

JNUEE MSC Life Science

Topic:- SLSM225 JNUS21

1) Given below are two statements:

Statement I: When an object is placed in front of a concave mirror between centre of curvature and focus, the image formed will be behind the mirror and magnified.

Statement II: When an object is placed in front of a concave mirror at the centre of curvature the image formed will be at the same place and same size of the object but inverted.

In the light of the above statements, choose the Correct answer from the options given below

[Question ID = 20408][Question Description = S1_SLSM_225_MSc_Q001]

- Both Statement I and Statement II are true [Option ID = 105600]
- Both Statement I and Statement II are false [Option ID = 105601]
- Statement I is correct but Statement II is incorrect [Option ID = 105602]
- Statement I is incorrect but Statement II is correct [Option ID = 105603]

2) Match List I with List II

List I	List II
A. Radio wave	I 7×10^{-7} to 10^{-3} m
B. Infrared	II 10^{-11} to 10^{-8} m
C. Visible light	III $> 10^{-1}$ m
D. X-rays	IV 4×10^{-7} to 7×10^{-7} m

Choose the correct answer from the options given below:

[Question ID = 20409][Question Description = S1_SLSM_225_MSc_Q002]

- A-I, B-II, C-III, D-IV [Option ID = 105604]
- A-II, B-III, C-IV, D-I [Option ID = 105605]
- A-III, B-I, C-IV, D-II [Option ID = 105606]
- A-IV, B-I, C-II, D-III [Option ID = 105607]

3) ${}_{92}\text{U}^{238}$ decays successively to form ${}_{90}\text{Th}^{234}$, ${}_{91}\text{Pa}^{234}$, ${}_{92}\text{U}^{234}$ and ${}_{90}\text{Th}^{230}$. During this reaction how many beta particles are emitted?[Question ID = 20410]

[Question Description = S1_SLSM_225_MSc_Q003]

- 2 [Option ID = 105608]
- 3 [Option ID = 105609]
- 4 [Option ID = 105610]
- 5 [Option ID = 105611]

4) If the two wires each carrying 3 Amps of current in the same direction are separated by 1 m, what will be the force generated between them per meter of the length?

[Question ID = 20411][Question Description = S1_SLSM_225_MSc_Q004]

- 1.8×10^{-6} N/m

[Option ID = 105612]

- 9×10^{-7} N/m

[Option ID = 105613]

- 3×10^{-7} N/m

[Option ID = 105614]

- 10^{-7} N/m

[Option ID = 105615]

5) Two light waves from two coherent sources of intensity ratio 25 : 1 produce interference. What is the ratio of the maxima and minima formed in the interference pattern?

[Question ID = 20412][Question Description = S1_SLSM_225_MSc_Q005]

- 25:1

[Option ID = 105616]

- 5:4

[Option ID = 105617]

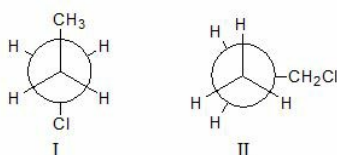
- 9:4

[Option ID = 105618]

- 26:24

[Option ID = 105619]

6) . The relationship between structure I and structure II is



[Question ID = 11048][Question Description = S1_SLSM_225_MSc_Q006]

- Same compound [Option ID = 105620]
- Positional isomers [Option ID = 105621]
- Functional isomers [Option ID = 105622]
- Conformational isomers [Option ID = 105623]

7) Match List I with List II

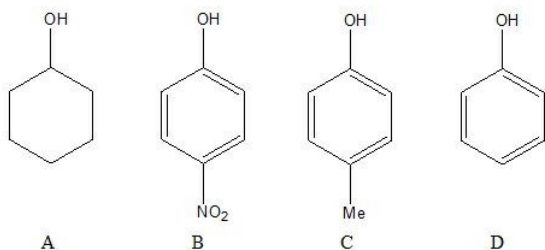
List I (Crystal system)	List II (Axial distance)
A. Cubic	I. $a = b = c$
B. Hexagonal	II. $a = b \neq c$
C. Triclinic	III. $a \neq b \neq c$

Choose the correct answer from the options given below:

[Question ID = 11049][Question Description = S1_SLISM_225_MSc_Q007]

1. A-II, B-I, C-III [Option ID = 105624]
2. A-I, B-II, C-III [Option ID = 105625]
3. A-I, B-III, C-II [Option ID = 105626]
4. A-III, B-II, C-I [Option ID = 105627]

8) Arrange the following compounds according to increasing acidity

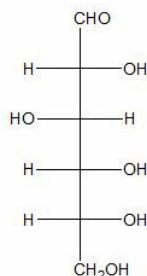


Choose the correct answer from the options given below:

[Question ID = 11050][Question Description = S1_SLISM_225_MSc_Q008]

1. $A < B < C < D$ [Option ID = 105628]
2. $B < D < C < A$ [Option ID = 105629]
3. $A < D < C < B$ [Option ID = 105630]
4. $A < C < D < B$ [Option ID = 105631]

9) For the following Fischer projection of D (+) Glucose which is the correct stereochemical notation



[Question ID = 11051][Question Description = S1_SLISM_225_MSc_Q009]

1. 2R, 3R, 4S, 5R [Option ID = 105632]
2. 2R, 3S, 4S, 5R [Option ID = 105633]
3. 2R, 3S, 4R, 5R [Option ID = 105634]
4. 2S, 3R, 4S, 5R [Option ID = 105635]

10) Which of the following amino acid will have only two dissociation constants?[Question ID = 11052][Question Description = S1_SLISM_225_MSc_Q010]

1. Histidine [Option ID = 105636]
2. Glycine [Option ID = 105637]
3. Lysine [Option ID = 105638]
4. Aspartic acid [Option ID = 105639]

11) If 1, w , w^2 are the three cube roots of unity. What will be the value of $(1+w^2)(1+w^4)(1+w^8)(1+w^{16})$

[Question ID = 11053][Question Description = S1_SLISM_225_MSc_Q011]

1. -1 [Option ID = 105640]
2. -w [Option ID = 105641]
3. +1 [Option ID = 105642]
4. w^2 [Option ID = 105643]

12) If $n^2 C_8 : n^2 P_4 = 57 : 16$, what is the value of "n"?

