [Option ID = 88330]
2. Roundworm – pseudocoelomate; Earthworm - acoelomate; Flatworm – coelomate [Option ID = 88328]
3. Roundworm –coelomate; Earthworm – pseudocoelomate; Flatworm – acoelomate [Option ID = 88331]
4. Roundworm – acoelomate; Earthworm – coelomate; Flatworm – acoelomate [Option ID = 88329]

**Correct Answer :-**

- Roundworm – pseudocoelomate; Earthworm – coelomate; Flatworm – acoelomate [Option ID = 88330]

**45) Which, of the following statements are FALSE?**

**i) Most of the inherited changes in our DNA arise because of exposure to extracellular mutagens, including radiation sources and chemical mutagens.**

**ii) Most of the inherited changes in our DNA arise because of unavoidable endogenous errors in cellular mechanisms and harmful effects of certain natural molecules and atoms within our cells.**

**iii) Errors in DNA replication and DNA repair are a major source of mutations in our cells.**

**iv) Significant chemical damage is sustained by DNA because of its proximity to water molecules in our cells. [Question ID = 52130]**

1. Only (i) & (ii) [Option ID = 88512]
2. i, ii, iii [Option ID = 88513]
3. only (iv) [Option ID = 88515]
4. only (i) & (iv) [Option ID = 88514]

**Correct Answer :-**

- only (i) & (iv) [Option ID = 88514]

**46) G-banding of metaphase chromosomes are [Question ID = 52107]**

1. Phyla specific [Option ID = 88420]
2. Species specific [Option ID = 88423]
3. Family specific [Option ID = 88421]
4. Genus specific [Option ID = 88422]

**Correct Answer :-**

- Species specific [Option ID = 88423]

**47) What is the anticodon sequence of tRNA used to translate the codon 5' AUU 3' present in the sequence of DNA template strand? [Question ID = 52124]**

1. 5' UAA-3' [Option ID = 88488]
2. 5'AUU-3' [Option ID = 88489]
3. 5' UUA-3' [Option ID = 88490]
4. 5' AAU-3' [Option ID = 88491]



**Correct Answer :-**

- 5' AAU-3' [Option ID = 88491]

**48) Substrate-level phosphorylation is catalyzed by which of the following enzymes? [Question ID = 52098]**

1. Pyruvate kinase [Option ID = 88386]
2. Hexokinase [Option ID = 88384]
3. Glycerol kinase [Option ID = 88385]
4. Galactokinase [Option ID = 88387]

**Correct Answer :-**

- Pyruvate kinase [Option ID = 88386]

**49) During generation of a knockout mouse using homologous recombination, a viral thymidine kinase gene is often included in the vector outside of the region of homology between the vector and targeted chromosome. Which one of the following statement could best explain the purpose of this? [Question ID = 52129]**

1. To allow negative selection of cells in which integration of the targeting sequence has occurred by homologous recombination [Option ID = 88509]
2. To allow positive selection of cells in which integration of the targeting sequence has occurred by homologous recombination [Option ID = 88510]
3. To allow positive selection of cells in which integration of the targeting sequence has occurred by random insertion into the genome [Option ID = 88511]
4. To allow negative selection of cells in which integration of the targeting sequence has occurred by random insertion into the genome [Option ID = 88508]

**Correct Answer :-**

- To allow negative selection of cells in which integration of the targeting sequence has occurred by random insertion into the genome [Option ID = 88508]

**50) Following are some statements related to concepts of genetics:**

- i. Segregation of alleles can occur at Anaphase II of meiosis
- ii. The alignment of chromosomes at Metaphase I leads to independent assortment
- iii. Independent assortment can lead to variation

**Which of the above statements are correct? [Question ID = 52135]**

1. Only (i) [Option ID = 88532]
2. Only (ii) [Option ID = 88533]
3. All (i), (ii) and (iii) [Option ID = 88535]
4. Both (i) and (ii) [Option ID = 88534]

**Correct Answer :-**

- All (i), (ii) and (iii) [Option ID = 88535]

**51) If there were a gene for intelligence and the effect of that gene was altered by the inheritance of another gene, the latter gene would be referred to as a: [Question ID = 52142]**

1. Regulator gene [Option ID = 88560]
2. Sex controlled gene [Option ID = 88562]
3. Modifier gene [Option ID = 88561]
4. Pleiotropic gene [Option ID = 88563]

**Correct Answer :-**

- Modifier gene [Option ID = 88561]

