

Test Paper : III  
 Test Subject : LIFE SCIENCES  
 Test Subject Code : A-09-03

Test Booklet Serial No. : \_\_\_\_\_  
 OMR Sheet No. : \_\_\_\_\_  
 Hall Ticket No. 

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 (Figures as per admission card)

**Name & Signature of Invigilator**

Name : \_\_\_\_\_ Signature : \_\_\_\_\_

**Paper : III  
 Subject : LIFE SCIENCES**

Time : 2 Hours 30 Minutes Maximum Marks : 150

Number of Pages in this Booklet : 16 Number of Questions in this Booklet : 75

**Instructions for the Candidates**

1. Write your Hall Ticket Number in the space provided on the top of this page.
2. This paper consists of seventy five multiple-choice type of questions.
3. At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as below :
  - (i) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal and do not accept an open booklet.
  - (ii) **Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.**
  - (iii) After this verification is over, the Test Booklet Number should be entered in the OMR Sheet and the OMR Sheet Number should be entered on this Test Booklet.
4. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.  
**Example :**

(A)	(B)	<input checked="" type="radio"/>	(D)
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 where (C) is the correct response.
5. Your responses to the items are to be indicated in the **OMR Sheet given to you**. If you mark at any place other than in the circle in the Answer Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your name or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
9. You have to return the test question booklet and OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall.
10. **Use only Blue/Black Ball point pen.**
11. **Use of any calculator or log table etc., is prohibited.**
12. **There is no negative marks for incorrect answers.**

**అభ్యర్థులకు సూచనలు**

1. ఈ పుట పై భాగంలో ఇవ్వబడిన స్థలంలో మీ హాల్ టికెట్ నంబరు రాయండి.
2. ఈ ప్రశ్న పత్రము డెబ్బైఐదు బహుళాప్త ప్రశ్నలను కలిగి ఉంది.
3. పరీక్ష ప్రారంభమున ఈ ప్రశ్నాపత్రము మీకు ఇవ్వబడుతుంది. మొదటి ఐదు నిమిషములలో ఈ ప్రశ్నాపత్రమును తెరిచి కింద తెలిపిన అంశాలను తప్పనిసరిగా సరిచూసుకోండి.
  - (i) ఈ ప్రశ్న పత్రమును చూడడానికి కవర్ పేజీ అంచున ఉన్న కాగితపు సీలును చించండి. స్టిక్కర్ సీలులేని మరియు ఇదివరకే తెరిచి ఉన్న ప్రశ్నాపత్రమును మీరు అంగీకరించనద్దు.
  - (ii) కవరు పేజీ పై ముద్రించిన సమాచారం ప్రకారం ఈ ప్రశ్నపత్రములోని పేజీల సంఖ్యను మరియు ప్రశ్నల సంఖ్యను సరిచూసుకోండి. పేజీల సంఖ్యకు సంబంధించి గానీ లేదా సూచించిన సంఖ్యలో ప్రశ్నలు లేకపోవుట లేదా నిజప్రతి కాకపోవుట లేదా ప్రశ్నలు క్రమపద్ధతిలో లేకపోవుట లేదా ఏదైనా తేడాలుండుట వంటి దోషపూరితమైన ప్రశ్న పత్రాన్ని వెంటనే మొదటి ఐదు నిమిషాల్లో పరీక్షా పర్యవేక్షకునికి తిరిగి ఇచ్చివేసి దానికి బదులుగా సరిగ్గా ఉన్న ప్రశ్నపత్రాన్ని తీసుకోండి. తదనంతరం ప్రశ్నపత్రము మార్చబడదు అదనపు సమయం ఇవ్వబడదు.
  - (iii) పై విధంగా సరిచూసుకొన్న తర్వాత ప్రశ్నాపత్రం సంఖ్యను OMR పత్రము పై అదేవిధంగా OMR పత్రము సంఖ్యను ఈ ప్రశ్నాపత్రము పై నిర్దిష్ట స్థలంలో రాయవలెను.
4. ప్రతి ప్రశ్నకు నాలుగు ప్రత్యామ్నాయ ప్రతిస్పందనలు (A), (B), (C) మరియు (D) లుగా ఇవ్వబడ్డాయి. ప్రతి ప్రశ్నకు సరైన ప్రతిస్పందనను ఎన్నుకొని కింద తెలిపిన విధంగా OMR పత్రములో ప్రతి ప్రశ్నా సంఖ్యకు ఇవ్వబడిన నాలుగు వృత్తాల్లో సరైన ప్రతిస్పందనను సూచించే వృత్తాన్ని బాల్ పాయింట్ పెన్ తో కింద తెలిపిన విధంగా పూరించాలి.  
**ఉదాహరణ :**

