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FOR KSET PREPARATION

KSET 2023 Life Sciences Question Paper

EXAM	YEAR	TYPE
KSET	2023	Question Paper

K-SET

ಕ್ರಮ ಸಂಖ್ಯೆ. 417553

ವರ್ಷನ್ ಸಂಕೇತ **A1**

ಸ್ಪರ್ಧಾತ್ಮಕ ಪರೀಕ್ಷೆ- 2023

ಪತ್ರಿಕೆ – II

ವಿಷಯ: ಜೀವ ವಿಜ್ಞಾನಗಳು

ವಿಷಯ ಸಂಕೇತ:28

ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ ಸಂಕೇತ	ಅವಧಿ	ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ	ಗರಿಷ್ಠ ಅಂಕಗಳು	ನಿಮ್ಮ ನೋಂದಣಿ ಸಂಖ್ಯೆಯನ್ನು ನಮೂದಿಸಿ						
LIF202328	ಎರಡು ಘಂಟೆಗಳು	100	200							

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

ಮಾಡಿ:

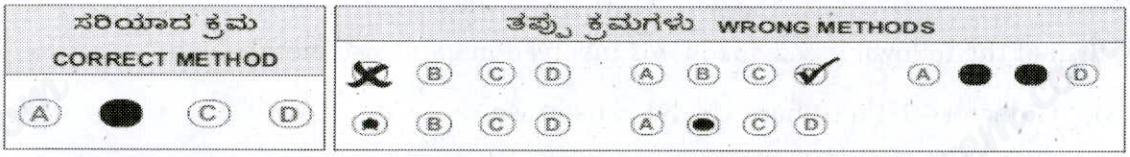
1. ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರು ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ನಿಮಗೆ ಎರಡನೇ ಬೆಲ್ ಆದ ನಂತರ ಕೊಡುತ್ತಾರೆ.
2. ನೊಂದಣಿ ಸಂಖ್ಯೆಯನ್ನು ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಬರೆದು ಅದಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ವೃತ್ತಗಳನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ತುಂಬಿದ್ದೀರೆಂದು ಖಾತ್ರಿಪಡಿಸಿಕೊಳ್ಳತಕ್ಕದ್ದು.
3. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ವರ್ಷನ್ ಕೋಡ್ ಅನ್ನು ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಬರೆದು ಅದಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ವೃತ್ತಗಳನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ತುಂಬಬೇಕು.
4. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ವರ್ಷನ್ ಕೋಡ್ ಮತ್ತು ಕ್ರಮ ಸಂಖ್ಯೆಯನ್ನು ನಾಮಿನಲ್ ರೋಲ್‌ನಲ್ಲಿ ತಪ್ಪಿಲ್ಲದೆ ಬರೆಯಬೇಕು.
5. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯ ಕೆಳಭಾಗದ ನಿಗದಿತ ಜಾಗದಲ್ಲಿ ಕಡ್ಡಾಯವಾಗಿ ಸಹಿ ಮಾಡಬೇಕು.

ಮಾಡಬೇಡಿ:

1. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಮುದ್ರಿತವಾಗಿರುವ **ಟೈಮಿಂಗ್** & **ಮಾರ್ಕನ್ನು** ತಿದ್ದಬಾರದು / ಹಾಳುಮಾಡಬಾರದು / ಅಳಿಸಬಾರದು.
2. ಮೂರನೇ ಬೆಲ್ ಆಗುವವರೆಗೂ,
   - ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಬಲಭಾಗದಲ್ಲಿರುವ ಸೀಲ್ ಅನ್ನು ತೆಗೆಯಬಾರದು.
   - ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಒಳಗಡೆ ಇರುವ ಪ್ರಶ್ನೆಗಳನ್ನು ನೋಡಲು ಪ್ರಯತ್ನಿಸಬಾರದು ಮತ್ತು ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಉತ್ತರಿಸಲು ಪ್ರಾರಂಭಿಸಬಾರದು.