**52) The number of introns in cDNA having 7 exons are [Question ID = 52125]**

1. 0 [Option ID = 88493]
2. 6 [Option ID = 88495]
3. 8 [Option ID = 88494]
4. 7 [Option ID = 88492]

**Correct Answer :-**

- 0 [Option ID = 88493]

**53) The primary effect of selection is to reduce the variability. The reduction in the frequency of extreme phenotypes by selection is called: [Question ID = 52127]**

1. Stabilizing selection [Option ID = 88501]
2. Cyclical selection [Option ID = 88502]
3. Disruptive selection [Option ID = 88503]
4. Directional selection [Option ID = 88500]

**Correct Answer :-**

- Stabilizing selection [Option ID = 88501]

**54) The watery graveyard on earth for titanium fuel tanks and other high-tech space debris is better known as [Question ID = 52059]**

1. Final destination point [Option ID = 88230]
2. Point Zero [Option ID = 88229]
3. Point Nemo [Option ID = 88228]
4. Doomsday point [Option ID = 88231]

**Correct Answer :-**

- Point Nemo [Option ID = 88228]

**55) An auxotrophic mutant arises spontaneously in a wild type *E. coli* culture growing in a nutrient rich medium. Which one of the following techniques should be used to ensure the isolation of the auxotrophic mutant?**

**[Question ID = 52060]**

1. Replica plating [Option ID = 88232]
2. Direct microscopic observation [Option ID = 88234]
3. Antibiotic selection [Option ID = 88235]
4. Streaking for single colonies [Option ID = 88233]

**Correct Answer :-**

- Replica plating [Option ID = 88232]

**56) Which of the following receptors is NOT present on cell surface? [Question ID = 52079]**

1. Steroid hormone receptors [Option ID = 88311]
2. Enzyme linked receptors [Option ID = 88308]
3. Ion-channel linked receptors [Option ID = 88309]
4. G protein coupled receptors [Option ID = 88310]

**Correct Answer :-**

- Steroid hormone receptors [Option ID = 88311]

**57) Which of the following processes is an example of allosteric regulation of protein activity? [Question ID = 52100]**

1. Enzyme inhibition due to ATP binding [Option ID = 88395]
2. Chaperonin-mediated protein folding [Option ID = 88392]
3. Enzyme activation by a protein kinase [Option ID = 88393]
4. Transit of the nuclear pore by RNA polymerase [Option ID = 88394]

**Correct Answer :-**

- Enzyme inhibition due to ATP binding [Option ID = 88395]

**58) Which one of the following statements about chromatin is NOT true? [Question ID = 52094]**

1. DNA winds approximately 1.65 times around the nucleosomes [Option ID = 88368]
2. H2A-H2B bind to both the entry and exit ends of DNA in nucleosomes [Option ID = 88369]
3. Non-histone proteins are part of mitotic chromosomes [Option ID = 88371]
4. Covalent modification of histones influence chromatin compaction [Option ID = 88370]

**Correct Answer :-**

- H2A-H2B bind to both the entry and exit ends of DNA in nucleosomes [Option ID = 88369]

**59) Which one of the following DNA polymerase is essential for both replication and repair of DNA in prokaryote? [Question ID = 52118]**

1. DNA polymerase I [Option ID = 88464]
2. DNA polymerase delta [Option ID = 88467]
3. DNA polymerase II [Option ID = 88465]
4. DNA polymerase III [Option ID = 88466]

**Correct Answer :-**

- DNA polymerase I [Option ID = 88464]

**60) X-rays passing through a strong uniform magnetic field: [Question ID = 52065]**

1. Do not get deflected at all [Option ID = 88255]

2. Get deflected in the opposite direction of the field [Option ID = 88253]
3. Get deflected in the direction of the field [Option ID = 88252]
4. Get deflected in the direction perpendicular to that of the field [Option ID = 88254]

**Correct Answer :-**

- Do not get deflected at all [Option ID = 88255]

**61) In which one of the following microscopy techniques the specimen interfere with the wavelength of light to produce a high contrast image without the need of dyes or any damage to the sample? [Question ID = 52101]**

1. Atomic force microscopy [Option ID = 88398]
2. Fluorescence microscopy [Option ID = 88399]
3. Phase contrast microscopy [Option ID = 88397]
4. Bright field light microscopy [Option ID = 88396]

**Correct Answer :-**

- Phase contrast microscopy [Option ID = 88397]