[Question ID = 11054][Question Description = S1_SLISM_225_MSc_Q012]

1. 13 [Option ID = 105644]
2. 19 [Option ID = 105645]
3. 17 [Option ID = 105646]
4. 23 [Option ID = 105647]

13) If $N = \sqrt{12 + \sqrt{12 + \sqrt{12 + \dots}}}$, what is the value of N?[Question ID = 11055][Question Description = S1_SLISM_225_MSc_Q013]

1. 2 [Option ID = 105648]
2. 4 [Option ID = 105649]
3. $\sqrt{12}$ [Option ID = 105650]
4. 16 [Option ID = 105651]

14) If $\log_{2/3} 144 = C$, what is the value of C^2 ?[Question ID = 11056][Question Description = S1_SLISM_225_MSc_Q014]

1. 16 [Option ID = 105652]

2. 2 [Option ID = 105653]
3. 9 [Option ID = 105654]
4. 4 [Option ID = 105655]

15) The two lines $A_1x + B_1y + C_1 = 0$ and $A_2x + B_2y + C_2 = 0$ are perpendicular to each other, then which of the following condition is correct?[Question ID = 11057][Question Description = S1_SLSM_225_MSc_Q015]

1. $A_1/A_2 = B_1/B_2$ [Option ID = 105656]
2. $A_1/A_2 = B_1/B_2 \neq C_1/C_2$ [Option ID = 105657]
3. $A_1A_2 + B_1B_2 = 0$ [Option ID = 105658]
4. $A_1A_2 - B_1B_2 = 0$ [Option ID = 105659]

16) 4 white and 3 black cows in 5 days give the same amount of milk that of 3 white and 5 black cows in 4 days. Which of the following sets of cows will give least amount of milk per day?[Question ID = 11058][Question Description = S1_SLSM_225_MSc_Q016]

1. 5W + 5B [Option ID = 105660]
2. 4W + 6B [Option ID = 105661]
3. 6W + 4 B [Option ID = 105662]
4. 8W + 2B [Option ID = 105663]

17)

Ramesh, Naveen and Vipin are tailor, grocer and photographer, not necessarily in the same order. Vipin married Ramesh's sister and earn more money than photographer. Grocer is the only child of his parents and earns least. Match the names with profession.

Column -1	Column -II
A. Ramesh	I. Tailor
B. Naveen	II. Grocer
C. Vipin	III. Photographer

[Question ID = 11059][Question Description = S1_SLSM_225_MSc_Q017]

1. A-I, B- II, C- III [Option ID = 105664]
2. A- III, B-II, C -I [Option ID = 105665]
3. A-II, B-I, C- III [Option ID = 105666]
4. A-II, B-III, C-I [Option ID = 105667]

18) Which of the following items are present in a typical bacterial cell?

- A. Ribosome
- B. Lysosome
- C. Peptidoglycan
- D. Golgi body

[Question ID = 11060][Question Description = S1_SLSM_225_MSc_Q018]

1. A and C only [Option ID = 105668]
2. A, B and C only [Option ID = 105669]
3. B, C and D only [Option ID = 105670]
4. A, B, C and D all present [Option ID = 105671]

19) The Nobel Prize in Chemistry (2020) was awarded jointly to Emmanuelle Charpentier and Jennifer A. Doudna for

[Question ID = 11061][Question Description = S1_SLSM_225_MSc_Q019]

1. Next generation sequencing

[Option ID = 105672]

2. Microarray

[Option ID = 105673]

3. Lithium-ion batteries

[Option ID = 105674]

4. Genome editing

[Option ID = 105675]

20) Identify the correct order of atmospheric layers starting from the earth's surface (all layers are not included)

[Question ID = 11062][Question Description = S1_SLSM_225_MSc_Q020]

1. Troposphere → Stratosphere → Mesosphere → Thermosphere

[Option ID = 105676]

2. Stratosphere → Mesosphere → Thermosphere → Troposphere

[Option ID = 105677]

3. Stratosphere → Troposphere → Mesosphere → Thermosphere

[Option ID = 105678]

4. Troposphere → Mesosphere → Thermosphere → Stratosphere

[Option ID = 105679]

21)

Match the following

Column I	Column II
A. Aluminum	I. Bauxite
B. Copper	II. Chalcopyrite
C. Iron	III. Magnetite
D. Magnesium	IV. Dolomite

[Question ID = 11063][Question Description = S1_SLSM_225_MSc_Q021]

1. A-II, B-I, C-III, D-IV [Option ID = 105680]
2. A-I, B-II, C-III, D-IV [Option ID = 105681]
3. A-III, B-IV, C-II, D-I [Option ID = 105682]
4. A-I, B-III, C-IV, D-II [Option ID = 105683]

22) What would be the concentration of OH⁻ ions for a solution containing 5x10⁻⁴M H⁺ ions?[Question ID = 11064][Question Description = S1_SLSM_225_MSc_Q022]

1. 0.5x10⁻¹¹ M [Option ID = 105684]
2. 0.5x 10⁻¹⁰ M [Option ID = 105685]
3. 2x10⁻¹¹ M [Option ID = 105686]
4. 2x10⁻¹⁰ [Option ID = 105687]

23) Principle of competitive exclusion refers to: [Question ID = 11065][Question Description = S1_SLSM_225_MSc_Q023]

1. Dominance of predators over prey resulting into elimination of the later. [Option ID = 105688]
2. Two species with similar environmental requirements cannot coexist indefinitely in the same habitat. [Option ID = 105689]
3. Excessive growth of herbivore results into reduction of vegetation. [Option ID = 105690]
4. Competition between two individuals of a same species resulting into elimination of the weaker one [Option ID = 105691]

24) Which of the following is CORRECT regarding the mutation of haemoglobin gene causing sickle-cell anemia?[Question ID = 11066][Question Description = S1_SLSM_225_MSc_Q024]

1. Glutamic acid is replaced by leucine [Option ID = 105692]
2. Leucine is replaced by glutamic acid [Option ID = 105693]
3. Glutamic acid is replaced by valine [Option ID = 105694]
4. Valine is replaced by glutamic acid [Option ID = 105695]

25) Which of the following is CORRECT regarding the formation of image in transmission electron microscope after a beam of electrons interact with specimen? [Question ID = 18506][Question Description = S1_SLSM_225_MSc_Q025]

1. A mirror image of the specimen is developed. [Option ID = 105696]
2. A shadow image of the specimen is developed. [Option ID = 105697]
3. Image develops by the reflecting electrons [Option ID = 105698]
4. Image develops by refraction of electrons [Option ID = 105699]

26) Which of the following positions of a polypeptide is cleaved by Edman's reagent?[Question ID = 18507][Question Description = S1_SLSM_225_MSc_Q026]

1. C-terminus of positively charged residues [Option ID = 105700]
2. C-terminus of hydrophobic residues [Option ID = 105701]
3. C-terminal end [Option ID = 105702]
4. N-terminal end [Option ID = 105703]

27) Which of the following amino acid has asymmetric C_β atom?