(A)	(B)	<input checked="" type="radio"/>	(D)
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 (C) సరైన ప్రతిస్పందన అయితే
5. ప్రశ్నలకు ప్రతిస్పందనలను ఈ ప్రశ్నపత్రముతో ఇవ్వబడిన OMR పత్రము పైన ఇవ్వబడిన వృత్తాల్లోనే పూరించి గుర్తించాలి. అలాకాక సమాధాన పత్రంపై వేరొక చోట గుర్తిస్తే మీ ప్రతిస్పందన మూల్యాంకనం చేయబడదు.
6. ప్రశ్న పత్రము లోపల ఇచ్చిన సూచనలను జాగ్రత్తగా చదవండి.
7. చిత్తుపనిని ప్రశ్నపత్రము చివర ఇచ్చిన ఖాళీస్థలములో చేయాలి.
8. OMR పత్రము పై నిర్ణీత స్థలంలో సూచించవలసిన వివరాలు తప్పించి ఇతర స్థలంలో మీ గుర్తింపును తెలిపే విధంగా మీ పేరు రాయడం గానీ లేదా ఇతర చిహ్నాలను పెట్టడం గానీ చేసినట్లయితే మీ అనర్హతకు మీరే బాధ్యులవుతారు.
9. పరీక్ష పూర్తయిన తర్వాత మీ ప్రశ్నపత్రాన్ని మరియు OMR పత్రాన్ని తప్పనిసరిగా పరీక్షపర్యవేక్షకుడికి ఇవ్వాలి. వాటిని పరీక్ష గది బయటకు తీసుకువెళ్ళకూడదు.
10. నీలి/నల్ల రంగు బాల్ పాయింట్ పెన్ మాత్రమే ఉపయోగించాలి.
11. లాగరిథమ్ బేబుల్స్, క్యాలిక్యులేటర్లు, ఎలక్ట్రానిక్ పరికరాలు మొదలగునవి పరీక్షగదిలో ఉపయోగించడం నిషేధం.
12. తప్పు సమాధానాలకు మార్కుల తగ్గింపు లేదు.





## LIFE SCIENCES

### Paper – III

- The highest concentration of cystine can be found in  
(A) Myosin                      (B) Keratin  
(C) Collagen                    (D) Spectrin
- A membrane bound enzyme that catalyses the formation of cAMP from ATP is  
(A) MAP Kinase  
(B) Receptor Kinase  
(C) ATP phosphorylase  
(D) Adenyl cyclase
- Assertion (A)** : Quorum sensing is the ability of bacteria to communicate and co-ordinate behaviour.  
**Reason (R)** : Bacteria those use Quorum sensing to producer and secrete a signaling chemical called as “Inducer”.  
(A) Both A and R are true and R is the correct explanation  
(B) Both A and R are true, but R is the false explanation  
(C) A is true, but R is false  
(D) A is false, but R is true
- Assertion (A)** : Interferons are produced by the host against viral infection.  
**Reason (R)** : Interferons are essential for viral replication.  
(A) Both A and R are true and R is the correct explanation  
(B) Both A and R are true, but R is the false explanation  
(C) A is true, but R is false  
(D) A is false, but R is true
- Chylomicrons, Intermediate density lipoproteins (IDL), Low density Lipoproteins (LDL) and very low density Lipoproteins all are serum Lipoproteins. What is correct ordering of these particles from the lowest to the greatest density ?  
(A) LDL, IDL, VLDL, Chylomicra  
(B) Chylomicra, VLDL, IDL, LDL  
(C) VLDL, IDL, LDL, Chylomicra  
(D) Chylomicra, IDL, VLDL, LDL
- The sequence of the steps involved in the viral replication  
I) Attachment  
II) Penetration  
III) Genome replication and Expression  
IV) Uncoating  
Arrange the above steps in chronologically  
(A) I, II, III, IV                      (B) III, II, I, IV  
(C) II, III, IV, I                      (D) I, II, IV, III
- In the area of desmosome the adjacent cells have  
I) Intercellular thickening material  
II) Cilia  
III) Transmembrane linkers  
IV) Protein sheath  
(A) I and IV are correct  
(B) II and IV are correct  
(C) I, II and III are correct  
(D) I and III are correct