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಮುಖ್ಯ ಸೂಚನೆಗಳು

1. ಪ್ರಶ್ನೆಗಳಲ್ಲಿ ಬಳಸಿರುವ signs and symbols ಗಳನ್ನು, ಬೇರೆ ರೀತಿಯಲ್ಲಿ ಹೇಳದ ಹೊರತು, ನಿಗದಿತ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಅರ್ಥವನ್ನು ಪರಿಗಣಿಸಬೇಕು.
2. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಒಟ್ಟು **100** ಪ್ರಶ್ನೆಗಳಿದ್ದು, ಪ್ರತಿ ಪ್ರಶ್ನೆಗೂ 4 ಬಹು ಆಯ್ಕೆ ಉತ್ತರಗಳು ಇರುತ್ತವೆ. ಪ್ರತಿ ಪ್ರಶ್ನೆಯ ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ನಾಲ್ಕು ಬಹು ಆಯ್ಕೆಯ ಉತ್ತರಗಳಲ್ಲಿ ಸರಿಯಾದ ಒಂದು ಉತ್ತರವನ್ನು ಆಯ್ಕೆ ಮಾಡಿ.
3. ಮೂರನೇ ಬೆಲ್ ಆದ ನಂತರ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಬಲಭಾಗದಲ್ಲಿರುವ ಸೀಲ್ ತೆಗೆದು ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಯಾವುದೇ ಪುಟಗಳು ಮುದ್ರಿತವಾಗಿಲ್ಲದೇ ಇರುವುದು ಕಂಡು ಬಂದಲ್ಲಿ ಅಥವಾ ಹರಿದು ಹೋಗಿದ್ದಲ್ಲಿ ಅಥವಾ ಯಾವುದೇ ಅಕ್ಷರಗಳು ಬಿಟ್ಟುಹೋಗಿದ್ದಲ್ಲಿ ಎಂಬುದನ್ನು ಖಚಿತಪಡಿಸಿಕೊಂಡು, ಈ ರೀತಿ ಆಗಿದ್ದರೆ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಿ ಕೊಳ್ಳುವುದು. ನಂತರ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಉತ್ತರಿಸಲು ಪ್ರಾರಂಭಿಸುವುದು.
4. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗೆ ಅನುಗುಣವಾಗಿರುವ ಸರಿ ಉತ್ತರವನ್ನು ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಅದೇ ಕ್ರಮ ಸಂಖ್ಯೆಯ ಮುಂದೆ ನೀಡಿರುವ ಸಂಬಂಧಿಸಿದ ವೃತ್ತವನ್ನು ನೀಲಿ ಅಥವಾ ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್‌ನಿಂದ ಸಂಪೂರ್ಣ ತುಂಬುವುದು.



5. ಈ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯನ್ನು ಸ್ಕ್ಯಾನ್ ಮಾಡುವ ಸ್ಕ್ಯಾನರ್ ಬಹಳ ಸೂಕ್ಷ್ಮವಾಗಿದ್ದು ಸಣ್ಣ ಗುರುತನ್ನು ಸಹ ದಾಖಲಿಸುತ್ತದೆ. ಆದ್ದರಿಂದ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಉತ್ತರಿಸುವಾಗ ಎಚ್ಚರಿಕೆ ವಹಿಸಿ.
6. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಕೊಟ್ಟಿರುವ ಖಾಲಿ ಜಾಗವನ್ನು ರಫ್ ಕೆಲಸಕ್ಕೆ ಉಪಯೋಗಿಸಿ. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯನ್ನು ಇದಕ್ಕೆ ಉಪಯೋಗಿಸಬೇಡಿ.
7. **ಕೊನೆಯ ಬೆಲ್ ಆದ ನಂತರ ಉತ್ತರಿಸುವುದನ್ನು ನಿಲ್ಲಿಸಿ, ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯನ್ನು ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರಿಗೆ ಯಥಾಸ್ಥಿತಿಯಲ್ಲಿ ನೀಡಿರಿ.**
8. ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರು ಮೇಲ್ಭಾಗದ ಹಾಳೆಯನ್ನು ಪ್ರತ್ಯೇಕಿಸಿ (ಕಚೇರಿ ಪ್ರತಿ) ತಮ್ಮ ವಶದಲ್ಲಿ ಇಟ್ಟುಕೊಂಡು ತಳಬದಿಯ ಯಥಾಪ್ರತಿಯನ್ನು (ಅಭ್ಯರ್ಥಿಯ ಪ್ರತಿ) ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಕೊಡುತ್ತಾರೆ.
9. ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೆ ಸಮಾನ ಅಂಕಗಳಿರುತ್ತದೆ. ಋಣಾತ್ಮಕ ಮೌಲ್ಯಮಾಪನವಿರುವುದಿಲ್ಲ.
10. ಯಾವುದೇ ರೀತಿಯ ಮೊಬೈಲ್ ಫೋನ್, ಕ್ಯಾಲ್ಕ್ಯುಲೇಟರ್ ಮತ್ತು ಇತರೆ ರೀತಿಯ ಎಲೆಕ್ಟ್ರಾನಿಕ್/ಕಮ್ಯುನಿಕೇಷನ್ ಸಾಧನಗಳು ಇತ್ಯಾದಿಗಳನ್ನು ಪರೀಕ್ಷಾ ಕೇಂದ್ರದ ಅವರಣದೊಳಗೆ ತರುವುದನ್ನು ನಿಷೇಧಿಸಿದೆ.