[Question ID = 18508][Question Description = S1_SLSM_225_MSc_Q027]

1. Threonine
[Option ID = 105704]
2. Phenylalanine
[Option ID = 105705]
3. Leucine
[Option ID = 105706]
4. Lysine
[Option ID = 105707]

28) Types of non-bonded interactions involved in stabilization of biomolecular structure

- A. Salt bridges
- B. Hydrogen bonds
- C. Disulfide bridge
- D. Non polar interaction
- E. Stacking of aromatic subgroup

Choose the most appropriate answer from the options given below:

[Question ID = 18509][Question Description = S1_SLSM_225_MSc_Q028]

1. A, C, and E Only
[Option ID = 105708]
2. A, B, and D Only
[Option ID = 105709]
3. B, C, D, and E Only
[Option ID = 105710]
4. A, B, C, D, and E
[Option ID = 105711]

29) The gene coding for the glycogen debranching enzyme has been knocked out in mice. In this context, the following statements are made:

Statement I: The mice will exhibit decreased capacity to mobilize glycogen.

Statement II: The blood glucose levels between meals will be lowered in these mice.

[Question ID = 18510][Question Description = S1_SLSM_225_MSc_Q029]

1. Both Statement I and Statement II is true.
[Option ID = 105712]
2. Both Statement I and Statement II is false.
[Option ID = 105713]
3. Statement I is true but Statement II is false.
[Option ID = 105714]
4. Statement is false but Statement II is true.
[Option ID = 105715]

30) Which of the following statements about a transcription unit is correct?[Question ID = 18511][Question Description = S1_SLSM_225_MSc_Q030]

1. A nontemplate strand has the complementary sequence as mRNA except T is replaced by U [Option ID = 105716]
2. A template strand has the same sequence as the mRNA except T is replaced by U. [Option ID = 105717]
3. RNA synthesis is complementary and antiparallel to the template strand [Option ID = 105718]
4. RNA synthesis is complementary but not antiparallel to the template strand [Option ID = 105719]

31) Which of the following is true about the bacterial tryptophan biosynthetic operon?

- A. It is an example of a positively controlled repressible operon.
B. It is an example of a negatively controlled repressible operon.
C. Tryptophan does not function as an inducer
Choose the correct answer from the options given below:

[Question ID = 18512][Question Description = S1_SLSM_225_MSc_Q031]

1. A and B Only
[Option ID = 105720]
2. B and C Only
[Option ID = 105721]
3. A and C Only
[Option ID = 105722]
4. A, B and C Only
[Option ID = 105723]

32) A promoter is required for gene transcription. Which of the following is NOT a feature of a promoter?[Question ID = 18513][Question Description = S1_SLSM_225_MSc_Q032]

1. Contains the first nucleotide that is transcribed to an mRNA [Option ID = 105724]
2. Specifies which DNA strand is used as a template [Option ID = 105725]
3. The DNA sequence to which the transcription machinery binds [Option ID = 105726]
4. Includes the first codon of the mRNA [Option ID = 105727]

33) Using the pK_a values for glutamate ($pK_1 = 2.19$; $pK_2 = 9.67$; $pK_R = 4.2$) indicate the net charge on glutamate at pH 1.0.

[Question ID = 18514][Question Description = S1_SLSM_225_MSc_Q033]

1. +1
[Option ID = 105728]
2. 0
[Option ID = 105729]
3. -1
[Option ID = 105730]
4. -2
[Option ID = 105731]

34) Match the sugars with the number of chiral carbon atom present

A. Glucose	I. 0
B. Ribulose	II. 1
C. Glyceraldehyde	III. 4
D. Dihydroxyacetone	IV. 2

[Question ID = 18515][Question Description = S1_SLSM_225_MSc_Q034]

1. A-IV, B-I, C-III, D-II [Option ID = 105732]
2. A-III, B-IV, C-II, D-I [Option ID = 105733]
3. A-II, B-I, C-IV, D-III [Option ID = 105734]
4. A-I, B-IV, C-III, D-II [Option ID = 105735]

35)

In the left column are the conformations of DNA and in the right column are the associated characteristics. Match column I with column II

column I	column II
A. Supercoiled DNA B. Triple helical DNA C. Double helical DNA	I. Watson–Crick hydrogen bonding II. Closed circular, relaxed by nicking one strand III. Hoogsteen base pairing

Choose the correct answer from the following options:

[Question ID = 18516][Question Description = S1_SLSM_225_MSc_Q035]

1. A-III, B-II, C-I [Option ID = 105736]
2. A-II, B-III, C-I [Option ID = 105737]
3. A-I, B-III, C- II [Option ID = 105738]
4. A-III,B-I,C- II [Option ID = 105739]

36) Which one of the following TCA cycle enzymes is/are membrane bound?

- A) Succinate dehydrogenase
B) Isocitrate dehydrogenase
C) Fumerase
D) Malate dehydrogenase

[Question ID = 18517][Question Description = S1_SLSM_225_MSc_Q036]

1. A only
[Option ID = 105740]
2. A and B only
[Option ID = 105741]
3. A, B and C only
[Option ID = 105742]
4. A,B,C and D
[Option ID = 105743]

37) Mannose-6-phosphate is used as a signal for targeting proteins to which of the following cellular organelle?[Question ID = 18518][Question Description =

S1_SLSM_225_MSc_Q037]

1. Lysosomes [Option ID = 105744]
2. Endoplasmic reticulum [Option ID = 105745]
3. Golgi Complex [Option ID = 105746]
4. Peroxisomes [Option ID = 105747]

38) Given below are two statements:

Statement I: Allosteric enzymes are regulated by covalent interactions with modulators.

Statement II: For a typical allosteric enzyme regulation, the $K_{0.5}$ values are variable while $\frac{1}{2} V_{\max}$ values remain constant.

