

SUBJECT CODE	SUBJECT	PAPER
A-09-03	LIFE SCIENCES	III
HALL TICKET NUMBER		QUESTION BOOKLET NUMBER
OMR SHEET NUMBER		
DURATION	MAXIMUM MARKS	NUMBER OF PAGES
2 HOUR 30 MINUTES	150	16
		NUMBER OF QUESTIONS
		75

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Candidates Signature

Name and Signature of Invigilator

Instructions for the Candidates

- Write your Hall Ticket Number in the space provided on the top of this page.
- This paper consists of seventy five multiple-choice type of questions.
- 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** :
 - 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.
 - 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.**
 - 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.
- 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) (C) (D)
where (C) is the correct response.
- Your responses to the items are to be indicated in the **OMR Answer Sheet given to you**. If you mark at any place other than in the circle in the Answer Sheet, it will not be evaluated.
- Read instructions given inside carefully.
- Rough Work is to be done in the end of this booklet.
- 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.
- The candidate must handover the OMR Answer Sheet to the invigilators at the end of the examination compulsorily** and must not carry it with you outside the Examination Hall. The candidate is allowed to take away the carbon copy of OMR Sheet and used Question paper booklet at the end of the examination.
- Use only Blue/Black Ball point pen.**
- Use of any calculator or log table etc., is prohibited.**
- There is no negative marks for incorrect answers.**

అభ్యర్థులకు సూచనలు

- ఈ పుట పై భాగంలో ఇవ్వబడిన స్థలంలో మీ హాల్ టికెట్ నంబరు రాయండి.
- ఈ ప్రశ్న పత్రము డెబ్బైఐదు బహుళైచ్ఛిక ప్రశ్నలను కలిగి ఉంది.
- పరీక్ష ప్రారంభమున ఈ ప్రశ్నాపత్రము మీకు ఇవ్వబడుతుంది. మొదటి ఐదు నిమిషములలో ఈ ప్రశ్నాపత్రమును తెరిచి కింద తెలిపిన అంశాలను తప్పనిసరిగా **సరిచూసుకోండి.**
 - ఈ ప్రశ్న పత్రమును చూడడానికి కవర్ పేజీ అంచున ఉన్న కాగితపు సీలును చించండి. స్టిక్కర్ సీలులేని మరియు ఇదివరకే తెరిచి ఉన్న ప్రశ్నాపత్రమును మీరు అంగీకరించవద్దు.
 - 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 ఇప్పిచేసి దానికి బదులుగా సరిగ్గా ఉన్న ప్రశ్నపత్రాన్ని తీసుకోండి. తదనంతరం ప్రశ్నపత్రము మార్చబడదు అదనపు సమయం ఇవ్వబడదు.
 - పై విధంగా సరిచూసుకొన్న తర్వాత ప్రశ్నాపత్రం సంఖ్యను OMR పత్రము పై అదేవిధంగా OMR పత్రము సంఖ్యను ఈ ప్రశ్నాపత్రము పైనిర్దిష్టస్థలంలో రాయవలెను.
- ప్రతి ప్రశ్నకు నాలుగు ప్రత్యామ్నాయ ప్రతిస్పందనలు (A), (B), (C) మరియు (D) లుగా ఇవ్వబడ్డాయి. ప్రతిప్రశ్నకు 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) (C) (D)
(C) సరైన ప్రతిస్పందన అయితే
- ప్రశ్నలకు ప్రతిస్పందనలను ఈ ప్రశ్నపత్రముతో ఇవ్వబడిన OMR పత్రము పైన ఇవ్వబడిన వృత్తాల్లోనే పూరించి గుర్తించాలి. అలాకాక సమాధాన పత్రంపై వేరొక చోట గుర్తిస్తే మీ ప్రతిస్పందన మూల్యాంకనం చేయబడదు.
- ప్రశ్న పత్రము లోపల ఇచ్చిన సూచనలను జాగ్రత్తగా చదవండి.
- చిత్తుననివి ప్రశ్నపత్రము చివర ఇచ్చిన ఖాళీస్థలములో చేయాలి.
- 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 అసర్దుతకు మీరే బాధ్యులవుతారు.
- పరీక్ష పూర్తయిన తర్వాత మీ OMR పత్రాన్ని తప్పనిసరిగా పరీక్ష పర్యవేక్షకుడికి ఇవ్వాలి. వాటిని పరీక్ష గది బయటకు తీసుకువెళ్లకూడదు. పరీక్ష పూర్తయిన తరువాత అభ్యర్థులు ప్రశ్న పత్రాన్ని, OMR పత్రం యొక్క కార్బన్ కాపీని తీసుకువెళ్లనచ్చు.
- నీలి/నల్ల రంగు బాల్ పాయింట్ పెన్ మాత్రమే ఉపయోగించాలి.
- లాగరిథమ్ టేబుల్స్, క్యాలిక్యులేటర్లు, ఎలక్ట్రానిక్ పరికరాలు మొదలగునవి పరీక్ష గదిలో ఉపయోగించడం నిషేధం.
- తప్పు సమాధానాలకు మార్కుల తగ్గింపు లేదు.



