

JNUEE MSC Molecular Medicine

Topic:- CMMM233 JNUS21

1) A catalytically active enzyme with bound metal ions is correctly defined as which of the following?[Question ID = 10463]
[Question Description = S1_CMMM_233_MSc_Q001]

1. Apoenzyme [Option ID = 102800]
2. Holoenzyme [Option ID = 102801]
3. Prosthetic enzyme [Option ID = 102802]
4. Apoprotein [Option ID = 102803]

2) Post-translational modification of proteins by the addition of galactose residues occur in which of the cellular organelle?
[Question ID = 10464][Question Description = S1_CMMM_233_MSc_Q002]

1. Lysosomes [Option ID = 102804]
2. *Trans*-Golgi [Option ID = 102805]
3. *Cis*-Golgi [Option ID = 102806]
4. Endoplasmic reticulum [Option ID = 102807]

3) Which is the main difference between smooth muscles and striated muscles?[Question ID = 10465][Question Description = S1_CMMM_233_MSc_Q003]

1. Smooth muscles lack thin myofilaments. [Option ID = 102808]
2. Striated muscles lack thick myofilaments. [Option ID = 102809]
3. Smooth muscles lack Z-disc. [Option ID = 102810]
4. Striated muscles lack Z-disc. [Option ID = 102811]

4) Which of the following statement is NOT true for Meiosis?[Question ID = 10466][Question Description = S1_CMMM_233_MSc_Q004]

1. Reduction in the number of chromosomes [Option ID = 102812]
2. Recombination with interchange of chromosome segments [Option ID = 102813]
3. Random assortment of homologous chromosomes. [Option ID = 102814]
4. Formation of diploid daughter cells. [Option ID = 102815]

5) Actin filaments are composed of which of the following?[Question ID = 10467][Question Description = S1_CMMM_233_MSc_Q005]

1. Actin, Tropomyosin and Troponin. [Option ID = 102816]
2. Actin, Tropomyosin. [Option ID = 102817]
3. Actin, Trypsin, Troponin. [Option ID = 102818]
4. Actin, Tropomyosin, Trypsin. [Option ID = 102819]

6) Which of the following stimulus DOES NOT increase the secretion of anti-diuretic hormone (ADH)?[Question ID = 10468]
[Question Description = S1_CMMM_233_MSc_Q006]

1. Increase in plasma osmolarity. [Option ID = 102820]
2. Decrease in blood volume [Option ID = 102821]
3. Decrease in blood pressure [Option ID = 102822]
4. Increase in alcohol level. [Option ID = 102823]

7) Oligomeric status of a protein can be determined by which ONE of the following methods?[Question ID = 10469]
[Question Description = S1_CMMM_233_MSc_Q007]

1. Affinity chromatography [Option ID = 102824]
2. Ion exchange chromatography [Option ID = 102825]
3. Gel filtration chromatography [Option ID = 102826]
4. Thin layer chromatography [Option ID = 102827]

8) Which of the following order represent the energy storage in the body?[Question ID = 10470][Question Description = S1_CMMM_233_MSc_Q008]

1. Protein>Fat>Amino Acid [Option ID = 102828]
2. Glucose>Fat>Protein [Option ID = 102829]
3. Fat>Protein>Glucose [Option ID = 102830]
4. Glucose>Fat>Amino Acid [Option ID = 102831]

9) Ethylene glycol is used as a coolant in car because it is relatively non-volatile and it[Question ID = 10471][Question Description = S1_CMMM_233_MSc_Q009]

1. raises the boiling point of water [Option ID = 102832]
2. decreases the boiling point of water [Option ID = 102833]
3. allows water to freeze [Option ID = 102834]
4. helps fast flowing of fuel [Option ID = 102835]

10) Phosphoglyceride consists of a glycerol backbone to which[Question ID = 10472][Question Description =

S1_CMMM_233_MSc_Q010]

1. two fatty acid chains and a phosphorylated alcohol are attached. [Option ID = 102836]
2. three fatty acid chains are attached [Option ID = 102837]
3. three phosphorylated alcohol are attached [Option ID = 102838]
4. one fatty acid and two phosphorylated alcohol are attached [Option ID = 102839]

11) The end product of the beta oxidation (beta carbon with respect to the carboxylic group) of fatty acid is acetyl Co-A. How many acetyl Co-A molecules will be generated when a fatty acid with C18 undergoes beta oxidation?[Question ID = 10473][Question Description = S1_CMMM_233_MSc_Q011]

1. 18 [Option ID = 102840]
2. 9 [Option ID = 102841]
3. 10 [Option ID = 102842]
4. 11 [Option ID = 102843]

12) In a double strand DNA, the backbone of the each strand is made by alternate sugar and phosphate molecules linked with each other where the bases linked with sugar are kept[Question ID = 10474][Question Description = S1_CMMM_233_MSc_Q012]

1. in between the two strands [Option ID = 102844]
2. outside the two strands to avoid crowding [Option ID = 102845]
3. approximately 60% bases will be inside and 40% bases will be outside [Option ID = 102846]
4. alternate bases will be outside and inside [Option ID = 102847]

13) Gyrase is an example of Topoisomerase II present mainly in the prokaryotes. It can[Question ID = 10475][Question Description = S1_CMMM_233_MSc_Q013]