8. Viruses contain the following
- I) Genome
  - II) Capsid
  - III) Capsule
  - IV) Enzyme
- (A) I, II, III are correct  
(B) I, II, III, IV are correct  
(C) I, II, IV are correct  
(D) II, III, IV are correct
9. DNA polymerase I are multifunctional enzymes because it promotes
- I) Polymerisation reaction
  - II) Removal of nucleotides from 3' terminus in DNA
  - III) Removal of nucleotides from 5' terminus in DNA
  - IV) Joining of ends of DNA fragments
- (A) I & IV are correct  
(B) II & IV are correct  
(C) III & IV are correct  
(D) I, II & III are correct
10. Most of DNA binding proteins insert the following structure into the major groove of DNA during binding
- (A) Beta-sheet      (B) Alpha-helix  
(C) Beta-Turn      (D) Triple-helix
11. Coding region of an mRNA is 336 nucleotides long, including the initiator and termination codons. What is the number of amino acids in the protein translated from this mRNA ?
- (A) 109                      (B) 110  
(C) 111                      (D) 112
12. Origin of replication in E.coli consists of
- I) Repetitive elements
  - II) GC rich regions
  - III) AT rich regions
  - IV) Series of U residues
- (A) III is correct  
(B) I and III are correct  
(C) I, III and IV are correct  
(D) IV is correct
13. Bt Cotton contains
- (A) dry gene              (B) Cry gene  
(C) Nif gene              (D) AmpR gene
14. Choose the correct signal transduction pathway.
- (A) Hormone → 7 TM Receptor → G Protein → cAMP → PKA  
(B) Hormone → G protein → 7 TM Receptor → cAMP → PKA  
(C) Hormone → 7 TM Receptor → G protein → PKA → cAMP  
(D) Hormone → 7 TM Receptor → cAMP → G protein → PKA
15. Which of the following can form a part of a Biosensor ?
- I) Enzyme
  - II) Antibody
  - III) Lipid
  - IV) Vitamin
- (A) III and IV are correct  
(B) II and IV are correct  
(C) I and II are correct  
(D) I, II and III are correct



16. Name the enzyme act as Intracellular mediator for growth factor receptor  
(A) MAP Kinases  
(B) Phosphodiesterases (PDE)  
(C) JAK Kinases  
(D)  $\beta$ -adrenergic receptor Kinase (BARK)

17. DNA can be radiolabelled with

- I)  $P^{32}$
  - II)  $I^{125}$
  - III)  $P^{33}$
  - IV)  $S^{35}$
- (A) I, II and III are correct  
(B) I and III are correct  
(C) I, III and IV are correct  
(D) II and IV are correct

18. Electrophoresis of a purified protein called X in the presence of SDS and beta-Mercaptoethanol shows a single band of 60 KDa. In gel filtration experiment protein X elutes between alcohol dehydrogenase (160 KDa) and beta-amylase (190 KDa). How many identical subunits in the protein X composed of ?

- (A) 1                      (B) 2  
(C) 3                      (D) 4

19. Branched hydrophobic amino acids are

- I) Valine
  - II) Leucine
  - III) Isoleucine
  - IV) Threonine
- (A) I & IV are correct  
(B) I, II & III are correct  
(C) I & II are correct  
(D) Only I is correct

20. **Assertion (A):** Olfaction and taste are important sensory modalities for insects, particularly in mating, oviposition and food selection.