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LIFE SCIENCES

Paper – III

1. The class interval of the continuous grouped data of 10 – 19, 20 – 29, 30 – 39, 40 – 49, 50 – 59 is

- (A) 9
- (B) 10
- (C) 12
- (D) 20

2. Nucleosome consists of

- (A) Octameric complex (H_{2A} , H_{2B} , H_3 and H_4) + Linker DNA
- (B) Non histone proteins and DNA
- (C) Histone proteins alone
- (D) Less dense euchromatin

3. Match the following :

List I

- I. Christie
- II. Linus Pauting and Corey
- III. Mitchell
- IV. Venkataraman

List II

- 1. Ribosomal structure
- 2. Mitochondrial structure
- 3. Protein structure
- 4. Chemoosmotic hypothesis

Code :

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

4. Arrange the compounds in ascending order based on their energy content

- I. Glucose 6-phosphate
- II. ATP
- III. Phosphoenol pyruvate
- IV. Creatine phosphate

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

5. **Assertion (A)** : Larger proteins over 40 kba can pass through nuclear pons in eukaryotes.

Reasoning (R) : Entry of larger proteins carrying nuclear localisation sequence through nuclear pons is allowed.

- (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



6. A phosphoglyceride is constituted with
- Fatty acids
 - Glycerol
 - Phosphate
 - Head alcohol
- (A) I and II are correct
(B) II and III are correct
(C) I and III are correct
(D) I, II, III and IV are correct
7. Glycogen and cellulose consist of 100% D-glucose but they differ in
- Glycosidic bonds
 - Covalent bonds
 - Ionic bonds
 - Peptide bonds
8. T-cell receptors are transmembrane structures consisting of
- Four polypeptide chains ($2\alpha + 2\beta$)
 - Two polypeptide chains ($1\alpha + 1\beta$)
 - Three polypeptide chains ($1\alpha + 2\beta$)
 - One polypeptide chain (1α)
9. Which one of the following pairs is NOT correctly matched ?
- Stress protein — Hsp 70
 - Decline phase — Secondary metabolites
 - Log phase — Exponential growth
 - Pro toxin — Inactive toxin
10. In a classical model of transcription, a repressor binds to
- An enhancer
 - AUG sequence
 - An operator
 - TATA Box
11. Given below are two statements :
- Assertion (A)** : In fermentation glucose consumption by yeast cells increases.
- Reasoning (R)** : Yeast cells generate only two ATP molecules for one glucose molecule.
- A is correct, R is also correct
 - A is wrong but R is correct
 - A is correct but R is wrong
 - Both A and R are wrong
12. Which one of the following pairs is NOT correctly matched ?
- The gas responsible for global warming — CO_2
 - Plants growing in acid soils — Oxylophytes
 - Mangrove region in Andhra Pradesh — Coringa
 - Ecology is the study of structure and function of nature — Tansley



13. Statement (A) : Atmospheric pressure is one of the factors influencing rate of transpiration. As the atmospheric pressure decreases the rate of transpiration increases.

Reasoning (R) : The plants growing in high altitude places exhibit xerophytic characteristics.

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

- (A) Both the statements are correct
- (B) Both the statements are wrong
- (C) A is correct but R is wrong
- (D) A is wrong but R is correct

14. Match isotopes in List I with emissions in List II :

List I		List II	
I. Cobalt – 60		1. No emission	
II. Carbon – 14		2. Gamma rays	
III. Nitrogen – 15		3. Beta rays	
IV. Phosphorus – 31		4. Stable	

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

15. Assertion (A) : Metagenomic cloning gives large numbers of novel genes.

Reason (R) : In metagenomics, genes for useful products are cloned directly from environmental samples without first isolating the organisms that carry them.