**62) The value of which of the following parameters is zero when the cell is fully turgid? [Question ID = 52076]**

1. Osmotic pressure [Option ID = 88298]
2. Diffusion pressure deficit/water potential [Option ID = 88299]
3. Turgor pressure/potential pressure [Option ID = 88296]
4. Wall pressure [Option ID = 88297]

**Correct Answer :-**

- Diffusion pressure deficit/water potential [Option ID = 88299]

**63) Organism with multiple sets of chromosomes from different species is called: [Question ID = 52146]**

1. Allopolyploid [Option ID = 88578]
2. Gametopolyploid [Option ID = 88577]
3. Autopolyploid [Option ID = 88579]
4. Heteropolyploid [Option ID = 88576]

**Correct Answer :-**

- Allopolyploid [Option ID = 88578]

**64) Non-pigmented bacterial suspensions also show optical density in visible light, because of [Question ID = 52070]**

1. non-specific refraction of light [Option ID = 88274]
2. scattering of light [Option ID = 88275]
3. absorption of light of specific wavelength [Option ID = 88272]
4. refraction of specific wavelengths of light [Option ID = 88273]

**Correct Answer :-**

- scattering of light [Option ID = 88275]

**65) A mixture of soluble proteins containing proteins X and Y is immunoprecipitated using anti-protein X antibody. Both protein X and protein Y are immunoprecipitated. Which of the following does NOT explain this observation? [Question ID = 52097]**

1. Protein X and protein Y are present in the same organelle [Option ID = 88383]
2. Protein X and protein Y are covalently bound. [Option ID = 88381]
3. Protein Y is a truncated version of protein X. [Option ID = 88382]
4. Protein X and protein Y are part of the same multimeric complex. [Option ID = 88380]

**Correct Answer :-**

- Protein X and protein Y are present in the same organelle [Option ID = 88383]

**66) A breeder identified a variegation mutant in the leaf colour in a normal green population of maize. To study the genetics of this mutant he made a cross between variegated and green plants using variegated as the female parent. All the F<sub>1</sub> and F<sub>2</sub> progeny were variegated. The leaf variegation in maize could be due to:**

**[Question ID = 52151]**

1. Maternal inheritance [Option ID = 88598]
2. Maternal effect [Option ID = 88596]
3. Mendelian inheritance [Option ID = 88597]
4. Mendelian inheritance, with variegated being dominant over green [Option ID = 88599]

**Correct Answer :-**

- Maternal inheritance [Option ID = 88598]

67) Which one of the following changes will not alter the sequence of the encoded protein?

- Codon optimization
- Gene methylation
- Synonymous mutation
- Missense mutation

**[Question ID = 52119]**

1. i & iii [Option ID = 88469]
2. ii & iii [Option ID = 88470]
3. i & iv [Option ID = 88468]
4. i, ii, & iii [Option ID = 88471]

**Correct Answer :-**

- i, ii, & iii [Option ID = 88471]

68) The genotype of  $F_1$  individuals in a tetrahybrid cross is  $AaBbCcDd$ . Assuming that genes are independently assorting, what is the probability that the  $F_2$  progeny will have the genotype  $AABbccDd$ ?

**[Question ID = 52133]**

1.  $2/256$  [Option ID = 88527]
2.  $1/256$  [Option ID = 88526]
3.  $1/64$  [Option ID = 88524]
4.  $2/64$  [Option ID = 88525]

**Correct Answer :-**

- $1/64$  [Option ID = 88524]

69) How should a student prepare 100 mL of a 1.0 M  $H_2SO_4$  solution from a 10M  $H_2SO_4$  solution?

**[Question ID = 52089]**

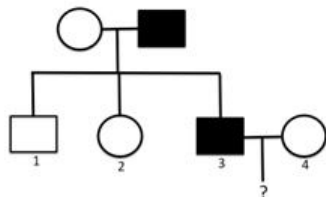
1. Adding 10 mL of 10M  $H_2SO_4$  to 90 mL of  $H_2O$  [Option ID = 88349]
2. Adding 10 mL of 10M  $H_2SO_4$  to 80 mL of  $H_2O$ , stirring and diluting to 100 mL after allowing to cool [Option ID = 88350]
3. Adding 80 mL of  $H_2O$  to 10 mL of 10M  $H_2SO_4$ , stirring and diluting to 100 mL after allowing to cool [Option ID = 88351]
4. Adding 90 mL of  $H_2O$  to 10 mL of 10M  $H_2SO_4$  [Option ID = 88348]

**Correct Answer :-**

- Adding 10 mL of 10M  $H_2SO_4$  to 80 mL of  $H_2O$ , stirring and diluting to 100 mL after allowing to cool [Option ID = 88350]

70)

The following is a pedigree of a family from a marriage between first cousins. The family shows a rare X-linked trait whose inheritance pattern is shown below. The son (individual-3) showing the trait marries outside the family?