1. only relax positively supercoiled DNA [Option ID = 102848]
2. only introduce negative supercoiling in relaxed DNA [Option ID = 102849]
3. relax positively supercoiled DNA and introduce negative supercoiling in relaxed DNA [Option ID = 102850]
4. relax negatively supercoiled DNA and introduce positive supercoiling in relaxed DNA [Option ID = 102851]

14) Collagen maturation is adversely affected in the following deficiency disease condition?[Question ID = 10476][Question Description = S1_CMMM_233_MSc_Q014]

1. Night blindness [Option ID = 102852]
2. Beri-beri [Option ID = 102853]
3. Scurvy [Option ID = 102854]
4. Rickets [Option ID = 102855]

15) All the following are constitutively expressed genes, commonly known as housekeeping genes, and are used for normalizing gene expression EXCEPT:[Question ID = 10477][Question Description = S1_CMMM_233_MSc_Q015]

1. 18S rRNA [Option ID = 102856]
2. P53 [Option ID = 102857]
3. B-actin [Option ID = 102858]
4. GAPDH [Option ID = 102859]

16) Which of the following tests is a long term indicator of blood glucose levels over the preceding 2-3 months, and used to monitor treatment of diabetes mellitus?[Question ID = 10478][Question Description = S1_CMMM_233_MSc_Q016]

1. Fasting blood glucose level [Option ID = 102860]
2. Random blood glucose level [Option ID = 102861]
3. Glycated haemoglobin level [Option ID = 102862]
4. Glucose tolerance test [Option ID = 102863]

17) Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R

Assertion: Double stranded DNA is denatured by exposing it to temperature as high as 60°C, and this leads to increase in its optical absorbance.

Reason: Denaturation of DNA leads to an increase in the optical absorbance of purine and pyrimidine bases, known as hyperchromicity of denaturation.

In light of the above statements, choose the most appropriate answer from the options given below:

[Question ID = 10479][Question Description = S1_CMMM_233_MSc_Q017]

1. Both A and R are correct and R is the correct explanation of A.
[Option ID = 102864]
2. Both A and R are correct but R is not the correct explanation of A.
[Option ID = 102865]
3. A is not correct but R is correct.
[Option ID = 102866]
4. A is correct but R is not correct.
[Option ID = 102867]

18) All the following statements about human Mitochondrial DNA are true EXCEPT.[Question ID = 10480][Question Description = S1_CMMM_233_MSc_Q018]

1. It is transmitted by maternal non-mendelian inheritance. [Option ID = 102868]

2. It has a higher mutation rate compared to nuclear DNA. [Option ID = 102869]
3. The mitochondrial genetic code differs slightly from the standard nuclear genetic code. [Option ID = 102870]
4. Majority of polypeptides in mitochondria are coded by genes found in the mitochondrial DNA. [Option ID = 102871]

19) All the following are characteristic properties of secondary immune response EXCEPT.[Question ID = 10481][Question Description = S1_CMMM_233_MSc_Q019]

1. The onset of secondary response is faster than the primary response. [Option ID = 102872]
2. Magnitude of response is lesser than primary response. [Option ID = 102873]
3. It is dependent on immunologic memory. [Option ID = 102874]
4. It occurs when there is a repeated exposure of the same antigen. [Option ID = 102875]

20) Passive immunization is used for treating all the following conditions EXCEPT.[Question ID = 10482][Question Description = S1_CMMM_233_MSc_Q020]

1. Streptococcal pneumonia. [Option ID = 102876]
2. Snake bite. [Option ID = 102877]
3. Botulism. [Option ID = 102878]
4. Rabies. [Option ID = 102879]

21) Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R
Assertion: Patients with glucose 6-phosphate dehydrogenase (G6PD) deficiency, can suffer from episodes of hemolysis (due to rupture of RBCs).

Reason: In these patients, reduced glutathione, which protects the RBC membrane from oxidant injury, cannot be regenerated due to deficiency of NADPH.

In light of the above statements, choose the most appropriate answer from the options given below:

[Question ID = 10483][Question Description = S1_CMMM_233_MSc_Q021]

1. Both A and R are correct and R is the correct explanation of A.
[Option ID = 102880]
2. Both A and R are correct but R is not the correct explanation of A.
[Option ID = 102881]
3. A is correct but R is not correct.
[Option ID = 102882]
4. A is not correct but R is correct.
[Option ID = 102883]

22) Match List I (Famous scientists) with List II (their contribution)

List I	List II
A. Karl Landsteiner	I. Polymerase chain reaction
B. Shinya Yamanaka	II. Vaccination against small pox
C. Kary Mullis	III. Human blood groups
D. Edward Jenner	IV. Induced pluripotent stem cells

[Question ID = 10484][Question Description = S1_CMMM_233_MSc_Q022]

1. A-III, B-IV, C-I, D-II [Option ID = 102884]
2. A-II, B-I, C-IV, D-III [Option ID = 102885]
3. A-III, B-II, C-IV, D-I [Option ID = 102886]
4. A-IV, B-III, C-I, D-II [Option ID = 102887]

23) Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R
Assertion: Fatty liver occurs due to accumulation of triacylglycerol in the liver.

Reason: Excess dietary carbohydrates are converted to triacylglycerol and are stored in the liver.