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1. Which of the following amino acid is a precursor of niacin ?

(A) Leucine
(B) Isoleucine
(C) Tryptophan
(D) Tyrosine

2. The isotopes of a neutral atom of an element show variation in which of the following properties ?

(A) Atomic number
(B) Chemical properties
(C) Physical properties
(D) Mass number

3. One of the following thermodynamic law gives the concept of enthalpy :

(A) First law of thermodynamics
(B) Second law of thermodynamics
(C) Third law of thermodynamics
(D) Fourth law of thermodynamics

4. Ramachandran plot predicts which one of the following parameter of a protein ?

(A) Total number of hydrogen atoms
(B) Possible number of interactions of side chains of the amino acid
(C) Number of reactive groups in a protein
(D) Dihedral angle

5. In a nucleotide, sugar and base are linked to each other by

(A) Hydrogen bond
(B) Glycoside bond
(C) Phosphodiester bond
(D) Ionic bond

6. Which of the following enzyme is ***not*** involved in galactose metabolism ?

(A) Galactose-1-Phosphate Uridyltransferase
(B) UDP-Galactose-4-epimerase
(C) Glucokinase
(D) Galactokinase

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7. Which of the following forces is most favourable for protein folding ?

(A) Hydrophobic interactions
(B) Conformational entropy
(C) Van der Waals interactions
(D) Hydrogen bonds

8. Which of the following is ***not*** true about Lipid rafts ?

(A) Lipid rafts are mainly constituted of cholesterol.
(B) Lipid rafts are assembled in Golgi complex and directly sent to plasma membrane.
(C) One Lipid raft is large enough to be seen under microscope.
(D) Lipid rafts when activated, form clusters.

9. Fluidity of the plasma membrane is mostly decided by the following constituent :

(A) Phospholipid
(B) Sphingolipid
(C) Cholesterol
(D) Protein

10. The only electron carrier in Electron Transport Chain which is ***not*** a protein bound prosthetic group is

(A) Cytochrome C
(B) Coenzyme Q
(C) Iron-Sulphur Cluster
(D) NADH reductase

11. Match the following :

a.	Microtubules	i.	Muscle contraction
b.	Actin	ii.	Cell adhesion
c.	Lamin	iii.	Spindle formation
d.	Keratin	iv.	Desmosomes

Codes :

	a	**b**	**c**	**d**
(A)	iii	i	ii	iv
(B)	iii	i	iv	ii
(C)	iii	ii	iv	i
(D)	ii	i	iv	iii

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12. Chromatin condensation in a cell to form fibres requires

(A) Acetylation of histone tails

(B) Deacetylation of histone tails

(C) Methylation of serine and threonine

(D) Phosphorylation of arginine

13. The following cell cycle transition is ***not*** an irreversible process :

(A) $G_1 \rightarrow S$ phase

(B) $G_1 \rightarrow G_0$ phase

(C) Metaphase $\rightarrow$ Anaphase

(D) Anaphase $\rightarrow$ Telophase

14. The following statement is ***not*** correct about auxotrophs :

(A) They are unable to synthesize all of the vital nutrients.

(B) TRP1 is a auxotrophic marker gene.

(C) They grow in minimal media, not in supplemented media.

(D) Auxotrophic mutants can be isolated by filtration enrichment technique.

15. The amino acid that is encoded by only a single triplet code is :

(A) Phenylalanine

(B) Alanine

(C) Leucine

(D) Methionine

16. Which of the following double-strand repair mechanism occurs throughout the cell cycle ?

(A) Post replication repair

(B) Nucleotide excision repair

(C) Homologous recombination

(D) Non-homologous DNA end joining

17. Histone acetylation increases transcription of gene because :

(A) It enhances the DNA-Histone interaction

(B) It induces DNA bending which is recognised by RNA polymerase

(C) The acetyl groups on histones are recognized by the RNA polymerase

(D) It loosens the DNA histone complex to make it accessible to RNA polymerase

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18. The eukaryotic RNA polymerase that transcribes Pre-mRNAs is :

(A) RNA Polymerase I
(B) RNA Polymerase II
(C) RNA Polymerase III
(D) RNA Polymerase IV

19. Which organelle is responsible for the modification, sorting and packaging of proteins for secretion or intracellular use ?