**Reason (R) :** Chaemo reception in insects is well established than the other animals.

- (A) Both (A) and (R) are true and (R) is the correct explanation  
(B) Both (A) and (R) are true and (R) is not the correct explanation  
(C) (A) is true, but (R) is false  
(D) (A) is false, but (R) is true

21. Match the Jaw suspension type in various organisms.

List – I		List – II	
I) Autodiastylitic		1) elasmobranchs	
II) Amphistylitic		2) mammals	
III) Hyostylitic		3) bony fishes	
IV) Autostylitic		4) shark	
	I    II    III    IV		
(A)	1    2    3    4		
(B)	2    1    4    3		
(C)	3    4    1    2		
(D)	4    2    1    3		

22. Arrange the transport pigments in the order of evolutionary origin from more recent

- (A) Haemoglobin, Myoglobin, Chlorocruorin, Haemocyanin  
(B) Myoglobin, Chlorocruorin, Haemoglobin, Haemocyanin  
(C) Haemocyanin, Chlorocruorin, Myoglobin, Haemoglobin  
(D) Haemocyanin, Haemoglobin, Myoglobin, Chlorocruorin



23. Match List I (genes) with List II (character) and select the correct answer using the codes given below the Lists :

**List – I**

**List – II**

- |                         |  |
|-------------------------|--|
| I) Incomplete dominance | 1) Human skin colour                         |
| II) Codominance         | 2) Purple colour in maize due to anthocyanin |
| III) Polygenes          | 3) Human being belonging to AB blood group   |
| IV) Complementary genes | 4) Pink colour in 4 O' clock plant           |

**Code :**

	I	II	III	IV
(A)	4	3	1	2
(B)	3	4	2	1
(C)	4	3	2	1
(D)	3	4	1	2

24. The cross over percentage between linked genes J and M is 20%, J and L is 35%, J and N is 70%, L and K is 15%, M and N 50%. Thus the sequence of genes on the chromosome is

- (A) J, N, M, L, K
- (B) J, M, L, N, K
- (C) J, M, L, K, N
- (D) M, J, L, K, N

25. Mammals and birds were originated in which of the following era/epoch/period ?

- (A) Jurassic period
- (B) Eocene and Oligocene
- (C) Carboniferous and permian
- (D) All of these

26. The Hardy-Weinberg law is expressed as  $(p+q)^2$ , where 'p' and 'q' stands for

- (A) Frequency of heterozygotes
- (B) Frequency of alleles in population
- (C) Gene frequencies in population
- (D) Genotype frequencies in population

27. **Assertion (A)** : Autonomous specification gives rise to a pattern of embryogenesis referred to as mosaic development. If particular blastomere is removed early in its development, that isolated blastomere will produce the same type of cells that it would have made if it were still part of the embryo.

**Reason (R)** : The embryo appears to be constructed like a file mosaic of independent, self differentiating parts.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- (C) (A) is true, but (R) is false
- (D) (A) is false, but (R) is true



**28. Assertion (A)** : Structures of globular proteins are accurately determined with X-ray diffraction.

**Reason (R)** : Wave length of X-rays is less than  $2^{\circ}\text{A}$  and the resolution of structural information achievable is around  $2^{\circ}\text{A}$ .

- (A) A & R are correct. R is explanation for A
- (B) A is false, but R is correct
- (C) A is correct, but R is false
- (D) Both A and R are false

**29.** Given below are two statements :

**Assertion (A)** : Foreign genes can be cloned into plasmid cloning vectors.

**Reason (R)** : Cloning vectors can be used for expressing the foreign genes in bacterial systems.

Which of these statements is correct ?

- (A) Both A and R are correct
- (B) Both A and R are wrong
- (C) A is correct, R is wrong
- (D) A is wrong, R is correct

**30.** Given below are two statements

**Assertion (A)** : Plant breeders have an advantage over the animal breeders.

**Reason (R)** : Plant breeders can employ clonal propagation.

Which of the statements are correct ?