In light of the above statements, choose the most appropriate answer from the options given below:

[Question ID = 10485][Question Description = S1_CMMM_233_MSc_Q023]

1. Both A and R are correct and R is the correct explanation of A.
[Option ID = 102888]
2. Both A and R are correct but R is not the correct explanation of A.
[Option ID = 102889]
3. A is correct but R is not correct.
[Option ID = 102890]
4. A is not correct but R is correct.
[Option ID = 102891]

24) Phenylketonuria is a disease that can be caused by any of the following mechanisms EXCEPT.[Question ID = 10486]
[Question Description = S1_CMMM_233_MSc_Q024]

1. Deficiency of Phenylalanine hydroxylase [Option ID = 102892]
2. Defect in dihydrobiopterin reductase [Option ID = 102893]
3. Defect in dihydrobiopterin biosynthesis [Option ID = 102894]

4. Deficiency of Homogentisate oxidase [Option ID = 102895]

25) All the following are features of the human genetic code EXCEPT.[Question ID = 10487][Question Description = S1_CMMM_233_MSc_Q025]

1. Non-punctuate [Option ID = 102896]
2. Unambiguous [Option ID = 102897]
3. Degenerate [Option ID = 102898]
4. Overlapping [Option ID = 102899]

26) The levels of all the following parameters in the serum, are indicative of optimal functioning of the liver EXCEPT. [Question ID = 10488][Question Description = S1_CMMM_233_MSc_Q026]

1. Serum bilirubin [Option ID = 102900]
2. Serum albumin [Option ID = 102901]
3. Serum levels of the enzyme alanine transaminase [Option ID = 102902]
4. Serum creatinine [Option ID = 102903]

27) Which of the following molecules influences the mobility of fatty acyl chains in the cell plasma membrane?[Question ID = 10489][Question Description = S1_CMMM_233_MSc_Q027]

1. Lamins [Option ID = 102904]
2. Glycogen [Option ID = 102905]
3. Carbohydrates [Option ID = 102906]
4. Cholesterol [Option ID = 102907]

28) To uphold the specific ethical practices and standards ‘Hippocratic oath’ is taken when beginning the practice of which profession?

[Question ID = 10490][Question Description = S1_CMMM_233_MSc_Q028]

1. Doctors
[Option ID = 102908]
2. Lawyers
[Option ID = 102909]
3. Members of Parliament
[Option ID = 102910]
4. Chief of Defence
[Option ID = 102911]

29) Ayurveda is an alternative medicine system. Who is recognized as the father of ‘Ayurveda’?[Question ID = 10491][Question Description = S1_CMMM_233_MSc_Q029]

1. Charaka [Option ID = 102912]
2. MS Valiathan [Option ID = 102913]
3. Vagbhata [Option ID = 102914]
4. Sushruta [Option ID = 102915]

30) Which of the amino acid pairs are incorrectly matched with their type?

No.	Type of amino acid	Single letter symbols
A	Hydrophobic	G, V
B	Basic	R, M
C	Acidic	E, D
D	Sulphur containing	C, K
E	Aromatic	F, Y

[Question ID = 10492][Question Description = S1_CMMM_233_MSc_Q030]

1. A and E [Option ID = 102916]
2. B and D [Option ID = 102917]
3. A and C [Option ID = 102918]
4. C and E [Option ID = 102919]

31) The site of location of Leydig’s cells, and their secretion are?[Question ID = 10493][Question Description = S1_CMMM_233_MSc_Q031]

1. ovary and progesterone, respectively [Option ID = 102920]
2. liver and bile, respectively [Option ID = 102921]
3. pancreas and insulin, respectively [Option ID = 102922]
4. testes and testosterone, respectively [Option ID = 102923]

32) Identify the hormone that stimulates the secretion of milk from female?[Question ID = 10494][Question Description = S1_CMMM_233_MSc_Q032]

1. Oxytocin [Option ID = 102924]
2. Progesterone [Option ID = 102925]
3. LH [Option ID = 102926]
4. Prolactin [Option ID = 102927]

33) In cell signalling, which of the following is NOT a secondary messenger molecule?[Question ID = 10495][Question

Description = S1_CMMM_233_MSc_Q033]

1. Inositol triphosphate [Option ID = 102928]
2. Diacylglycerol [Option ID = 102929]
3. Calcium ion (Ca^{2+}) [Option ID = 102930]
4. AMP (Adenosine monophosphate) [Option ID = 102931]

34) In a compound microscope, the final magnified image viewed by an observer is contributed by which one of the following?[Question ID = 10496][Question Description = S1_CMMM_233_MSc_Q034]

1. Objective piece lens only [Option ID = 102932]
2. Ocular piece lens only [Option ID = 102933]
3. Both, objective and ocular piece lenses [Option ID = 102934]
4. Objective, ocular piece lens and numerical aperture. [Option ID = 102935]

35) Two sugar molecules that differ in their configuration only around one carbon atom are known as[Question ID = 10497][Question Description = S1_CMMM_233_MSc_Q035]

1. Epimers [Option ID = 102936]
2. Anomers [Option ID = 102937]
3. Metamers [Option ID = 102938]
4. Isotopes [Option ID = 102939]

36) The polypeptide chains A and B in an insulin molecule are connected together by which type of bonds and how many of those bonds?[Question ID = 10498][Question Description = S1_CMMM_233_MSc_Q036]

1. Hydrogen bonds; 3 [Option ID = 102940]
2. Disulfide bonds; 2 [Option ID = 102941]
3. Peptide bonds; 3 [Option ID = 102942]
4. Covalent bonds; 2 [Option ID = 102943]

37) Ischemia is associated with decreased flow of which one of the following to the tissues?