In the light of the above statements, choose the *Correct* answer from the options given below[Question ID = 18519][Question Description = S1_SLSM_225_MSc_Q038]

1. Both Statement I and Statement II are correct [Option ID = 105748]
2. Both Statement I and Statement II are incorrect [Option ID = 105749]
3. Statement I is correct but Statement II is incorrect [Option ID = 105750]
4. Statement I is incorrect but Statement II is correct [Option ID = 105751]

39) The order of general transcription factors recruited to promoter is:[Question ID = 18520][Question Description = S1_SLSM_225_MSc_Q039]

1. TFIID, TFIIE, TFIIH, TFIIB [Option ID = 105752]
2. TFIIB, TFIID, TFIIE, TFIIH [Option ID = 105753]
3. TFIID, TFIIB, TFIIE, TFIIH [Option ID = 105754]
4. TFIID, TFIIB, TFIIH, TFIIE [Option ID = 105755]

40) Which of the following statements is INCORRECT regarding Klenow polymerase?

[Question ID = 18521][Question Description = S1_SLSM_225_MSc_Q040]

1. It is a fragment of DNA pol I

[Option ID = 105756]

2. It has 5' to 3' polymerase activity

[Option ID = 105757]

3. It has 5' to 3' exonuclease activity

[Option ID = 105758]

4. It cannot continue synthesis after nick is filled in

[Option ID = 105759]

41) Match List I with List II

List I	List II
A. 2n chromosomes	I. Nullisomy
B. 2n-1 chromosomes	II. Diploidy
C. 2n+2 chromosomes	III. Monosomy
D. 2n-2 chromosomes	IV. Tetrasomy

Choose the correct answer from the options given below:

[Question ID = 18522][Question Description = S1_SLSM_225_MSc_Q041]

1. A-II, B-I, C-III, D-IV [Option ID = 105760]
2. A-II, B-IV, C-I, D-III [Option ID = 105761]
3. A-II, B-III, C-IV, D-I [Option ID = 105762]
4. A-II, B-I, C-IV, D-III [Option ID = 105763]

42) Given below are two statements

Statement I: In case of *Drosophila*, the ratio of X chromosome to autosome determines the sex of the fly.

Statement II: IF X:A ratio is 0.67, the fly will have intersex phenotype.

In the light of the above statements, choose the *correct* answer from the options given below[Question ID = 18523][Question Description = S1_SLSM_225_MSc_Q042]

1. Both Statement I and Statement II are true [Option ID = 105764]
2. Both Statement I and Statement II are false [Option ID = 105765]
3. Statement I is correct but Statement II is false [Option ID = 105766]
4. Statement I is incorrect but Statement II is true [Option ID = 105767]

43) A plant with the genotype *AaBbDdFf* is crossed with a plant with the genotype *AabbddFF*. What proportion of progeny will have *AaBbDdFf* genotype?

[Question ID = 18524][Question Description = S1_SLSM_225_MSc_Q043]

1. 1/8 [Option ID = 105768]
2. 1/16 [Option ID = 105769]
3. 1/32 [Option ID = 105770]
4. 1/64 [Option ID = 105771]

44) A biologist examines 200 cells. Of these 160 cells were in interphase, 20 cells were in prophase, 6 cells in prometaphase, 2 cells in metaphase, 7 cells in anaphase, and 5 cells in telophase. The cell cycle completes in 24 hr. The approximate duration of prometaphase is[Question ID = 11067][Question Description = S1_SLSM_225_MSc_Q044]

1. 23 minutes [Option ID = 105772]
2. 33 minutes [Option ID = 105773]
3. 43 minutes [Option ID = 105774]
4. 53 minutes [Option ID = 105775]

45) Given below are two statements

Statement I: Histones are small basic proteins.

Statement II: Both core and variant histones can be incorporated into DNA only in the S phase.

In the light of the above statements, choose the *correct* answer from the options given below[Question ID = 11068][Question Description = S1_SLSM_225_MSc_Q045]

1. Both Statement I and Statement II are correct [Option ID = 105776]
2. Both Statement I and Statement II are incorrect [Option ID = 105777]
3. Statement I is correct but Statement II is incorrect [Option ID = 105778]
4. Statement I is incorrect but Statement II is correct [Option ID = 105779]

46) How many diploid genotypes are possible if a single locus has 4 alleles?[Question ID = 11069][Question Description = S1_SLSM_225_MSc_Q046]

1. 10 [Option ID = 105780]
2. 8 [Option ID = 105781]
3. 16 [Option ID = 105782]
4. 12 [Option ID = 105783]

47) Given below are two statements

Statement I: Transitions and transversions occur with equal frequency.

Statement II: Transversions arise at apurinic sites.

In the light of the above statements, choose the *correct* answer from the options given below[Question ID = 11070][Question Description =

S1_SLSM_225_MSc_Q047]

1. Both Statement I and Statement II are true [Option ID = 105784]
2. Both Statement I and Statement II are false [Option ID = 105785]
3. Statement I is correct but Statement II is false [Option ID = 105786]
4. Statement I is incorrect but Statement II is true [Option ID = 105787]

48) Which of the following statements is NOT True?

[Question ID = 11071][Question Description = S1_SLSM_225_MSc_Q048]

1. X and Y chromosome pair via pseudoautosomal region
[Option ID = 105788]
2. Synaptonemal complex helps in joining the homologous chromosomes together
[Option ID = 105789]
3. Homologous chromosomes pair via pairing centers in Drosophila
[Option ID = 105790]
4. Pairing of homologous chromosomes is not essential for meiosis
[Option ID = 105791]

49) Match List I with List II

List I	List II
A. BLOSUM90, PAM30 B. Needleman and Wunsch C. Smith and Waterman D. BLOSUM45, PAM250	I. Global alignment using full length sequence of each protein or DNA II. Low similarity III. Local alignment focusing regions of greatest similarity IV. High similarity

Choose the **correct** answer from the options given below:

[Question ID = 11072][Question Description = S1_SLSM_225_MSc_Q049]

1. A- III, B- IV, C- II, D- I
[Option ID = 105792]
2. A- IV, B- I, C- III, D- IV
[Option ID = 105793]
3. A- I, B- III, C- IV, D- II
[Option ID = 105794]
4. A- IV, B- III, C- II, D- I
[Option ID = 105795]