- (A) A and R are correct and R is the explanation for A
- (B) A and R are correct and R is not the explanation for A
- (C) A is wrong, but R is correct
- (D) Both A and R are wrong

**31.** Identify the correct statement

- (A) Went's theory explains the reasons for geotropism
- (B) Thigmotropic movements are shown by Desmodium gyrans
- (C) Coiling of tendrils around a hard stem are nyctinastic movements
- (D) Movements of tentacles of Drosera are chemotropic movements

**32.** Given below are two statements, one labeled as Assertion (A), and the other labeled as Reason (R) :

**Assertion (A)** : Several factors are responsible for seed dormancy. One of the factors is immature embryo.

**Reason (R)** : Seed dormancy caused by immature embryo can be overcome by scarification.

In the context of the above two statements which one of the following is correct ?

**Codes :**

- (A) A is correct, R is also correct
- (B) A is wrong, R is correct
- (C) A is correct, R is wrong
- (D) A is wrong and R is also wrong



33. List I consists of some terms and List II includes their corresponding definitions. Select the code showing correct matching

<b>List – I (Terms)</b>	<b>List – II (Definitions)</b>
I) Photooxidation	1) Influence of duration of day and night on flowering of plants
II) Photoperiodism	2) Splitting of water molecule by light
III) Photolysis	3) Damage of cells under high intensity of light
IV) Photorespiration	4) Respiration in chloroplasts during day time

**Codes :**

	I	II	III	IV
(A)	4	3	1	2
(B)	3	4	2	1
(C)	2	1	4	3
(D)	3	1	2	4

34. The light sensitive plant pigment phytochrome was first isolated by

- (A) Borthwick and Coworders
- (B) Garner and Allard
- (C) Butler and his colleagues
- (D) Hammer and Bonner

35. Which one of the following is NOT a correct statement ?

- (A) Calcium is a component of chlorophyll
- (B) Iron is a structural component of porphyrin molecules
- (C) Boron plays an important role in translocation of sugars
- (D) Molybdenum plays active role in nitrogen fixation

36. List I consists of some terms and List II includes corresponding definitions. Select the code showing correct matching

<b>List – I (Terms)</b>	<b>List – II (Definitions)</b>
I) Nitrification	1) Conversion of nitrates to gaseous nitrogen
II) Denitrification	2) Conversion of $\text{NH}_3$ to $\text{NO}_3$
III) Nitrogen fixation	3) Conversion of proteins to ammonia
IV) Ammonification	4) Conversion of gaseous nitrogen to ammonia

**Codes :**

	I	II	III	IV
(A)	1	2	3	4
(B)	2	1	4	3
(C)	3	4	2	1
(D)	4	1	2	3



37. The following proteins are involved in protein synthesis on ribosomes

- 1) EF-TU
- 2) RF1
- 3) RRF
- 4) EF-G
- 5) IF2

What is the sequence of their involvement in the translation process ?

- (A) 1, 5, 2, 3, 4
- (B) 2, 3, 1, 4, 5
- (C) 5, 2, 3, 1, 4
- (D) 5, 1, 4, 2, 3

38. Choose the correct sequence of the following tools applied in proteomic

- I) MALDI – TOF
  - II) IEF
  - III) SDS-PAGE
  - IV) Isolation of proteins
- (A) III, II, I, IV
  - (B) II, III, IV, I
  - (C) IV, II, III, I
  - (D) I, III, IV, II

39. Five proteins with the following PI values were separated by isoelectric focusing

- 1) 3.6
- 2) 2.9
- 3) 7.2
- 4) 6.5
- 5) 8.5

What is the order of their migration from the anode (closest to farthest) ?

- (A) 5, 3, 4, 1, 2
- (B) 3, 4, 5, 1, 2
- (C) 2, 1, 4, 3, 5
- (D) 5, 2, 3, 1, 4

40. Match the following :

- |                                     |                                |
|-------------------------------------|--------------------------------|
| I) Somaclonal variation             | 1) Anther culture              |
| II) Haploid culture                 | 2) Suspension culture          |
| III) Protoplast isolation           | 3) Callus culture              |
| IV) Secondary metabolite production | 4) Cell wall degrading enzymes |

- |     | I | II | III | IV |
|-----|---|----|-----|----|
| (A) | 2 | 3  | 4   | 1  |
| (B) | 4 | 1  | 2   | 3  |
| (C) | 3 | 2  | 1   | 4  |
| (D) | 3 | 1  | 4   | 2  |