[Question ID = 10499][Question Description = S1_CMMM_233_MSc_Q037]

1. Oxygen
[Option ID = 102944]
2. Urine
[Option ID = 102945]
3. Blood
[Option ID = 102946]
4. Metabolites
[Option ID = 102947]

38) How many decarboxylation reactions occur in one tricarboxylic acid cycle?[Question ID = 10500][Question Description = S1_CMMM_233_MSc_Q038]

1. Four [Option ID = 102948]
2. Three [Option ID = 102949]
3. Two [Option ID = 102950]
4. One [Option ID = 102951]

39) Lipolysis is regulated in tissues by the ratio of insulin and glucagon in the body, choose the correct statement from below:[Question ID = 10501][Question Description = S1_CMMM_233_MSc_Q039]

1. high insulin/glucagon ratio activates lipolysis in muscle cells [Option ID = 102952]
2. low insulin/glucagon ratio inhibits lipolysis in liver cells [Option ID = 102953]
3. low insulin/glucagon ratio activates lipolysis in adipose tissue [Option ID = 102954]
4. high insulin/glucagon ratio activates lipolysis in adipose tissue [Option ID = 102955]

40)

Match the List I with List II

List I	List II
A. Glycolysis	I. Transaldolase
B. TCA Cycle	II. Aldolase
C. Pentose Phosphate Pathway	III. Argininosuccinase
D. Urea cycle	IV. Succinate dehydrogenase

Choose the correct answer from the options given below:

[Question ID = 10502][Question Description = S1_CMMM_233_MSc_Q040]

1. A-I; B-II; C-III; D-IV
[Option ID = 102956]
2. A-II; B-III; C-I; D-IV
[Option ID = 102957]

3. A-IV; B-I; C-II; D-III

[Option ID = 102958]

4. A-II; B-IV; C-I; D-III

[Option ID = 102959]

41) If distance between two points (3, 2) and (-5, x) is 8, then one of the values of x is[Question ID = 10503][Question Description = S1_CMMM_233_MSc_Q041]

1. 4 [Option ID = 102960]

2. 6 [Option ID = 102961]

3. 2 [Option ID = 102962]

4. -4 [Option ID = 102963]

42) Mean of the first ten even natural numbers is?[Question ID = 10504][Question Description = S1_CMMM_233_MSc_Q042]

1. 110 [Option ID = 102964]

2. 55 [Option ID = 102965]

3. 90 [Option ID = 102966]

4. 11 [Option ID = 102967]

43) In 10th board exam, 80% candidates passed in Mathematics and 85% candidates passed in science. If 73% passed in both these subjects, what percent of candidates failed in both these subjects?

[Question ID = 10505][Question Description = S1_CMMM_233_MSc_Q043]

1. 15

[Option ID = 102968]

2. 8

[Option ID = 102969]

3. 27

[Option ID = 102970]

4. 35

[Option ID = 102971]

44) Which one of the following molecules does not possess a permanent dipole moment?[Question ID = 10506][Question Description = S1_CMMM_233_MSc_Q044]

1. NO₂ [Option ID = 102972]

2. NF₃ [Option ID = 102973]

3. BF₃ [Option ID = 102974]

4. CH₂Cl₂ [Option ID = 102975]

45) Elements of the same group in a periodic table have: [Question ID = 10507][Question Description = S1_CMMM_233_MSc_Q045]

1. same atomic size [Option ID = 102976]

2. same electronic configuration [Option ID = 102977]

3. same number of electrons in the outer shell of their atoms [Option ID = 102978]

4. same number of atoms [Option ID = 102979]

46) Which of the following species is capable of functioning both as Bronsted acid and Bronsted base?

[Question ID = 10508][Question Description = S1_CMMM_233_MSc_Q046]

1. S²⁻

[Option ID = 102980]

2. CO₃²⁻

[Option ID = 102981]

3. F⁻

[Option ID = 102982]

4. HS⁻

[Option ID = 102983]

47) What happens when excess of water is added to BiCl₃?[Question ID = 10509][Question Description = S1_CMMM_233_MSc_Q047]

1. Ionization of BiCl₃ is increased [Option ID = 102984]

2. A white precipitate of Bi(OH)₃ is obtained [Option ID = 102985]

3. BiCl₃ is hydrolysed to give white precipitate of BiOCl [Option ID = 102986]

4. BiCl₃ is precipitated [Option ID = 102987]

48) The correct order of stability for the following super oxides is:[Question ID = 10510][Question Description = S1_CMMM_233_MSc_Q048]

1. $\text{KO}_2 > \text{RbO}_2 > \text{CsO}_2$ [Option ID = 102988]
2. $\text{RbO}_2 > \text{CsO}_2 > \text{KO}_2$ [Option ID = 102989]
3. $\text{CsO}_2 > \text{RbO}_2 > \text{KO}_2$ [Option ID = 102990]
4. $\text{KO}_2 > \text{CsO}_2 > \text{RbO}_2$ [Option ID = 102991]

49) The reaction of sodium ethoxide with ethyl iodide to form diethyl ether is[Question ID = 10511][Question Description = S1_CMMM_233_MSc_Q049]