The following statements were made regarding the above trait:

- i. The trait is recessive.
- ii. The trait is dominant.
- iii. The probability that the daughter (individual 2) is a carrier is 0.
- iv. The probability that the daughter (individual 2) is a carrier is 1.
- v. The probability that a son (?) born to individual 3 and 4 will show the trait is 0.
- vi. The probability that a son (?) born to individual 3 and 4 will show the trait is  $\frac{1}{2}$ .

Which of the above statements are correct?

Ac

[Question ID = 52152]

1. (i), (iv) and (v) [Option ID = 88601]
2. (ii), (iii) and (vi) [Option ID = 88602]
3. (ii), (iv) and (v) [Option ID = 88603]
4. (i), (iii) and (vi) [Option ID = 88600]

**Correct Answer :-**

- (i), (iv) and (v) [Option ID = 88601]

**71)** The basic unit of radioactive decay is Curie (Ci). 1Ci is equivalent to  $2.22 \times 10^{12}$  dpm (disintegrations per minute). The disintegrations actually detected by an instrument are referred to as counts per minute (cpm).  $\text{cpm} = \text{dpm} \times \text{detection efficiency}$ . For example if an instrument has 25% efficiency,  $100 \text{ cpm} = 400 \text{ dpm}$ . (Use this information for answering the question below)

The radioactivity in a material was measured to be  $5.55 \times 10^{10} \text{ cpm}$  using an instrument with 50% efficiency. How many Curies does this correspond to?

[Question ID = 52104]

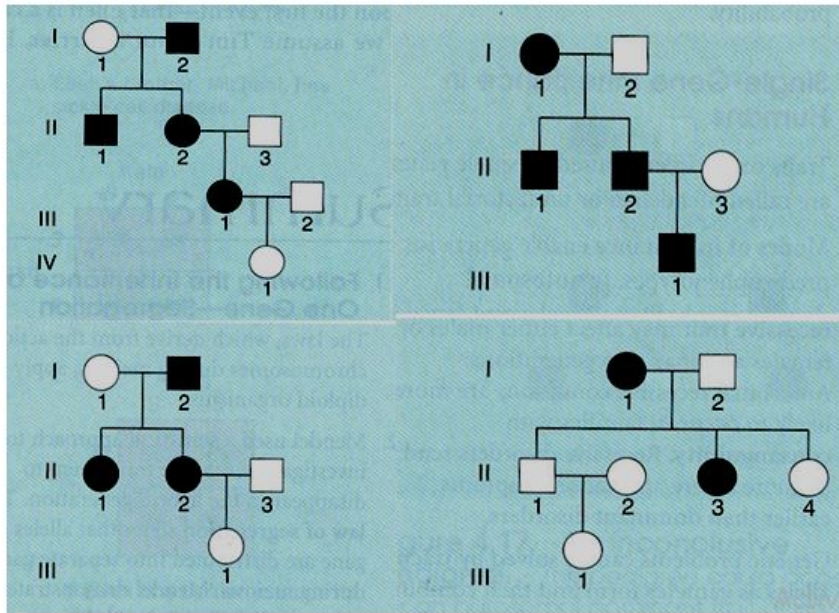
1. 5.0 Ci [Option ID = 88410]
2. 0.5 Ci [Option ID = 88409]
3. 0.05 Ci [Option ID = 88408]
4. 50 Ci [Option ID = 88411]

**Correct Answer :-**

- 0.05 Ci [Option ID = 88408]

**72)**

Below are four pedigrees depicting families with achondroplasia, a common form of hereditary dwarfism. What is the most likely mode of inheritance?



[Question ID = 52157]

1. X-linked dominant [Option ID = 88622]
2. Autosomal recessive [Option ID = 88621]
3. Autosomal dominant [Option ID = 88620]
4. X-linked recessive [Option ID = 88623]

**Correct Answer :-**

- Autosomal dominant [Option ID = 88620]

73) You have a mixture of three proteins in a Tris-Cl, pH7.5 solution with the following molecular weight (mw) and isoelectric point (pI): P1 (mw 40 kDa, pI 7.4), P2 (mw 150 kDa, pI 7.2) and P3 (mw 250 kDa, pI 7.3) respectively. What would be the most appropriate technique to separate them in an active form?