50) The pentose phosphate pathway generates reducing equivalent and pentoses for nucleotide biosynthesis. Which of the following proposed combinations is CORRECT?[Question ID = 11073][Question Description = S1_SLSM_225_MSc_Q050]

1. FADH₂ and Ribose-5-phosphate [Option ID = 105796]
2. NADPH and Ribose -5-phosphate [Option ID = 105797]
3. NADPH and Arabinose-5-phosphate [Option ID = 105798]
4. NADH and Arabinose-5-phosphate [Option ID = 105799]

51) Match the ligands (List I) with receptors (List II)

List I	List II
A. Insulin	I. Cytokine receptor
B. Gamma-interferon	II. Receptor tyrosine kinase
C. Testosterone	III. Receptor serine/threonine kinases
D. TGF-Beta	IV. Nuclear receptor

Choose the correct answer from the options given below:

[Question ID = 11074][Question Description = S1_SLSM_225_MSc_Q051]

1. A- I, B- II, C- III, D- IV [Option ID = 105800]
2. A- II, B- I, C- III, D- IV [Option ID = 105801]
3. A- II, B- I, C- IV, D- III [Option ID = 105802]
4. A- III, B- IV, C- II, D- I [Option ID = 105803]

52) Given below are two statements:

Statement I: ClustalW uses progressive alignment for construction of multiple sequence alignment.

Statement II: MUSCLE uses an iterative approach by creating an initial alignment and then modifying to improve the alignment.

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

[Question ID = 11075][Question Description = S1_SLSM_225_MSc_Q052]

1. Both Statement I and Statement II are correct
[Option ID = 105804]
2. Both Statement I and Statement II are incorrect
[Option ID = 105805]
3. Statement I is correct but Statement II is incorrect
[Option ID = 105806]
4. Statement I is incorrect but Statement II is correct
[Option ID = 105807]

53) The highest efficiency of one step purification of a protein from a mixture is achieved by [Question ID = 11076][Question Description = S1_SLSM_225_MSc_Q053]

1. Ion exchange chromatography [Option ID = 105808]
2. Gel Filtration chromatography [Option ID = 105809]
3. Ammonium sulphate purification [Option ID = 105810]
4. Affinity chromatography [Option ID = 105811]

54) You are synthesizing one randomized (any one of having all four nucleotide in each position) oligonucleotide having ten bases. The number of variants in final product would be[Question ID = 11077][Question Description = S1_SLSM_225_MSc_Q054]

1. 2¹⁰ [Option ID = 105812]
2. 2¹⁸ [Option ID = 105813]

3. 2²⁰ [Option ID = 105814]
 4. 2²² [Option ID = 105815]

55) In the following table, the left column has names of different metabolic pathways and the right column has the names of metabolites. Identify the correct match of pathways and associated metabolites.

A. Embden-Meyerhof-Parnas	I. Fumarate
B. TCA cycle	II. Fatty acyl CoA
C. β -Oxidation	III. Dihydroxyacetone phosphate
D. Oxidative pentose-phosphate	IV. 6-phosphogluconate

Choose the **correct** matching from the options given below:

[Question ID = 11078][Question Description = S1_SLISM_225_MSc_Q055]

1. A-II, B-IV, C-I D-III [Option ID = 105816]
2. A-IV, B-I, C-II, D-III [Option ID = 105817]
3. A-III, B-I C-II, D-IV [Option ID = 105818]
4. A-I, B-II, C-III, D-IV [Option ID = 105819]

56) Which of the following enzymes is responsible for producing reactive oxygen species in a cell?[Question ID = 11079][Question Description = S1_SLISM_225_MSc_Q056]

1. Ascorbic peroxidase [Option ID = 105820]
2. Glutathione reductase [Option ID = 105821]
3. Catalase [Option ID = 105822]
4. NAD(P)H-oxidase [Option ID = 105823]

57) Match List I with List II

List I	List II
A. <i>Giardia lamblia</i>	I. Kala azar
B. <i>Plasmodium falciparum</i>	II. Amoebiasis
C. <i>Entamoeba histolytica</i>	III. Malaria
D. <i>Leishmania donovani</i>	IV. Giardiasis

Choose the correct answer from the options given below:

[Question ID = 11080][Question Description = S1_SLISM_225_MSc_Q057]

1. A-IV, B-III, C-II, D-I [Option ID = 105824]
2. A-IV, B-II, C-I, D-III [Option ID = 105825]
3. A-IV, B-I, C-II, D-III [Option ID = 105826]
4. A-IV, B-III, C-I, D-II [Option ID = 105827]

58) Given below are two statements

Statement I: Glutaraldehyde is used as a fixative in sample preparation for electron microscopy.

Statement II: Glutaraldehyde cross-links carbohydrates and lipids.

In the light of the above statements, choose the **correct** answer from the options given below[Question ID = 11081][Question Description = S1_SLISM_225_MSc_Q058]

1. Both Statement I and Statement II are correct [Option ID = 105828]
2. Both Statement I and Statement II are incorrect [Option ID = 105829]
3. Statement I is correct but Statement II is incorrect [Option ID = 105830]
4. Statement I is incorrect but Statement II is correct [Option ID = 105831]

59) Given below are two statements

Statement I: Autophagy involves active participation of lysosomes.

Statement II: An inherited diseases called Tay-Sachs disease is due to the defect in lysosomal functioning.

In the light of the above statements, choose the **correct** answer from the options given below[Question ID = 11082][Question Description = S1_SLISM_225_MSc_Q059]

1. Both Statement I and Statement II are true [Option ID = 105832]
2. Both Statement I and Statement II are false [Option ID = 105833]
3. Statement I is correct but Statement II is false [Option ID = 105834]
4. Statement I is incorrect but Statement II is true [Option ID = 105835]

60) If a cell homogenate is subjected to repeated centrifugation with progressively higher speed, what will be the order of precipitation for the following organelles?[Question ID = 11083][Question Description = S1_SLISM_225_MSc_Q060]

1. Nuclei, microsomes, ribosomes, mitochondria [Option ID = 105836]
2. Nuclei, mitochondria, microsomes, ribosomes [Option ID = 105837]
3. Mitochondria, nuclei, ribosomes, microsomes [Option ID = 105838]
4. Mitochondria, nuclei, microsomes, ribosomes [Option ID = 105839]

61) Which one of the following statements is NOT true for antibiotic "Gentamicin"? It is

[Question ID = 11084][Question Description = S1_SLISM_225_MSc_Q061]

1. an aminoglycoside
[Option ID = 105840]
2. a bactericidal agent
[Option ID = 105841]
3. a transcriptional inhibitor
[Option ID = 105842]
4. a broad spectrum antibiotics
[Option ID = 105843]

62) Match List I with List II

List I (Microbial Product)	List II (Organism)
A. Ethanol	I. <i>Zymomonas</i> sp.
B. Acetone and Butanol	II. <i>Clostridium</i> sp.
C. Cellulase	III. <i>Trichoderma</i> sp.