1. electrophilic substitution [Option ID = 102992]
2. nucleophilic substitution [Option ID = 102993]
3. electrophilic addition [Option ID = 102994]
4. radical substitution [Option ID = 102995]

50) Identify the correct statement regarding Entropy.[Question ID = 10512][Question Description = S1_CMMM_233_MSc_Q050]

1. At absolute zero temperature, entropy of a perfectly crystalline substance is taken to be zero. [Option ID = 102996]
2. At absolute zero temperature, entropy of a perfectly crystalline substance is positive. [Option ID = 102997]
3. Absolute entropy of a substance cannot be determined. [Option ID = 102998]
4. At 0°C , the entropy of a perfectly crystalline substance is taken to be zero. [Option ID = 102999]

51) Which one of the following neurotransmitters is secreted by the pre-ganglionic neurons of sympathetic nervous system? [Question ID = 10513][Question Description = S1_CMMM_233_MSc_Q051]

1. Epinephrine [Option ID = 103000]
2. Acetylcholine [Option ID = 103001]
3. Dopamine [Option ID = 103002]
4. Norepinephrine [Option ID = 103003]

52) Which of the following is most likely to produce anaphylaxis in a susceptible individual?[Question ID = 10514][Question Description = S1_CMMM_233_MSc_Q052]

1. Pollen [Option ID = 103004]
2. Mold [Option ID = 103005]
3. Dust [Option ID = 103006]
4. Bee sting [Option ID = 103007]

53) Which of the following statements is NOT true about cytochrome P450 enzymes?[Question ID = 10515][Question Description = S1_CMMM_233_MSc_Q053]

1. They contain heme and magnesium. [Option ID = 103008]
2. They belong to a general class of enzymes called monooxygenases. [Option ID = 103009]
3. There are over 30 different cytochrome P450 enzymes. [Option ID = 103010]
4. Variation in cytochrome P450 enzyme profile between individuals can explain individual variation in drug susceptibility. [Option ID = 103011]

54) Which of the following is NOT a diazotroph?[Question ID = 10516][Question Description = S1_CMMM_233_MSc_Q054]

1. *Frankia* [Option ID = 103012]
2. *Anabaena azollae* [Option ID = 103013]
3. *Bradyrhizobium japonicum* [Option ID = 103014]
4. *Xylella fastidiosa* [Option ID = 103015]

55) Genetic engineering of Delta-12 desaturase gene is effective in:[Question ID = 10517][Question Description = S1_CMMM_233_MSc_Q055]

1. Enhancing the protein levels in vegetables [Option ID = 103016]
2. Delaying the ripening in tomatoes [Option ID = 103017]
3. Increasing Oleic acid content in soybeans [Option ID = 103018]
4. Reducing starch content in fruit and vegetables [Option ID = 103019]

56) Which phytohormone ratio within the explant favors shoot generation?[Question ID = 10518][Question Description = S1_CMMM_233_MSc_Q056]

1. High auxin to cytokinin ratio [Option ID = 103020]
2. High cytokinin to auxin ratio [Option ID = 103021]
3. High cytokinin to abscisic ratio [Option ID = 103022]
4. High abscisic to cytokinin ratio [Option ID = 103023]

57) The process of breaking seed dormancy by weakening the seed coat is called:[Question ID = 10519][Question Description = S1_CMMM_233_MSc_Q057]

1. Photoperiodism [Option ID = 103024]
2. Scarification [Option ID = 103025]
3. Vernalization [Option ID = 103026]
4. Stratification [Option ID = 103027]

58) What kind of genetic material is transferred by *Agrobacterium tumefaciens* mediated plant transformation?[Question ID = 10520][Question Description = S1_CMMM_233_MSc_Q058]

1. Linear double-stranded DNA [Option ID = 103028]
2. Linear single-stranded DNA [Option ID = 103029]
3. mRNA [Option ID = 103030]
4. Circular double-stranded DNA [Option ID = 103031]

59) Endoreduplication refers to:[Question ID = 10521][Question Description = S1_CMMM_233_MSc_Q059]

1. recurrent DNA replication without subsequent mitosis and cytokinesis [Option ID = 103032]
2. splitting up of endoplasmic reticulum (ER) to form rough and smooth ERs [Option ID = 103033]
3. mobilization of DNA into ER and replication of DNA in the ER [Option ID = 103034]
4. replication of DNA in the nuclei and endocytosis of one copy to another organelle [Option ID = 103035]

60) Which two cytoplasmic ribosome subunits are present in plants?[Question ID = 10522][Question Description = S1_CMMM_233_MSc_Q060]

1. 30S and 50S [Option ID = 103036]
2. 40S and 60S [Option ID = 103037]
3. 20S and 60S [Option ID = 103038]
4. 30S and 60S [Option ID = 103039]

61) During embryonic development, the presumptive neural tissue originates from[Question ID = 10523][Question Description = S1_CMMM_233_MSc_Q061]

1. ectoderm [Option ID = 103040]
2. mesoderm [Option ID = 103041]
3. endoderm [Option ID = 103042]
4. germ cells [Option ID = 103043]

62) In the sequence below, which fraction comes next?