41. Match the items of Column – A with Column – B

Column – A		Column – B	
I) Plasma Membrane		1) DNA polymerase	
II) Nucleus		2) 5' Nucleotidase	
III) Mitochondria		3) Catalase and peroxidase	
IV) Microbodies		4) SDH	
I	II	III	IV
(A) 2	1	4	3
(B) 1	2	3	4
(C) 4	3	2	1
(D) 3	4	1	2

42. Which of the following pairs is not matched correctly ?

- (A) Production of recombinant protein – Expression vector
- (B) Type of molecular marker – YAC
- (C) Immunological detection method – ELISA
- (D) Measurement of radioactivity – scintillation counting

43. Match the following

I) Allosteric enzyme		1) PDC	
II) Isoenzyme		2) Acetyl CoA	
III) Multienzyme complex		3) LDH	
IV) Coenzyme		4) ATcase	
I	II	III	IV
(A) 1	4	3	2
(B) 4	3	1	2
(C) 3	1	4	2
(D) 2	4	3	1

44. Which of the following pairs is matched correctly ?

- (A) Protein involved in transcription termination in prokaryotes – RF1
- (B) General transcription factor involved in initiation of transcription in eukaryotes – sigma factor
- (C) Protein involved in elongation of translation – EF.TU
- (D) Enzyme involved in unwinding of DNA helix – Topoisomerase

45. Which of the following pairs is not paired correctly ?

- (A) All family of repetitive elements – LINES
- (B) Transposons identified in Drosophila – Pelement
- (C) Tandemly repeated elements – VNTRs
- (D) Mobile elements found in maize – Ac-Ds elements

46. Given below are two statements

**Assertion (A) :** Aminoacylation of t RNA is a very accurate process.

**Reason (R) :** Proof reading does not occur during aminoacylation of t RNA by aminoacyl tRNA synthetases.

Which of these statements are true ?

- (A) Both A and R are true
- (B) A is true, but R is false
- (C) Both A and R are false
- (D) A is false, but R is true



47. Given below are two statements

**Assertion (A) :** Lac operon is activated in bacteria by the presence of lactose in the medium.

**Reason (R) :** Lac operon is not affected by glucose concentration in the medium.

Which of these statements are true ?

- (A) (A) is false, but (R) is true
- (B) Both (A) and (R) are false
- (C) Both (A) and (R) are true
- (D) (A) is true, but (R) is false

48. **Assertion (A) :** A. Monellin is a sweetener and it is a protein. When it is heated its sweetness is lost

**Reason (R) :** The reason for its sweetness lies in its confirmation

- (A) A and R are correct
- (B) A and R are wrong
- (C) A is correct and R is wrong
- (D) A is wrong and R is correct

49. In a flower odd sepal is anterior, petals arranged in descendingly imbricate aestivation. This flowers belong to the family

- (A) Fabaceae (s.s.)
- (B) Fabaceae (s.e.)
- (C) Caesalpiniaceae
- (D) Mimosaceae

50. Taxonomy refers to

- I) Identification and Nomenclature
  - II) Nomenclature and classification
  - III) Classification
  - IV) Classification and evolution
- (A) I & IV
  - (B) I & II
  - (C) I & III
  - (D) II only

51. **Assertion (A) :** Based on formation of mucilage due to partial dissolution of outer pectin wall in water, spirogyra is also called pond silk.

**Reason (R) :** In a matured cell of Spirogyra the cytoplasm is peripheral with a central vacuole

- (A) Both (A) and (R) are true, and (R) is the correct explanation of (A)
- (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- (C) (A) is true, but (R) is false
- (D) Both (A) and (R) are false



52. Match the following :

- |                         |                              |
|-------------------------|------------------------------|
| 1) Engler               | I) Chemosystematics          |
| 2) Secondary metabolite | II) Oak                      |
| 3) Natural system       | III) Embryophyta siphonogama |
| 4) Nut                  | IV) Alpha taxonomy           |
|                         | V) Marigold                  |

- |     | 1   | 2 | 3   | 4  |
|-----|-----|---|-----|----|
| (A) | IV  | I | III | V  |
| (B) | III | I | IV  | V  |
| (C) | IV  | I | III | II |
| (D) | III | I | IV  | II |