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

16. β -galactosidase enzyme hydrolyses

- (A) Isopropyl β -thiogalactosidase
- (B) X-gal
- (C) Maltose
- (D) Sucrose

17. Choose the correct sequence of the following steps for determination of sequence of residues of amino acids in peptide.

- I. Recovery of N-terminal amino acid as phenyl thiohydantoin derivative
 - II. Retrieving of peptide shortened by one amino acid residue for the repetitive cycles of the events
 - III. Coupling reaction between peptide and phenyl isothiocyanate
 - IV. Exposure of phenyl thiocarbamoyl derivative of peptide to dry acid vapours
- (A) II, I, III and IV
 - (B) III, IV, I and II
 - (C) I, II, IV and III
 - (D) IV, III, II and I



18. Limits for correlation co-efficient

- (A) $-1 \leq r \leq 1$
- (B) $0 \leq r \leq 1$
- (C) $-1 \leq r \leq 0$
- (D) $1 \leq r \leq 2$

19. Match the following lists :

List I (Transcription Factors)	List II (Activity)
I. TF II A	1. TATA Box recognition
II. TF II B	2. Recruitment of RNA pol II
III. TF II D	3. Selection of start point of transcription
IV. TF II F	4. Stabilizes TBP binding

Code :

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

20. In spectroscopic methods, absorption of radiation energy by solute molecules generally depends on

- I. Concentration of solute in solution
 - II. Path length of cuvettes used
 - III. Thickness of walls of cuvettes used
 - IV. Inherent property of solute
- (A) I and II are correct
 - (B) I, II and III are correct
 - (C) I, II and IV are correct
 - (D) I, II, III and IV are correct

21. Which one of the following is NOT correct associated pair ?

- (A) DNA polymerase — PCR
- (B) Reverse transcriptase — cDNA library
- (C) EPSP synthase — Leucine
- (D) DNase I — Foot printing

22. The orderly arrangement of biosensor activation

- (A) Biological material + Analyte → Bound analyte → Biological response → Electronic response → Measurement
- (B) Biological material + Analyte → Biological response → Bound analyte → Electronic response → Measurement
- (C) Biological material + Analyte → Electronic response → Biological response → Bound analyte → Measurement
- (D) Measurement → Electronic response → Biological response → Bound analyte → Biological material + Analyte

23. Which hormones help in breaking the dormancy of seed ?

- I. ABA
 - II. CK
 - III. GA
 - IV. IAA
- (A) II and III are correct
 - (B) I, II, IV are correct
 - (C) II, III, IV are correct
 - (D) I and III are correct



- 24.** Yeast artificial chromosome (YAC) is used for
- (A) Cloning large segment of DNA
 - (B) Cloning only yeast genomic sequences
 - (C) Cloning of only cDNA sequences
 - (D) All DNA except plant DNA sequences
- 25.** Courtship behaviour is a form of
- (A) Taxis
 - (B) Imprinting
 - (C) Fixed action pattern
 - (D) Kinesis
- 26.** Match the following used in plant tissue culture :
- | | |
|-------------------------|-----------------------|
| I. Meristem culture | 1. Virus elimination |
| II. Suspension culture | 2. Homozygosity |
| III. Protoplast culture | 3. Packed cell volume |
| IV. Anther culture | 4. Liposome |
- I II III IV
- (A) 1 2 3 4
 - (B) 1 3 2 4
 - (C) 1 4 3 2
 - (D) 4 3 2 1
- 27.** The chromosomes whose number and morphology do not differ between males and females of a species are called
- (A) Autosomes
 - (B) Allosomes
 - (C) Giant chromosomes
 - (D) Heterosomes
- 28.** Which one of the following pairs serve as biofertilisers ?
- (A) Aspergillus and Actinomycetes
 - (B) Albugo and Nostoc
 - (C) Azotobacter and Nostoc
 - (D) Pseudomonas and E. coli
- 29.** The ecozones of ocean are
- I. Polar zone
 - II. Temperate zone
 - III. Tropical zone
 - IV. Boreal zone
- (A) I, II and III are correct
 - (B) I and IV are correct
 - (C) I, II and IV are correct
 - (D) II, III and IV are correct
- 30.** Intrinsic apoptotic pathway consists of
- I. Caspase – 3 – activation
 - II. Mitochondrial changes
 - III. Apoptosome formation
 - IV. Caspase – 9 – activation
- The correct order of the events is
- (A) II, III, IV, I
 - (B) I, II, III, IV
 - (C) IV, III, II, I
 - (D) III, II, I, IV