1/2 , 3/4, 5/8, 7/16, X

[Question ID = 10524][Question Description = S1_CMMM_233_MSc_Q062]

1. 9/18 [Option ID = 103044]
2. 9/24 [Option ID = 103045]
3. 9/32 [Option ID = 103046]
4. 9/35 [Option ID = 103047]

63) If the pore size through the paracellular space between cells is 1 Angstrom, what is it equivalent to?[Question ID = 10525][Question Description = S1_CMMM_233_MSc_Q063]

1. 10^{-5} cm [Option ID = 103048]
2. 10^{-6} cm [Option ID = 103049]
3. 10^{-7} cm [Option ID = 103050]
4. 10^{-8} cm [Option ID = 103051]

64) An electron microscope gives higher magnification than an optical microscope because:[Question ID = 10526][Question Description = S1_CMMM_233_MSc_Q064]

1. Electrons have more energy than light particles [Option ID = 103052]
2. Velocity of electrons is less than light particles [Option ID = 103053]
3. Electron microscope lenses are more powerful [Option ID = 103054]
4. Wavelength of electrons used is smaller as compared to visible light [Option ID = 103055]

65) Induced pluripotent cells can be derived from[Question ID = 10527][Question Description = S1_CMMM_233_MSc_Q065]

1. embryonic stem cells [Option ID = 103056]
2. adult somatic cells [Option ID = 103057]
3. natural pluripotent cells [Option ID = 103058]
4. mature red blood cells [Option ID = 103059]

66) What is the percentage of solar energy that plants utilize during photosynthesis?[Question ID = 10528][Question Description = S1_CMMM_233_MSc_Q066]

1. 5-10% [Option ID = 103060]
2. 0-1% [Option ID = 103061]
3. 1-2 % [Option ID = 103062]
4. 10- 20% [Option ID = 103063]

67) The role of decomposers in nitrogen cycle is to:

[Question ID = 10529][Question Description = S1_CMMM_233_MSc_Q067]

1. Fix N_2 into ammonia
[Option ID = 103064]
2. Incorporate N_2 into amino acids and organic compounds
[Option ID = 103065]
3. Release ammonia from organic compounds which is then cycled back to soil
[Option ID = 103066]
4. Denitrify ammonia and release N_2 into soil
[Option ID = 103067]

68) Cross between tiger and lion may produce a viable off spring “tigon”. Though the ranges of the two animals once overlapped, such hybrids were never produced because of[Question ID = 10530][Question Description = S1_CMMM_233_MSc_Q068]

1. hybrid infertility [Option ID = 103068]

2. gametic mortality [Option ID = 103069]
3. mechanical isolation [Option ID = 103070]
4. behavioral isolation [Option ID = 103071]

69) Graffian follicle is:[Question ID = 10531][Question Description = S1_CMMM_233_MSc_Q069]

1. An immature developing follicle [Option ID = 103072]
2. A mature follicle ready to ovulate [Option ID = 103073]
3. A follicle undergoing apoptosis [Option ID = 103074]
4. Ovulated follicle [Option ID = 103075]

**70) The ability of a desert rat's kidney to produce highly concentrated urine is primarily due to [Question ID = 10532]
[Question Description = S1_CMMM_233_MSc_Q070]**

1. high glomerular filtration rate [Option ID = 103076]
2. production of very salty ultra-filtrate in glomerulus [Option ID = 103077]
3. the ability of cells lining the proximal convoluted tubule to absorb water [Option ID = 103078]
4. presence of long loops of Henle that pass through tissues of increasing salt concentration [Option ID = 103079]

71) Insulin and thyroxine reach an organ simultaneously. While thyroxine has an effect on the organ insulin fails. This is because[Question ID = 10533][Question Description = S1_CMMM_233_MSc_Q071]

1. Throxine is lipophilic while insulin is not. [Option ID = 103080]
2. The organ lacks receptor for insulin [Option ID = 103081]
3. Thyroxine is a local hormone while insulin is a circulatory hormone [Option ID = 103082]
4. Target cells present in the organ get upregulated by thyroxine [Option ID = 103083]

72) Trypsin differs from pepsin in that[Question ID = 10534][Question Description = S1_CMMM_233_MSc_Q072]

1. Trypsin digests protein in an acidic medium while pepsin does so in alkaline conditions [Option ID = 103084]
2. Trypsin digests protein in an alkaline medium while pepsin does so in acidic conditions [Option ID = 103085]
3. Trypsin is secreted from gastric glands while pepsin is secreted from the pancreas [Option ID = 103086]
4. Peptidic neurohormones influence trypsin production while pepsin production is influenced by steroids [Option ID = 103087]

73) Two siblings inherit 50% of the genome from each parent but show lot of phenotypic differences. Which one of the following events contributes maximally to this difference?[Question ID = 10535][Question Description = S1_CMMM_233_MSc_Q073]

1. Mutation [Option ID = 103088]
2. Recombination [Option ID = 103089]
3. Independent assortment [Option ID = 103090]
4. Environment [Option ID = 103091]

74) Mutation in gene X leads to lethality in a haploid organism. Which one of the following is best suited to analyse the function of gene X?[Question ID = 10536][Question Description = S1_CMMM_233_MSc_Q074]

1. Pleiotropic mutants [Option ID = 103092]
2. Temperature sensitive mutations [Option ID = 103093]
3. Recessive mutants [Option ID = 103094]
4. Mutants with low penetrance [Option ID = 103095]

75) Match the cofactor/prosthetic group in left column with the enzymes on the right.