53. Indicate the four correct statements from the following :

- I) Cotton is used either alone or in combination with other fibres in manufacturing all types of textiles
  - II) Cotton seed oil is used as lubricant and the oil cake is used as poultry feed
  - III) Mercerised cotton is resulted by treating the cotton fibres with caustic soda
  - IV) The fuzz (short hairs) is used in preparation of pillows, cushions and mattresses
  - V) Cotton treated with nitric acid to produce gun powder, which is used in making explosives
- (A) I, II, III & IV  
(B) I, III, IV & V  
(C) II, III, IV & V  
(D) I, II, IV & V

54. The system of classification proposed by these scientists is also called as Neo-Adansonian system

- (A) Engler & Prantl
- (B) Bentham & Hooker
- (C) Sokal & Sneath
- (D) Camp & Gilly

55. Pick up the wrong statement from the following :

- (A) The rate of production of total organic material is known as gross primary productivity
- (B) The balance energy or biomass remaining after meeting the cost of respiration of producers is called net primary productivity
- (C) The productivity is of three kinds : primary, secondary and tertiary
- (D) Net productivity = Gross productivity – Respiration and other losses

56. The several stages of hydrosere along with their suitable examples are given. Indicate the correct matches from them.

- I) Plank stage – Diatoms
  - II) Woodland stage – Juncus
  - III) Floating stage – Nymphaea
  - IV) Submerged stage – Hydrilla
  - V) Reed swamp stage – Sagittaria
- (A) I, II, III & IV  
(B) I, III, IV & V  
(C) II, III, IV & V  
(D) I, II, III & V



57. Addition of consortium or cocktail of micro-organisms to the polluted soil is known as

- (A) Biostimulation
- (B) Biomagnification
- (C) Biofencing
- (D) Bioaugmentation

58. Match the following :

- |   |                         |
|---|-------------------------|
| 1) Littoral and swamp forests   | I) Savannas             |
| 2) Montane wet temperate forests  | II) Mangroves           |
| 3) Natural grasslands   | III) Relics             |
| 4) Species show a restricted distribution but cover large areas in course of time | IV) Sholas              |
|   | V) Progressive endemics |

- |        |     |   |     |
|--------|-----|---|-----|
| 1      | 2   | 3 | 4   |
| (A) II | IV  | I | V   |
| (B) II | IV  | I | III |
| (C) IV | III | I | V   |
| (D) IV | II  | I | III |

59. The study of migration of birds is known as

- (A) Phrenology
- (B) Phenology
- (C) Pedology
- (D) Odontology

60. **Assertion (A)** : The Japanese and Philippine lakes are volcanic lakes in which the extreme chemical conditions are seen.

**Reason (R)** : Acid or alkaline lakes associated with volcanic regions are called volcanic lakes.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (B) Both (A) and (R) are true, but (R) is not correct explanation of (A)
- (C) (A) is true, but (R) is false
- (D) Both (A) and (R) are false

61. If the fertilized egg of a plant has 40 chromo-mes, the number of chromosomes present in the pollen mother cell is

- (A) 80
- (B) 160
- (C) 40
- (D) 60

62. The female gametophyte of a typical dicot (polygonum) at the time of fertilization is

- (A) 8 nucleate and 7 celled
- (B) 7 nucleate and 8 celled
- (C) 4 nucleate and 4 celled
- (D) 8 nucleate and 8 celled

63. **Assertion (A)** : In cleodic egg, the development of embryo is arrested in freshly laid eggs

**Reason (R)** : Freshly laid eggs show drop in temperature so they need incubation

- (A) Both (A) and (R) are true and R is the correct explanation of A
- (B) Both (A) and (R) are true, but R is not the correct explanation of A
- (C) (A) is true, but R is false
- (D) Both (A) and (R) are false



64. Match the pattern of embryonic cleavage type (in List 1) with organisms (in List 2)

**List – 1**

**List – 2**

- |                         |                |
|-------------------------|----------------|
| I) Radial cleavage      | 1) Echinoderms |
| II) Spiral cleavage     | 2) Tunicates   |
| III) Bilateral cleavage | 3) Mammals     |
| IV) Rotational cleavage | 4) Annelids    |