[Question ID = 52111]

1. Immunoprecipitation [Option ID = 88439]
2. Anion exchange chromatography [Option ID = 88438]
3. Affinity chromatography [Option ID = 88436]
4. Size exclusion chromatography [Option ID = 88437]

**Correct Answer :-**

- Size exclusion chromatography [Option ID = 88437]

74) 0.1 ml of a bacterial culture is diluted into 9.9 ml of buffer; 0.1 ml of this dilution is again diluted in 9.9 ml of fresh buffer. Plating 0.1 ml from the second dilution tube yields 72 colonies on a petri plate. What is the cell density of the original culture?

[Question ID = 52121]

1.  $7.2 \times 10^8$  cfu/ml [Option ID = 88479]
2.  $7.2 \times 10^6$  cfu/ml [Option ID = 88477]
3.  $7.2 \times 10^5$  cfu/ml [Option ID = 88476]
4.  $7.2 \times 10^7$  cfu/ml [Option ID = 88478]

**Correct Answer :-**

- $7.2 \times 10^6$  cfu/ml [Option ID = 88477]

75) The genotypes of a husband and wife are  $I^A I^B \times I^A i$ . Among the blood types of their children, how many different genotypes and phenotypes are possible?

[Question ID = 52128]

1. 3 genotypes; 4 phenotypes [Option ID = 88504]
2. 3 genotypes; 3 phenotypes [Option ID = 88506]
3. 4 genotypes; 3 phenotypes [Option ID = 88507]
4. 4 genotypes; 4 phenotypes [Option ID = 88505]

**Correct Answer :-**

- 4 genotypes; 3 phenotypes [Option ID = 88507]

76) It was important that Mendel examined not just the  $F_1$  generation in his breeding experiments, but the  $F_2$  generation as well, because

[Question ID = 52131]

1. many of the  $F_1$  progeny died [Option ID = 88518]  
parental traits not observed in the  $F_1$  generation reappeared in  $F_2$  generation [Option ID = 88517]
2. he obtained very few  $F_1$  progeny, making statistical analysis was difficult [Option ID = 88516]  
the dominant phenotypes were visible in the  $F_2$  generation, but not the  $F_1$  generation [Option ID = 88519]
3. he obtained very few  $F_1$  progeny, making statistical analysis was difficult [Option ID = 88516]  
the dominant phenotypes were visible in the  $F_2$  generation, but not the  $F_1$  generation [Option ID = 88519]
4. he obtained very few  $F_1$  progeny, making statistical analysis was difficult [Option ID = 88516]  
the dominant phenotypes were visible in the  $F_2$  generation, but not the  $F_1$  generation [Option ID = 88519]

**Correct Answer :-**

- parental traits not observed in the  $F_1$  generation reappeared in  $F_2$  generation [Option ID = 88517]

77) The level of a pigment in an organism, is controlled by a single gene with many alleles. Two individuals with varying levels of pigment are crossed to obtain  $F_1$  progeny. The level of pigments in the parents and the  $F_1$  is as follows:

Parent A = 100, Parent B = 10,  $F_1$  = 60

Based on this observation, which one of the following best explains the relationship between the pair of alleles governing pigment levels in parents A and B?

[Question ID = 52134]

1. Over-dominance [Option ID = 88530]
2. Incomplete dominance [Option ID = 88528]
3. Polygenic [Option ID = 88531]
4. Co-dominance [Option ID = 88529]

**Correct Answer :-**

- Incomplete dominance [Option ID = 88528]

78)



The following statements were made about polytene chromosomes in *Drosophila*:

- i. Polytene chromosomes are arrested in the metaphase stage of the division without dissolving the synaptonemal complex
- ii. A pair of homologous are synapsed to make the arms of a polytene chromosome
- iii. The chromocentre of the polytene chromosome is formed by the fusion of the centromeres
- iv. Polytene chromosomes are transcriptionally active

Which of the above statements are CORRECT?

[Question ID = 52085]

1. Statements (i), (ii) and (iii) [Option ID = 88335]
2. Statements (iii) and (iv) only [Option ID = 88333]
3. Statements (i), (ii) and (iv) [Option ID = 88332]
4. Statements (ii), (iii) and (iv) [Option ID = 88334]

**Correct Answer :-**

- Statements (ii), (iii) and (iv) [Option ID = 88334]

79) The quantity of DNA can be measured by taking absorbance of a sample at 260 nm. Consider that 1OD corresponds to 50 µg DNA/mL. A 2mL sample of DNA showed an OD of 0.5. What is the amount of DNA (in ng) in 200µL of the DNA sample?