A. Succinate dehydrogenase	I. NAD ⁺
B. Alcohol dehydrognase	II. Tetrahydrofolate
C. NADH:Coenzyme Q oxidoreductase	III. FMN
D. Serine hydroxymethyltransferase	IV. FADH ₂

[Question ID = 10537][Question Description = S1_CMMM_233_MSc_Q075]

1. A: IV; B:I; C:III; D:II
[Option ID = 103096]
2. A:III; B:IV; C:I; D:II
[Option ID = 103097]
3. A:I; B:II; C:IV; D: III
[Option ID = 103098]
4. A: II; B: III; C: I; D:IV
[Option ID = 103099]

76) The TCA cycle generates:[Question ID = 10538][Question Description = S1_CMMM_233_MSc_Q076]

1. NADPH and FADH₂ [Option ID = 103100]
2. NADH and GTP [Option ID = 103101]
3. FADH₂ and CTP [Option ID = 103102]
4. NADH and cyclic GMP [Option ID = 103103]

77) You are supplied with a cDNA library from human brain from which you need to isolate the cDNA of a particular gene of your interest. You have the entire gene sequence available in a lambda vector. Which segment of the gene would be most appropriate as a probe for isolating the full length cDNA?

[Question ID = 10539][Question Description = S1_CMMM_233_MSc_Q077]

1. The segment corresponding to the 3' UTR

[Option ID = 103104]

2. The segment corresponding to the 5' UTR

[Option ID = 103105]

3. The last exon at the 3' end

[Option ID = 103106]

4. The first exon at the 5' end

[Option ID = 103107]

78) In CRISPR-Cas9 genome editing technique, CRISPR stands for[Question ID = 10540][Question Description = S1_CMMM_233_MSc_Q078]

1. Clustered Repeated Interspersing Short Palindromic Regulators [Option ID = 103108]
2. Chromatin Regularly Interspaced Short Palindromic Repeats [Option ID = 103109]
3. Clustered Regularly Interspaced Short Palindromic Repeats [Option ID = 103110]
4. Chromosomal Regularly Interspaced Short Pathogenic Repeats [Option ID = 103111]

79) For the development of knockout mice, embryonic stem cells and blastocysts are manipulated by the following techniques.

A. Electroporation of DNA

B. Microinjection of selected cells

C. Marker selection

D. PCR of tail DNA

Identify the correct order of their use.

[Question ID = 10541][Question Description = S1_CMMM_233_MSc_Q079]

1. A, B, C, D

[Option ID = 103112]

2. D, C, B, A

[Option ID = 103113]

3. A, C, B, D

[Option ID = 103114]

4. B, C, D, A

[Option ID = 103115]

80) The method commonly used for determining the structure of a protein is:[Question ID = 10542][Question Description = S1_CMMM_233_MSc_Q080]

1. Mass spectrometry [Option ID = 103116]
2. Gas chromatography [Option ID = 103117]
3. Nuclear Magnetic Resonance [Option ID = 103118]
4. Surface plasmon resonance [Option ID = 103119]

81) Ubiquitination primarily occurs on which one of the following residues of the target proteins?[Question ID = 10543][Question Description = S1_CMMM_233_MSc_Q081]

1. Histidine [Option ID = 103120]
2. Isolucine [Option ID = 103121]
3. Lysine [Option ID = 103122]
4. Leucine [Option ID = 103123]

82) Among the methods mentioned below, identify the one having the highest sensitivity to detect rare mutation?[Question ID = 10544][Question Description = S1_CMMM_233_MSc_Q082]

1. Droplet Digital PCR [Option ID = 103124]
2. RT-PCR [Option ID = 103125]
3. Microarray [Option ID = 103126]
4. Single read RNA-seq [Option ID = 103127]

83) Pathogen for COVID-19 is known as:[Question ID = 10545][Question Description = S1_CMMM_233_MSc_Q083]

1. SARS corona virus I [Option ID = 103128]
2. Gemini virus [Option ID = 103129]
3. SARS corona virus II [Option ID = 103130]
4. Potex Virus [Option ID = 103131]

84) A mutation that causes complete loss of gene function is called:[Question ID = 10546][Question Description = S1_CMMM_233_MSc_Q084]

1. Amorphic [Option ID = 103132]
2. Hypomorphic [Option ID = 103133]
3. Hypermorphic [Option ID = 103134]
4. Neomorphic [Option ID = 103135]

85) Sick cell anemia is:[Question ID = 10547][Question Description = S1_CMMM_233_MSc_Q085]

1. autosomal dominant inheritance [Option ID = 103136]
2. X-linked recessive inheritance [Option ID = 103137]
3. autosomal recessive inheritance [Option ID = 103138]
4. X-linked dominant inheritance [Option ID = 103139]

86) A virus with RNA- dependent RNA polymerase:[Question ID = 10548][Question Description = S1_CMMM_233_MSc_Q086]

1. Synthesizes DNA from RNA template [Option ID = 103140]
2. Synthesizes mRNA from DNA template [Option ID = 103141]
3. Synthesizes RNA from RNA template [Option ID = 103142]
4. Synthesizes dsRNA from DNA template [Option ID = 103143]

87) What is the target for Kanamycin in bacteria?[Question ID = 10549][Question Description = S1_CMMM_233_MSc_Q087]