Choose the correct answer from the options given below:

[Question ID = 11085][Question Description = S1_SLISM_225_MSc_Q062]

1. A-I, B-II, C-III [Option ID = 105844]
2. A-II, B-I, C-III [Option ID = 105845]
3. A-I, B-III, C-II [Option ID = 105846]

4. A-III, B-I, C-II [Option ID = 105847]

63) Given below are two statements

Statement I: Autoinducers used for quorum sensing by Gram-positive bacteria are freely diffusible across the cells.

Statement II: Acyl homoserine lactones are the autoinducers used for quorum sensing by Gram-negative bacteria.

In the light of the above statements, choose the *correct* answer from the options given below[Question ID = 11086][Question Description = S1_SLSM_225_MSc_Q063]

- Both Statement I and Statement II are correct [Option ID = 105848]
- Both Statement I and Statement II are incorrect [Option ID = 105849]
- Statement I is correct but Statement II is incorrect [Option ID = 105850]
- Statement I is incorrect but Statement II is correct [Option ID = 105851]

64) Forward scatter in flow cytometry is proportional to

[Question ID = 11087][Question Description = S1_SLSM_225_MSc_Q064]

- Internal complexity of the cell

[Option ID = 105852]

- Granularity of the cell

[Option ID = 105853]

- Size of the cell

[Option ID = 105854]

- Fluorescence intensity of the cell

[Option ID = 105855]

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

Assertion (A): Lactose fermenting and lactose nonfermenting enteric bacteria can be isolated with the use of MacConkey's agar.

Reason (R): Neutral red in the medium discriminates acid producers; lactose fermenting colonies become pink as opposed to pale colonies for non-fermenting bacteria.

In the light of the above statement, choose the correct answer from the options given below[Question ID = 11088][Question Description = S1_SLSM_225_MSc_Q065]

- Both A and R are true and R is the correct explanation of A [Option ID = 105856]
- Both A and R are true but R is NOT correct explanation of A [Option ID = 105857]
- A is true but R is false [Option ID = 105858]
- A is false but R is true [Option ID = 105859]

66) CpG dinucleotides bind to this endosomal receptor and stimulate the MyD88-dependent MAPK activation. This receptor is expressed on innate cells. Identify the receptor[Question ID = 11089][Question Description = S1_SLSM_225_MSc_Q066]

- TLR 1 [Option ID = 105860]
- TLR 9 [Option ID = 105861]
- NOD like receptors [Option ID = 105862]
- CD25 [Option ID = 105863]

67) Which of the following reagents would be required in a kit designed to detect Corona Virus antibodies in patient sera using indirect ELISA?

A. Primary antibody to Corona Virus antigens

B. Substrate

C. Enzyme-labeled secondary antibody to primary

D. Antigen-coated plates

Choose the correct answer from the options given below:[Question ID = 11090][Question Description = S1_SLSM_225_MSc_Q067]

- All the above [Option ID = 105864]
- B and D Only [Option ID = 105865]
- B, C and D Only [Option ID = 105866]
- A, B, and C Only [Option ID = 105867]

68) Delayed type hypersensitivity involves a sensitization phase and an effector phase. The process is mediated by _____ which require representation of antigen by _____ cells.[Question ID = 11091][Question Description = S1_SLSM_225_MSc_Q068]

- T cells; Mast [Option ID = 105868]
- Ig E; Neutrophils [Option ID = 105869]
- Ig E; Antigen presenting [Option ID = 105870]
- T cells; Antigen presenting [Option ID = 105871]

69) A mouse was immunized with antigen X. Two weeks later the same animal was administered a formulation comprising of antigen X and antigen Y. State which of the following statements is TRUE?[Question ID = 11092][Question Description = S1_SLSM_225_MSc_Q069]

- The magnitude and kinetics of the serum antibody response to antigen X and antigen Y will be comparable [Option ID = 105872]
- The magnitude of the serum antibody response to antigen X and antigen Y will be comparable, but the kinetics will be different [Option ID = 105873]
- The kinetics of the serum antibody response to antigen X and antigen Y will be comparable, but the magnitude will be different [Option ID = 105874]
- The magnitude and kinetics of the serum antibody response to antigen X and antigen Y will be different [Option ID = 105875]

70) Match the activities of B cells (left column) with possible mechanism (right column)

Activities	Mechanism
A. Expression of membrane versus secreted antibody B. Expression of IgA versus IgE C. V-D-J joining	I. DNA rearrangement II. Alternative RNA splicing III. Class switch at the level of DNA

Choose the correct answer from the options given below:

[Question ID = 11093][Question Description = S1_SLSM_225_MSc_Q070]

- A-II, B-I, C-III [Option ID = 105876]
- A-II, B-III, C-I [Option ID = 105877]
- A-III, B-I, C-II [Option ID = 105878]
- A-III, B-II, C-I [Option ID = 105879]

71) Match the following

Column I	Column II
A. Bacteria	I. Leaf curl

B. Fungi	II. Root-knot
C. Virus	III. Crown gall
D. Nematode	IV. Powdery mildew

[Question ID = 11094][Question Description = S1_SLSM_225_MSc_Q071]

1. A-I, B-II, C-III, D-IV [Option ID = 105880]
2. A-III, B-I, C-II, D-IV [Option ID = 105881]
3. A-II, B-IV, C-III, D-II [Option ID = 105882]
4. A-III, B-IV, C-I, D-II [Option ID = 105883]

72) Which of the following diseases is caused by *Pseudomonas syringae*?[Question ID = 11095][Question Description = S1_SLSM_225_MSc_Q072]

1. Bacterial speck on tomato [Option ID = 105884]
2. Powdery mildew on wheat [Option ID = 105885]
3. Rust on maize [Option ID = 105886]
4. Bacterial blight on rice [Option ID = 105887]