[Question ID = 52103]

1. 250 [Option ID = 88404]
2. 1000 [Option ID = 88405]
3. 2500 [Option ID = 88406]
4. 5000 [Option ID = 88407]

**Correct Answer :-**

- 5000 [Option ID = 88407]

80) A phenotypic ratio of 9:3:3:1 was obtained in the F<sub>2</sub> progeny of the dihybrid cross in the experiment of Gregor Mendel.

The following statements refer to the above finding:

- i. The two alleles of a gene have a dominant-recessive relationship
- ii. The two alleles are co-dominant
- iii. The alleles of a gene segregate from each other
- iv. The genes assort independently

Which of the above statements are correct?

[Question ID = 52153]

1. Only iv. [Option ID = 88604]
2. i, ii, iii and iv [Option ID = 88607]
3. i, iii and iv [Option ID = 88606]
4. Only i and iv [Option ID = 88605]

**Correct Answer :-**

- i, iii and iv [Option ID = 88606]

81)



In humans a gene can be mapped to a chromosome by somatic cell hybridization. In this technique, human and mouse somatic cells are fused. In the human-mouse cell hybrids, the human chromosomes are gradually lost in a random fashion. Thus different cell lines derived from the hybrid contain fewer sets of the human chromosomes. The human chromosomes in the hybrid cells can be identified by banding techniques and the presence of the gene under study can be identified in the different cell lines by studying the protein encoded by it. A gene mapping experiment was carried out to identify the location of gene 'X' using the above strategy, results of which is summarized below:

Cell Line	A	B	C	D	E	F	G
Protein X	+	-	+	+	-	-	-
Chromosome 3	+	+	+	-	-	+	-
Chromosome 5	-	-	+	+	+	-	+
Chromosome 6	+	-	+	+	-	-	-
Chromosome 8	+	+	-	-	-	+	+
Chromosome 9	-	+	-	-	+	+	-

Based on the above data identify the chromosome on which gene 'X' is located.

[Question ID = 52137]

1. Chromosome 9 [Option ID = 88543]
2. Chromosome 3 [Option ID = 88540]
3. Chromosome 8 [Option ID = 88542]
4. Chromosome 6 [Option ID = 88541]

**Correct Answer :-**

- Chromosome 6 [Option ID = 88541]

82) Eukaryotic cells and their organelles are disrupted by sonication. A centrifuge is used to separate soluble and insoluble components. Protein X is found in the insoluble fraction following centrifugation. The insoluble fraction is treated with 0.5 M NaCl and centrifugation is repeated. Protein X is still found in the insoluble fraction. The insoluble fraction is now treated with 2% non ionic detergent such as Triton X-100 and centrifugation is repeated. Protein X is now found in the soluble fraction. Protein X would be best described as

[Question ID = 52090]

1. a soluble nuclear protein [Option ID = 88355]
2. a peripheral membrane protein [Option ID = 88353]
3. a soluble cytoplasmic protein [Option ID = 88354]
4. an integral membrane protein [Option ID = 88352]

**Correct Answer :-**

- an integral membrane protein [Option ID = 88352]

83) In a study, it was found that  $K^+$  ion concentration in the root cells of Arabidopsis plant was ~100 fold more than that of the nutrient medium in which the plant was grown. This indicated that  $K^+$  ions were absorbed from the medium

[Question ID = 52106]

1. by an active, energy dependent process [Option ID = 88417]
2. because the plants were grown continuously in the dark [Option ID = 88416]
3. through plasmodesmatal connections between the epidermis and the medium [Option ID = 88419]
4. by simple diffusion [Option ID = 88418]

**Correct Answer :-**

- by an active, energy dependent process [Option ID = 88417]

84) What is the pH of a solution whose  $H^+$  concentration is 0.0001 moles per litre?

[Question ID = 52091]

1. 2 [Option ID = 88356]
2. 6 [Option ID = 88358]
3. 8 [Option ID = 88359]
4. 4 [Option ID = 88357]

Correct Answer :-

- 4 [Option ID = 88357]

85) Choose the correct ordering of the following events in meiosis.