31. Which one of the following is NOT correctly matched ?
- (A) The precursor amino acid for IAA biosynthesis is – tryptophan
 - (B) Guard cells differ from epidermal cells with regard to – chloroplasts
 - (C) Ascent of sap takes place through – phloem
 - (D) In C_4 pathway CO_2 is fixed by – PEP carboxylase
32. Which of the following pairs is correctly matched ?
- (A) Programmed cell death at site of infection – Hyper-sensitive response
 - (B) Hormone upregulated during flooding stress – IAA
 - (C) Pathogen-derived resistance – Enveloped gp of virus
 - (D) Gamma immunoglobulin – Pentameric
33. In two-component regulatory system for regulation of nitrogen assimilation (Ntr) in many bacteria, which is the response regulator for activation of transcription promoters of genes recognized by sigma factor 38 ?
- (A) NR I
 - (B) NR II
 - (C) P II
 - (D) P I
34. Consider the following fruits
1. Sapota
 2. Guava
 3. Papaya
- Which of the above are berry type of fruits ?
- (A) 1 and 2 only
 - (B) 1 and 3 only
 - (C) 2 and 3 only
 - (D) 1, 2 and 3
35. **Assertion** : DNA replication is discontinuous.
- Reasoning** : DNA polymase can synthesize DNA in 5' – 3' direction only.
- (A) Both A and R are true but R is not correct explanation
 - (B) Both A and R are true and R is correct explanation
 - (C) A is true but R is false
 - (D) A is false but R is true
36. Given below are two statements :
- Assertion (A)** : Certain effector enzymes catalyze the rapid production of water soluble molecules.
- Reason (R)** : The water soluble molecules – cAMP, cGMP, IP_3 act as second messengers.
- (A) A is true and R is false
 - (B) A is true and R is true
 - (C) A is false and R is false
 - (D) A is false and R is true



37. Specify sequence of binding of the following components for formation of functional complex in translation process in prokaryotes
- I. 30S. ribosomal subunit + IF3 + IF1
 - II. 50S. ribosomal subunit
 - III. F met – tRNA – IF2
 - IV. mRNA
- (A) IV, I, III and II
(B) I, II, III and IV
(C) III, I, II and IV
(D) II, III, I and IV
38. Events in cell transformation by a virus-induced cancer.
- I. Infection
 - II. Integration
 - III. Transcription
 - IV. Translation
 - V. Transformation
- (A) I, II, III, IV, V
(B) II, III, IV, V, I
(C) III, IV, V, I, II
(D) IV, V, I, II, III
39. If a cross is made between two plants of Aa, Bb, cc, Dd and Aa, bb, CC, DD genotypes, then what will be the expected frequency of obtaining a progeny with AA, Bb, Cc, Dd ?
- (A) $\frac{1}{16}$
(B) $\frac{1}{32}$
(C) $\frac{1}{64}$
(D) $\frac{1}{128}$
40. Identify the correct sequence of process in animal development :
- (A) Cell differentiation – regional specification – morphogenesis – growth
(B) Regional specification – cell differentiation – morphogenesis – growth
(C) Morphogenesis – regional specification – cell differentiation – growth
(D) Regional specification – cell differentiation – growth – morphogenesis
41. **Assertion (A)** : Potato tubers do not sprout immediately after harvest.
- Reason (R)** : Immediately after harvest, potato tubers contain high amount of abscissic acid which prevents sprouting.
- (A) Both (A) and (R) are true and (R) is 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) (A) is false but (R) is true
42. The activation of sperm in mammals is known as
- (A) Acrosome reaction
(B) Capacitation
(C) Fertilization
(D) Cortical reaction



43. In the biosynthesis of sesquiterpene the following are the intermediates

- I. Isopentyl pyrophosphate
- II. Geranyl pyrophosphate
- III. β -hydroxy – B – methyl – glutaryl CoA
- IV. Mevalonic acid diphosphate

The correct order of intermediates leading to the synthesis of sesquiterpene is

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

44. **Assertion (A)** : Competence is the ability of the cell responding to induction.