73) Which among the following is/are not present in the crocodilian heart?[Question ID = 11096][Question Description = S1_SLSM_225_MSc_Q073]

1. L-R shunt [Option ID = 105888]
2. R-L shunt [Option ID = 105889]
3. Foramen of Panizza [Option ID = 105890]
4. Anastomosis [Option ID = 105891]

74) When the radius of the resistance vessels increases, which of the following will also increase?[Question ID = 11097][Question Description = S1_SLSM_225_MSc_Q074]

1. Systolic blood pressure [Option ID = 105892]
2. Diastolic blood pressure [Option ID = 105893]
3. Viscosity of the blood [Option ID = 105894]
4. Capillary blood flow [Option ID = 105895]

75) In umbilical cord of mammalian embryo, the flowing blood:[Question ID = 11098][Question Description = S1_SLSM_225_MSc_Q075]

1. is maternal only. [Option ID = 105896]
2. is maternal and foetal both. [Option ID = 105897]
3. is foetal only. [Option ID = 105898]
4. proportion changes from the maternal to the foetal blood with development. [Option ID = 105899]

76) The large cotyledon of grass family monocot plants is called[Question ID = 11099][Question Description = S1_SLSM_225_MSc_Q076]

1. Endosperm [Option ID = 105900]
2. Scutellum [Option ID = 105901]
3. Coleoptile [Option ID = 105902]
4. Coleorhiza [Option ID = 105903]

77) An inflorescence is said to be determinate when

- A. Only a finite number of flowers develop on meristem
- B. Inflorescence meristem terminates into a flower
- C. Production of new flowers in axillary positions stops
- D. All flowers of the inflorescence are of same sex

Choose the correct answer from the options given below

[Question ID = 11100][Question Description = S1_SLSM_225_MSc_Q077]

1. A and B only
[Option ID = 105904]
2. B only
[Option ID = 105905]
3. A, B, and C only
[Option ID = 105906]
4. D only
[Option ID = 105907]

78) Read the following statements regarding cereal seeds

Statement -I: The cereal seeds contain starchy endosperm cells and aleurone cells.

Statement -II : At the maturity starchy endosperm dies but does not undergo autolysis.

Statement -III: Aleurone cells remain alive till germination.

Choose the correct statement(s)[Question ID = 11101][Question Description = S1_SLSM_225_MSc_Q078]

1. Statement I and II only [Option ID = 105908]
2. Statement II and III only [Option ID = 105909]
3. Statement I and III only [Option ID = 105910]
4. All statements are correct [Option ID = 105911]

79) Water uptake decreases when roots are subjected to_____

- A. Low temperatures
- B. Anaerobic conditions
- C. Treated with respiratory inhibitors
- D. High temperature

Choose the most appropriate answer from the options given below:

[Question ID = 11102][Question Description = S1_SLSM_225_MSc_Q079]

1. A and B only
[Option ID = 105912]
2. A, B, and C only
[Option ID = 105913]
3. B and C only
[Option ID = 105914]
4. B, C, and D only
[Option ID = 105915]

80) Which of the followings is/are produced during non-cyclic photophosphorylation?[Question ID = 11103][Question Description = S1_SLSM_225_MSc_Q080]

1. ATP [Option ID = 105916]
2. NADPH [Option ID = 105917]

3. NADPH and ATP [Option ID = 105918]
4. NADH and ATP [Option ID = 105919]

81) Phosphoenol pyruvate is the major CO₂ acceptor for which of the following plants?[Question ID = 11104][Question Description = S1_SLSM_225_MSc_Q081]

1. Cowpea [Option ID = 105920]
2. Apple [Option ID = 105921]
3. Sugarcane [Option ID = 105922]
4. Pinus [Option ID = 105923]

82) Which of the followings is/are correct regarding role of given phytohormones?

- A. Auxin stimulates fruit development
- B. Ethylene promotes ripening of fruits.
- C. Cytokinin promotes senescence in leaves.
- D. ABA inhibits stomatal closure.

Choose the *correct* answer from the options given below:[Question ID = 11105][Question Description = S1_SLSM_225_MSc_Q082]

1. A only [Option ID = 105924]
2. A and B only [Option ID = 105925]
3. A, B and C only [Option ID = 105926]
4. A, B and D only [Option ID = 105927]

83) Among the plant processes, which of the followings are primarily regulated by phytochrome?

- A. Shade avoidance
- B. Stomatal opening
- C. Chloroplast movement
- D. Flowering

Choose the *correct* answer from the options given below:[Question ID = 11106][Question Description = S1_SLSM_225_MSc_Q083]

1. A and B only [Option ID = 105928]
2. B and D only [Option ID = 105929]
3. C and D only [Option ID = 105930]
4. A and D only [Option ID = 105931]

84) Match List I with List II

List I	List II
A. Addison's disease	I. Inflammation of joints due to accumulation of uric acid crystals.
B. Acromegaly	II. Inadequate adrenal hormone
C. Gout	III. Over secretion of growth hormone

[Question ID = 11107][Question Description = S1_SLSM_225_MSc_Q084]

1. A- II, B- I, C-III [Option ID = 105932]
2. A- III, B- II, C-I [Option ID = 105933]
3. A- I, B- III, C-II [Option ID = 105934]
4. A- II, B- III, C-I [Option ID = 105935]

85) Which among the following is the upper lip of cockroach?[Question ID = 11108][Question Description = S1_SLSM_225_MSc_Q085]

1. Labrum [Option ID = 105936]
2. Labium [Option ID = 105937]
3. Hypopharynx [Option ID = 105938]
4. Maxilla [Option ID = 105939]

86) Match List I with List II

List I	List II
A. Silver Fish	I. Obelia
B. Medusa	II. Cetacean
C. Spicules	III. Insect
D. Dolphins	IV. Sponges

[Question ID = 11109][Question Description = S1_SLSM_225_MSc_Q086]

1. A- II, B- I, C-III, D -IV [Option ID = 105940]
2. A- III, B- I, C-IV, D -II [Option ID = 105941]
3. A- IV, B- II, C-I, D -III [Option ID = 105942]
4. A- I, B- III, C-II, D -IV [Option ID = 105943]

87) Which of the following statement is NOT correct for the aquatic annelid such as Nereis?