- (1) Homologous chromosomes separate
- (2) Chromosomes split at the centromere and sister chromatids separate
- (3) Homologous chromosomes pair
- (4) Homologous chromosomes recombine

[Question ID = 52156]

1. (2), (3), (4), (1) [Option ID = 88617]
2. (4), (3), (1), (2) [Option ID = 88616]
3. (3), (4), (1), (2) [Option ID = 88618]
4. (3), (4), (2), (1) [Option ID = 88619]

Correct Answer :-

- (3), (4), (1), (2) [Option ID = 88618]

86) A mutant *E. coli* strain synthesizes the enzymes permease and  $\beta$ -galactosidase irrespective of the presence of the inducer (allolactose). This can result from

- (i) mutations in the operator region
- (ii) mutations in the repressor gene
- (iii) mutations in the structural genes
- (iv) mutations in the promoter region

Which of the above options are correct?

[Question ID = 52092]

1. Both (i) and (iv) [Option ID = 88363]
2. Both (ii) and (iii) [Option ID = 88361]
3. Both (i) and (ii) [Option ID = 88362]
4. Both (ii) and (iv) [Option ID = 88360]

Correct Answer :-

- Both (i) and (ii) [Option ID = 88362]

87) Rifampicin, an inhibitor of RNA polymerase, is added to a bacterial culture. The culture is immediately divided into three fractions, to which radioactive thymine or uracil or methionine are added, respectively. Five minutes later the cells are lysed and the radioactive label in all macromolecules is monitored. What will you observe? [Question ID = 52086]

1. The labels will be equally incorporated [Option ID = 88336]
2. Thymine and methionine incorporation will be greater than uracil [Option ID = 88339]
3. Uracil incorporated is similar to methionine but less than thymine [Option ID = 88337]
4. Uracil incorporated will be greater than methionine but less than thymine [Option ID = 88338]

Correct Answer :-

- Thymine and methionine incorporation will be greater than uracil [Option ID = 88339]

**88) Unequal contribution to hereditary by males and females can be detected by [Question ID = 52139]**

1. Dihybrid cross [Option ID = 88551]
2. Reciprocal cross [Option ID = 88548]
3. Test cross [Option ID = 88550]
4. Back cross [Option ID = 88549]

**Correct Answer :-**

- Reciprocal cross [Option ID = 88548]

**89) Dosage compensation in humans is brought about by [Question ID = 52083]**

1. hypoactivity of both X-chromosomes in females [Option ID = 88326]
2. hyperactivity of autosomes in females [Option ID = 88327]
3. hyperactivity of single X-chromosome in males [Option ID = 88325]
4. inactivity of one X-chromosome in females [Option ID = 88324]

**Correct Answer :-**

- inactivity of one X-chromosome in females [Option ID = 88324]

**90) If non-disjunction occurs in meiosis I, which of the following scenario is most likely to occur [Question ID = 52114]**

1. One gamete will be  $n+1$ , two will be  $n$  and one will be  $n-1$  [Option ID = 88449]
2. Two gametes will be normal and two will be  $n-1$  [Option ID = 88450]
3. Two gametes will be normal and two will be  $n+1$  [Option ID = 88451]
4. Two gametes will be  $n+1$  and two will be  $n-1$  [Option ID = 88448]

**Correct Answer :-**

- Two gametes will be  $n+1$  and two will be  $n-1$  [Option ID = 88448]

**91) Which of the following parameters are NOT USED to describe the DNA topology ? [Question ID = 52064]**

1. The arrangement of the DNA in the nuclear matrix [Option ID = 88251]
2. The path of the DNA backbone in space due to torsional stress [Option ID = 88250]
3. The frequency of the helical turns [Option ID = 88249]
4. The number of times within certain boundaries that the two strand makes a 360 degree turn [Option ID = 88248]

**Correct Answer :-**

- The arrangement of the DNA in the nuclear matrix [Option ID = 88251]

**92) Zebrafish exhibit horizontal stripes of pigment cells in the skin. A small fraction of a zebrafish population grown in a pond that is contaminated with a mutagen exhibits blue spots in addition to the horizontal stripes. DNA sequence analysis confirms that cells within the blue spots possess a mutation in a gene that controls pigmentation. However, when these blue spotted fish are crossed to the normal (wild type) fish these spots do not appear either in  $F_1$  or  $F_2$  generation. This can be explained by the fact that the mutation leading to blue colouration**

**[Question ID = 52145]**

1. gets corrected in the subsequent generations [Option ID = 88572]
2. is a somatic mutation [Option ID = 88574]
3. is a recessive mutation [Option ID = 88573]
4. is a dominant mutation [Option ID = 88575]