1. Cell wall synthesis inhibition [Option ID = 103144]
2. Blocking of 70S ribosomal subunit [Option ID = 103145]
3. Blocking of 30S ribosomal subunit [Option ID = 103146]
4. Inhibition of Peptidyl transferase activity [Option ID = 103147]

88) siRNA functions by

[Question ID = 10550][Question Description = S1_CMMM_233_MSc_Q088]

1. forming a complex in spliceosome
[Option ID = 103148]
2. recruiting histone acetyl transferases to the nucleus
[Option ID = 103149]
3. forming a complex in ribosome
[Option ID = 103150]
4. forming a complex with RISC proteins to inhibit translation or cause degradation of complementary mRNA
[Option ID = 103151]

89) Fluorescent proteins are now used in diverse biological research techniques and methods. Out of the following fluorescent proteins which one is not derived from jelly fish green fluorescent protein?[Question ID = 10551][Question Description = S1_CMMM_233_MSc_Q089]

1. Blue fluorescent protein (BFP) [Option ID = 103152]
2. Cyan fluorescent protein (CFP) [Option ID = 103153]
3. Yellow fluorescent protein (YFP) [Option ID = 103154]
4. Red fluorescent protein (RFP) [Option ID = 103155]

90) If one strand of DNA has the following sequence: ATGATTGG, what will be the complementary RNA sequence?[Question ID = 10552][Question Description = S1_CMMM_233_MSc_Q090]

1. CCAAUCAU [Option ID = 103156]
2. CCAATCAT [Option ID = 103157]
3. TACTAACC [Option ID = 103158]
4. UACTAACC [Option ID = 103159]

91) A solution contains two proteins with same mass. The pH of one protein is 6.5. The protein can be purified at the physiological pH using which of the following techniques?

[Question ID = 10553][Question Description = S1_CMMM_233_MSc_Q091]

1. Ion exchange chromatography (anion exchange)
[Option ID = 103160]
2. Thin layer chromatography
[Option ID = 103161]
3. Ion exchange chromatography (cation exchange)
[Option ID = 103162]
4. Gel filtration chromatography
[Option ID = 103163]

92) If you treat RNA solution with NaOH:[Question ID = 10554][Question Description = S1_CMMM_233_MSc_Q092]

1. RNA will be lysed. [Option ID = 103164]
2. RNA will remain stabilized. [Option ID = 103165]
3. RNA will lose 5' phosphate [Option ID = 103166]
4. RNA will coagulate. [Option ID = 103167]

93) Properties of NaOH is used in the purification of[Question ID = 10555][Question Description = S1_CMMM_233_MSc_Q093]

1. Plasmid DNA. [Option ID = 103168]
2. Chromosomal or genomic DNA. [Option ID = 103169]
3. RNA. [Option ID = 103170]
4. Both DNA and RNA. [Option ID = 103171]

94) What would be the next number in the following series

1, 3, 2, 4, 3,

[Question ID = 10556][Question Description = S1_CMMM_233_MSc_Q094]

1. 5 [Option ID = 103172]
2. 2 [Option ID = 103173]
3. 6 [Option ID = 103174]
4. 4 [Option ID = 103175]

95) Choose reasonable right partner -, if Human: Leg, then Bird:[Question ID = 10557][Question Description = S1_CMMM_233_MSc_Q095]

1. Leg [Option ID = 103176]
2. Feather [Option ID = 103177]
3. Wing [Option ID = 103178]
4. Beak [Option ID = 103179]

96) Choose reasonably the right partner. If Protein. Antibody, then DNA gyrase:

[Question ID = 10558][Question Description = S1_CMMM_233_MSc_Q096]

1. Topoisomerase I
[Option ID = 103180]
2. Topoisomerase II
[Option ID = 103181]
3. Reverse gyrase
[Option ID = 103182]
4. Type II restriction enzyme
[Option ID = 103183]

97) Your opinion on next inevitable pandemic on planet Earth could be due to the following reasons except[Question ID = 10559][Question Description = S1_CMMM_233_MSc_Q097]

1. Continuous tampering with our ecosystem. [Option ID = 103184]
2. Climate change and deforestation. [Option ID = 103185]
3. Globalization and human life style. [Option ID = 103186]
4. Alien interference [Option ID = 103187]

98) The type of hybridization of boron atom in diborane is[Question ID = 10560][Question Description = S1_CMMM_233_MSc_Q098]

1. sp^2 [Option ID = 103188]
2. sp^3 [Option ID = 103189]
3. sp^3d^2 [Option ID = 103190]
4. sp [Option ID = 103191]

99) The conformational changes from the T to the R state is initiated by:[Question ID = 10561][Question Description = S1_CMMM_233_MSc_Q099]

1. binding of oxygen to the heme [Option ID = 103192]
2. movement of the proximal histidine towards the heme [Option ID = 103193]
3. movement of the F-helix, which contains the proximal His [Option ID = 103194]
4. reorganization of protein-protein contacts between the individual subunits [Option ID = 103195]

100) Genetic drift is most common in populations that are[Question ID = 10562][Question Description = S1_CMMM_233_MSc_Q100]

1. Allopatric [Option ID = 103196]
2. Large and panmictic [Option ID = 103197]
3. Small and inbred [Option ID = 103198]
4. Undergoing gene flow [Option ID = 103199]