Reason (R) : Enzyme complement of the embryonic cell to adopt to metabolites.

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

45. In photosynthesis, the products of light phase reactions are

- (A) Carbohydrates, Oxygen
- (B) Glucose, CO_2 , ATP
- (C) ATP, NADPH_2^+ , Oxygen
- (D) Oxygen, Glucose, ATP

46. Arrange the following stomach layers in order from the upper part to inner in a transverse section. Use the code given below :

- I. Mucus coat
- II. Submucous coat
- III. Peritoneal coat
- IV. Muscular coat

Code :

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

47. **List I** (Theories of evolution/ inheritance) **List II** (Proposed by)

- | | |
|--|------------|
| I. Catastrophism | 1. Cuvier |
| II. Inheritance of acquired characters | 2. Lamarck |
| III. Preformation | 3. Bonnet |
| IV. Pangenesis | 4. Darwin |

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

48. In prokaryotes, cell division apparatus, called Divisome is constituted with

- I. Fts Z
 - II. Zip A
 - III. Fts A
 - IV. Fts I
- (A) I and II are correct
 - (B) I and III are correct
 - (C) I, II and III are correct
 - (D) I, II, III and IV are correct



49. Match List I with List II and select the correct answer using the codes given below the list

List I (Structure)	List II (Availability)
I. Amnion	1. Mammalian ovum
II. Primitive streak	2. Amphibian gastrula
III. Dorsal lip of blastopore	3. Chick's gastrula
IV. Zona radiata	4. Reptilian embryo

Codes :

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

50. The Beta subunit of RNA polymerase is inhibited by

- I. Rifampicin
- II. Actinomycin D
- III. Streptoly digin
- IV. Mitomycin C

- (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

51. **Statement (A)** : The major phytohormones are IAA, GA and ABA. Ethylene induces the ripening of fruits.

Reasoning (R) : Parthenocarpic fruits can be induced by exposure with ethylene.

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

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

52. **Assertion (A)** : The pulmonary arteries carry the deoxygenated blood to the lungs where exchange of gases takes place.

Reason (R) : Without pulmonary arteries the deoxygenated blood cannot be carried to lungs.

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

53. The two parts of brain stem are

- (A) Cerebrum and Pons Varolii
- (B) Medulla Oblongata and Spinal Cord
- (C) Pons Varolii and Cerebellum
- (D) Pons Varolii and Medulla Oblongata



54. Which one of the following is correctly matched ?

- (A) Gibberellins induce — Internodal elongation
- (B) Artificially synthesized — 2, 4 – D auxin
- (C) Citric acid is a — Secondary metabolite
- (D) The most abundant enzyme protein on the earth is — Rubisco

55. In a population the Hardy – Weinberg equilibrium would not prevail in the

- (A) presence of random mating
- (B) absence of selection
- (C) presence of mutation
- (D) absence of immigration or emigration

56. **Assertion (A)** : Mendel did not explain the phenomenon of linkage.

Reason (R) : Factors (genes) for all seven characters in garden pea considered by Mendel are present in different chromosomes.

- (A) Both (A) and (R) are true and (R) is 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) (A) is false but (R) is true

57. **Assertion (A)** : Neutral theory of protein evolution suggest random evolutionary changes in proteins.

Reason (R) : Such mutations are assumed to be adaptively equivalent.

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

58. The genes P, Q, R and S are linked. The cross over map distances as determined by two point crosses are :

$R - P = 7$; $S - Q = 10$; $P - Q = 8$; $S - P = 2$ and $R - S = 5$. Based on the above data indicate the relative positions of the linked loci from the following :

- (A) RSPQ
- (B) SPRQ
- (C) RPSQ
- (D) SPQR

59. Miller proved the organic compounds were basis of life using the following gases :

- I. Methane
- II. Ammonia
- III. Hydrogen
- IV. Water vapour

Code :

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



60. Major mechanisms for the termination of receptor-dependent signal transduction are in the order

- I. Receptor inactivation
- II. Receptor internalization
- III. Receptor down-regulation

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

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

Assertion (A) : The fruits of ground nut plant are not nuts but underground pods.