**Correct Answer :-**

- is a somatic mutation [Option ID = 88574]

**93) In glycoproteins, the carbohydrate moiety always gets attached through which of the following amino acids? [Question ID = 52112]**

1. Glutamine or arginine [Option ID = 88441]
2. Tryptophan or phenylalanine [Option ID = 88443]
3. Aspartate or glutamate [Option ID = 88442]
4. Asparagine, serine, or threonine [Option ID = 88440]

**Correct Answer :-**

- Asparagine, serine, or threonine [Option ID = 88440]

**94) Compound tissue could be best defined as: [Question ID = 52082]**

1. Similar types of cells at different locations performing many functions [Option ID = 88322]
2. Similar types of cells held together by connective tissue [Option ID = 88320]

3. Different types of cells with varying structure and function [Option ID = 88323]
4. Different types of cells performing one function [Option ID = 88321]

**Correct Answer :-**

- Different types of cells performing one function [Option ID = 88321]

**95) A test cross is generally carried out to :**

**[Question ID = 52148]**

1. identify homozygous recessive individuals in the  $F_2$  [Option ID = 88586]
2. determine which allele is dominant and which is recessive [Option ID = 88585]
3. determine if two genes assort independently [Option ID = 88587]
4. identify heterozygous individuals with the dominant phenotype [Option ID = 88584]

**Correct Answer :-**

- identify heterozygous individuals with the dominant phenotype [Option ID = 88584]

**96) Hershey and Chase's experiment to demonstrate that DNA is the genetic material used radioactivity to label proteins and DNA. For this, the bacteriophage was allowed to grow in media containing radioactive phosphorus or radioactive sulphur. It is expected that**  
**[Question ID = 52120]**

1. radioactive sulphur will label proteins and radioactive phosphorus will label DNA [Option ID = 88472]
2. radioactive sulphur will label DNA and radioactive phosphorus will label proteins [Option ID = 88473]
3. both the labels will be found in DNA and proteins to the same extent [Option ID = 88474]
4. radioactive sulphur will label both DNA and protein [Option ID = 88475]

**Correct Answer :-**

- radioactive sulphur will label proteins and radioactive phosphorus will label DNA [Option ID = 88472]

**97) Fill in the missing words to the quote: "Statistical methods may be described as methods for drawing conclusions about \_\_\_\_\_ based on \_\_\_\_\_ computed from the \_\_\_\_\_". [Question ID = 52068]**

1. Populations, Statistics, Samples [Option ID = 88267]
2. Parameters, Samples, Statistics [Option ID = 88266]
3. Samples, Statistics, Parameters [Option ID = 88265]
4. Statistics, Samples, Populations [Option ID = 88264]

**Correct Answer :-**

- Populations, Statistics, Samples [Option ID = 88267]

**98) According to the classical taxonomical system, order the following from the most general taxonomic group to the most specific group is: [Question ID = 52078]**

1. Phylum, Kingdom, Order, Family, Class, Genus, Species [Option ID = 88304]
2. Phylum, Kingdom, Class, Family, Order, Genus, Species [Option ID = 88307]
3. Kingdom, Phylum, Class, Order, Family, Genus, Species [Option ID = 88305]
4. Kingdom, Order, Class, Phylum, Family, Genus, Species, [Option ID = 88306]

**Correct Answer :-**

- Kingdom, Phylum, Class, Order, Family, Genus, Species [Option ID = 88305]

**99) The technique used for demonstrating semi-conservative mode of replication by Meselson and Stahl in *E. coli* was:**

**[Question ID = 52102]**

1. Autoradiography [Option ID = 88400]
2. Spectroscopy [Option ID = 88402]
3. Gel Electrophoresis [Option ID = 88403]
4. Density Centrifugation [Option ID = 88401]

**Correct Answer :-**

- Density Centrifugation [Option ID = 88401]

**100) Assume that blue flower of a plant is dominant character over white. When a blue flowered plant is crossed with white flowered plant, the progeny showed 50% of plants with blue flowers and 50% of plants with white flowers. The genotypes of blue and white parents respectively are [Question ID = 52158]**

1. BB,Bb [Option ID = 88625]

2. BB,bb [Option ID = 88627]
3. Bb,bb [Option ID = 88624]
4. bb,bb [Option ID = 88626]

**Correct Answer :-**

- Bb,bb [Option ID = 88624]