[Question ID = 11110][Question Description = S1_SLSM_225_MSc_Q087]

1. It has lateral appendages, which help in swimming.
[Option ID = 105944]
2. It has closed circulatory system.
[Option ID = 105945]
3. It has neural system consisting of paired ganglion.
[Option ID = 105946]
4. Reproduction occurs through both sexual as well as asexual mode.
[Option ID = 105947]

88) Given below are two statements:

Statement I: When mRNA of aquaporin protein is inserted into the frog oocyte, aquaporin is expressed and it is incorporated in the membrane of oocyte. Such aquaporin expressing oocyte swelled when placed in water.

Statement II: When mRNA of aquaporin protein is inserted into the frog oocytes, aquaporin is expressed and it is incorporated in the membrane of oocyte. Such aquaporin expressing oocyte shrunk and died when placed in water.

In the light of the above statements, chose the correct answer from the options given below.[Question ID = 11111][Question Description = S1_SLSM_225_MSc_Q088]

1. Both Statement I and Statement II are true. [Option ID = 105948]
2. Both Statement I and Statement II are false. [Option ID = 105949]
3. Statement I is correct but Statement II is false. [Option ID = 105950]
4. Statement I is incorrect but Statement II is false. [Option ID = 105951]

89) Flagella of bacteria are primarily composed of[Question ID = 11112][Question Description = S1_SLSM_225_MSc_Q089]

1. Glucosamine and muramic acids [Option ID = 105952]
2. Lipids [Option ID = 105953]
3. Carbohydrates [Option ID = 105954]
4. Proteins [Option ID = 105955]

90) In case of Drosophila, after the cells are formed from the syncytial embryo, there are cell-to-cell interactions mediated by the segment polarity genes. In this aspect following possible statements were given:

- A. The segment polarity genes reinforce the parasegmental periodicity established by the earlier transcription factors.
- B. Through these cell-to-cell signaling, cell fates are established within each parasegment.
- C. Through these cell-to-cell signaling, cell fates are established within each segment.
- D. Segment polarity genes encode proteins that are constituents of Wnt and Hedgehog signaling pathways.
- E. *fushi tarazu* and hairy are examples of segment polarity genes.

Choose the correct answer from the options given below:[Question ID = 11113][Question Description = S1_SLSM_225_MSc_Q090]

1. A, B and E only [Option ID = 105956]
2. B, D and E only [Option ID = 105957]
3. A, B and D only [Option ID = 105958]
4. A, C and D only [Option ID = 105959]

91) Movement of individual cells into the blastocoel during gastrulation is called:[Question ID = 11114][Question Description = S1_SLSM_225_MSc_Q091]

1. ingression [Option ID = 105960]
2. involution [Option ID = 105961]
3. invagination [Option ID = 105962]
4. delamination [Option ID = 105963]

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

Assertion A: Tendril of pea and leaf-like organ of cactus are homologous organs

Reason R: Homologous organs have similar evolutionary origin

In the light of the above statements, choose the most appropriate answer from the options given below[Question ID = 11115][Question Description = S1_SLSM_225_MSc_Q092]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 105964]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 105965]
3. A is correct but R is not correct [Option ID = 105966]
4. A is not correct but R is correct [Option ID = 105967]

93) Pneumatophores are mostly present in [Question ID = 11116][Question Description = S1_SLSM_225_MSc_Q093]

1. Mesophytes [Option ID = 105968]
2. Halophytes [Option ID = 105969]
3. Xerophytes [Option ID = 105970]
4. Hydrophytes [Option ID = 105971]

94) Some small fishes gather around and feed on the leftover of bigger animals like sharks. This relationship is an example of [Question ID = 11117][Question Description = S1_SLSM_225_MSc_Q094]

1. Mutualism [Option ID = 105972]
2. Parasitism [Option ID = 105973]
3. Commensalism [Option ID = 105974]
4. Predatorism [Option ID = 105975]

95) Which element is most abundant in our universe?[Question ID = 11118][Question Description = S1_SLSM_225_MSc_Q095]

1. Hydrogen [Option ID = 105976]
2. Helium [Option ID = 105977]
3. Oxygen [Option ID = 105978]
4. Nitrogen [Option ID = 105979]

96) Real-time PCR can be used for detecting the

- A. Virus load in animal tissue
- B. Bacterial load in plant tissue
- C. Amount of viral cap protein present in any tissue
- D. Amount bacterial cell wall component in any tissue

[Question ID = 11119][Question Description = S1_SLSM_225_MSc_Q096]

1. A only

[Option ID = 105980]

2. A and B only

[Option ID = 105981]

3. A, B and C only

[Option ID = 105982]

4. A,B,C and D

[Option ID = 105983]

97) Which of the following methods can help to estimate molecular weight of a protein?

- A. Gel electrophoresis
- B. Gel exclusion chromatography
- C. Bioinformatic analysis of amino acid sequence
- D. Spectrophotometry

[Question ID = 11120][Question Description = S1_SLSM_225_MSc_Q097]

1. A only

[Option ID = 105984]

2. A and B only

[Option ID = 105985]

3. A, B and C only

[Option ID = 105986]

4. A,B,C and D

[Option ID = 105987]

98) Ninhydrin reagent is primarily used for detecting[Question ID = 11121][Question Description = S1_SLSM_225_MSc_Q098]

1. Monosaccharides and disaccharides [Option ID = 105988]
2. Starch [Option ID = 105989]
3. Triacylglycerol [Option ID = 105990]
4. Ammonia and amines [Option ID = 105991]

99) Which of the following is/are DNA binding dye?Which of the following is/are DNA binding dye?

A. DAPI (4',6-diamidino-2-phenylindole)

B. Nile red

C. Ethidium bromide

D. Trypan blue

Choose the correct answer from the following options.

[Question ID = 11122][Question Description = S1_SLSM_225_MSc_Q099]

1. A, B and C only

[Option ID = 105992]

2. B, C and D only

[Option ID = 105993]

3. C only

[Option ID = 105994]

4. A and C only

[Option ID = 105995]

100) Which of the following is a quorum sensing molecule for bacteria?[Question ID = 11123][Question Description = S1_SLSM_225_MSc_Q100]

1. N-acyl homoserine lactones [Option ID = 105996]

2. Acetosyringone [Option ID = 105997]

3. N-hydroxy-pipecolic acid [Option ID = 105998]

4. Chalcone [Option ID = 105999]