Reason (R) : The pods will not develop until the fertilised ovary is pushed under the soil.

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

- (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 a correct explanation of (A)
- (C) (A) is true but (R) is false
- (D) Both (A) and (R) are false

62. Vanillin, a popular flavouring agent for ice creams, is obtained from

- (A) latex
- (B) leaf
- (C) fruit
- (D) root

63. **Assertion 'A'** : Unsustainable population growth, increased natural resource consumption and unplanned development are the causes of loss of biodiversity.

Reason 'R' : Deficiency of knowledge concerning natural ecosystem, over exploitation of natural resources, pollution, global climate change are also the causes.

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

Codes :

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

64. The gram-negative plant pathogen Agrobacterium tumefaciens contains a large plasmid used in production of transgenic plants called

- (A) Ri plasmid
- (B) Ag plasmid
- (C) E plasmid
- (D) Ti plasmid



65. In the experimentation pertaining to prove the DNA as genetic material the following scientists contributed. Arrange them in chronological order.
1. Avery, MacLeod and McCarty
 2. Griffith
 3. Hershey and Chase
- (A) 3, 2, 1
(B) 2, 3, 1
(C) 2, 1, 3
(D) 3, 1, 2
66. Which one of the following families has sepals, petals, stamens and carpels in the ratio of 2 : 2 : 3 : 1 ?
- (A) Asteraceae
(B) Brassicaceae
(C) Liliaceae
(D) Solanaceae
67. In a nitrogen cycle the sequence of events in the order beginning with death are
- (A) Ammonification, Nitrification, Denitrification, Decomposition
(B) Decomposition, Ammonification, Nitrification, Denitrification
(C) Denitrification, Decomposition, Ammonification, Nitrification
(D) Nitrification, Ammonification, Denitrification, Decomposition
68. The term grey crescent is associated with the region in the egg of
- I. Animal pole
 - II. Vegetal pole
 - III. Frog
 - IV. Chick
- (A) I & II are correct
(B) II & III are correct
(C) III & IV are correct
(D) I & III are correct
69. The correct sequence in which these occur within a cell to form enzymes leading to the adaptive potential of an organism is
- I. Transcription
 - II. Configuration
 - III. Translation
 - IV. Replication
- Code :**
- (A) I, IV, III and II are correct
(B) IV, I, II and III are correct
(C) I, IV, II and III are correct
(D) IV, I, III and II are correct
70. When the plants are subjected to a stress of low temperature
- I. Abscissic acid increases
 - II. Gibberellic acid increases
 - III. Both Abscissic acid and Gibberellic acid decrease
 - IV. Gibberellic acid decreases
- (A) I & IV are correct
(B) I & II are correct
(C) II and III are correct
(D) II & IV are correct



71. The bony labyrinth contains these structures :

- I. Vestibule
- II. Semicircular canals
- III. Circular canals
- IV. Cochlea

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

72. Which one of the following pairs is NOT correctly matched ?

- (A) C-shaped cartilages — Trachea
- (B) Voice Box — Larynx
- (C) Pharynx — Passage way for both air and food
- (D) Oxygenated blood — Pulmonary artery

73. Consider the following features :

- I. Population consists of inter breeding groups of individuals
- II. Population does not form the basis as unit of study in population genetics
- III. Gene frequency is the important single index characterizing the population

Which of these are characteristic of Mendelian population ?

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

74. Number of chromosomes in a diploid plant is 24. Indicate the correct number of chromosomes in the endosperm, in an order, obtained by the following crosses.

- I. Male $2n \times$ female $4n$
- II. Male $4n \times$ female $2n$
- III. Male $2n \times$ female $2n$
- IV. Male $4n \times$ female $8n$

	I	II	III	IV
(A)	60	48	36	120
(B)	72	72	48	144
(C)	60	72	48	120
(D)	72	48	36	144

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

List I (Name of plant)	List II (Characteristic compound)
I. Coleus blumei	1. Morphine
II. Papaver somniferum	2. Scopolamine
III. Datura stramonium	3. Digitalin
IV. Stevia rebaudiana	4. Stevioside
	5. Rosmarinic acid

Code :

	I	II	III	IV
(A)	3	1	2	4
(B)	5	2	3	4
(C)	2	3	5	4
(D)	5	1	2	4



Space for Rough Work