**Code :**

	I	II	III	IV
(A)	1	2	3	4
(B)	3	2	1	4
(C)	4	3	1	2
(D)	1	4	2	3

65. During differentiation different cell types make different sets of proteins at several levels in following sequences

- I) Differential gene transcription
  - II) Differential RNA translation
  - III) Differential RNA processing
  - IV) Differential protein modification
- (A) III, II, I and IV  
(B) I, II, III and IV  
(C) I, III, II and IV  
(D) I, IV, II and III

66. If the deleterious effect of a mutation in a gene are overcome by a mutation in another gene, the process is called

- (A) Extra genetic (or) intragenic suppression
- (B) Non-sense mutation
- (C) Frame shift mutation
- (D) Somatic mutation

67. Extra chromosomal inheritance of male sterility was discovered in maize by

- (A) Dhawan and Paliwal
- (B) M.A. Overman and H.E. Warmke
- (C) Jones and Clarke
- (D) M.M. Rhodes

68. **Assertion (A) :** Mental and motor retardation and death by ages 2-4 years are phenotypic effects in the individuals of Tay-Sachs disease.

**Reason (R) :** In the individuals of Tay-Sachs disease galactose-1-phosphate uridyl transferase fails to catalyze transformation of galactose into glucose.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- (C) (A) is true, but (R) is false
- (D) Both (A) and (R) are false

69. **Assertion (A) :** Adapted characters acquired by an organism are not inherited.

**Reason (R) :** They do not get the sufficient time to be fixed at the genetic level.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- (C) (A) is true, but (R) is false
- (D) Both (A) and (R) are false



**70. Assertion (A) :** Geological evidence indicates that free oxygen began accumulating in the atmosphere about two billion years ago.

**Reason (R) :** The free oxygen in the atmosphere is produced by cyanobacteria like forms.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- (C) (A) is true, but (R) is false
- (D) Both (A) and (R) are false

**71. Assertion (A) :** The records of evolution of birds is sketchy.

**Reason (R) :** The pneumatic bones of birds make poor fossils.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- (C) (A) is true, but (R) is false
- (D) Both (A) and (R) are false

**72. Match List I with List II and select the correct answer using the codes given below the lists.**

<b>List – I</b>	<b>List – II</b>
<b>(Animals)</b>	<b>(Their realm)</b>

- |                              |                |
|------------------------------|----------------|
| I) Protopterus               | 1) Australian  |
| II) Opossum                  | 2) Ethiopian   |
| III) Sphenodon               | 3) Nearctic    |
| IV) Prehensile tailed monkey | 4) Neotropical |

**Code :**

- |     |   |    |     |    |
|-----|---|----|-----|----|
|     | I | II | III | IV |
| (A) | 2 | 3  | 1   | 4  |
| (B) | 2 | 1  | 3   | 4  |
| (C) | 4 | 1  | 3   | 2  |
| (D) | 4 | 3  | 1   | 2  |

**73. According to Darwinism which one represents the correct sequence of events in the origin of new species ?**

- I) Natural selection, Variation and their inheritance-Survival of the fittest, Struggle for existence
- II) Variation and their inheritance, Survival of the fittest, Natural selection, struggle for existence
- III) Survival of the fittest, Struggle for existence, Natural selection, Variation and their inheritance
- IV) Struggle for existence, Variation and their inheritance, Survival of the fittest, Natural selection

The correct sequence of these scales from the earliest to the most recent

- (A) I, II, III, IV
- (B) II, III, I, IV
- (C) III, IV, I, II
- (D) IV, II, III, I

**74. Enterokinase stimulates**

- (A) Trypsin
- (B) Trypsinogen
- (C) Pepsin
- (D) Pepsinogen

**75. In the detoxification of ammonia, the key intermediate product i.e., the synthesis of citrulline is appeared to be present in the following extra hepatic tissues**

- I) Brain
- II) Intestine
- III) Kidney
- IV) Lungs

- (A) I, II and III are correct
- (B) I and II are correct
- (C) I and III are correct
- (D) I, III and IV are correct



**Space for Rough Work**