(A) Nucleus
(B) Endoplasmic reticulum
(C) Golgi apparatus
(D) Mitochondria

20. Which kind of the following post-translational modification increases the stability of the proteins ?

(A) O-linked glycosylation
(B) N-linked glycosylation
(C) C-linked glycosylation
(D) Glypiation

21. In the RNAi regulatory pathway, the dicer enzyme cleaves

(A) RNA polymerase into non-functional pieces
(B) Single stranded DNA into repetitive sequences
(C) Double stranded RNA into short strands
(D) mRNA of genes to be repressed

22. Bacterial pathogen enter the host through their appendages which are

(A) Fimbria produced by P cluster of genes
(B) FimH gene product that binds with trimannose residues
(C) Prepilin like proteins
(D) Fibrinogen and fibronectin

23. The following GPCR signalling does ***not*** lead to opening of Ion channel :

(A) Muscarinic acetylcholine receptor
(B) Rhodopsin
(C) Epinephrine receptor
(D) Nicotinic acetylcholine receptor

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24. Match the following :

a.	TFG-β	i.	Ser/thr kinase
b.	Cytokine receptor	ii.	SMAD
c.	RAF	iii.	Tyrosine kinase
d.	RAS	iv.	JAK

Codes :

	a	**b**	**c**	**d**
(A)	iv	iii	ii	i
(B)	ii	iv	i	iii
(C)	iii	i	iv	ii
(D)	iv	iii	i	ii

25. Match the following :

a.	Adherens junction	i.	Plakoglobin
b.	Desmosomes	ii.	CAM
c.	Tight junctions	iii.	Integrins
d.	Hemidesmosomes	iv.	Claudin-1

Codes :

	a	**b**	**c**	**d**
(A)	ii	iii	iv	i
(B)	iv	iii	i	ii
(C)	iii	iv	i	ii
(D)	ii	i	iv	iii

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26. Match the following :

a.	RB gene	i.	Cell cycle checkpoint
b.	C-jun	ii.	Signal transducers
c.	p53	iii.	Transcription factors
d.	TFG-β	iv.	Progress through cell cycle

Codes :

	a	**b**	**c**	**d**
(A)	iv	iii	i	ii
(B)	iii	i	iv	ii
(C)	ii	i	iv	iii
(D)	iii	iv	ii	i

27. The following statement about Antibody Engineering is ***not*** correct :

(A) This involves polyclonal antibodies only.

(B) This involves monoclonal antibodies.

(C) This involves modification of the structure of antibody.

(D) This involves modification of sequence of antibody.

28. Covaxin is a vaccine which is :

(A) developed by India

(B) administered against SARS virus

(C) a naive and mRNA vaccine

(D) advised for persons with anaphylaxis history

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29. The development of specialized cell types is called :

(A) Specification
(B) Determination
(C) Autonomous specification
(D) Differentiation

30. Stem cells in the early embryo, capable of generating all the structures of the embryo, are called :

(A) Committed stem cells
(B) Progenitor cells
(C) Pluripotent stem cells
(D) Precursor cells

31. In mammals, the vitelline envelope is a separate and thick extracellular matrix called the :

(A) Cumulus
(B) Corona radiata
(C) Egg jelly
(D) Zona pellucida

32. In plants, the second sperm cell fuses with a multinucleated somatic cell to produce the :

(A) Haploid endosperm
(B) Diploid endosperm
(C) Triploid endosperm
(D) Microspores

33. In Dictyostelium, a tip arises at the top of tight aggregate and bends over to produce the migrating

(A) Slug
(B) Spore
(C) Stalk
(D) Prespore cell

34. What determines the specification of different cell types in Drosophila ?

(A) Micropyle
(B) Energids
(C) Pole cells
(D) Morphogens

35. When individual leaves arise from each node on the stem of a plant, it is called :

(A) Opposite phyllotaxy
(B) Alternate phyllotaxy
(C) Whorled phyllotaxy
(D) Internode

36. The tissue that produces a signal (or signals) that change(s) the cellular behaviour of the other tissues is a/an :

(A) Responder
(B) Inducer
(C) Induction
(D) Producer

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37. Which of the following is ***not*** the major factor contributing to water potential during plant growth under normal conditions ?

(A) Temperature

(B) Solute Potential

(C) Hydrostatic Pressure

(D) Gravity

38. Chloroplast distribution in chlorenchymatous cell is governed by blue light sensing phototropin-2. When the cells are exposed to high intensity blue light, the chloroplasts :

(A) aggregate in the middle of the cell

(B) move to the side walls

(C) aggregate in small clusters

(D) are evenly distributed

39. Which one of the following photoreceptors plays a role in circadian rhythms and perception of day length ?

(A) Cryptochromes

(B) Phototropins

(C) Zeitlupe family

(D) UV Resistance locus

40. Exposure of dark-grown seedlings to ethylene results in triple response. Which one of the following is ***not*** a part of triple response ?

(A) Thickening of shoot

(B) Horizontal growth of the epicotyl

(C) Decrease in the elongation of epicotyl

(D) Rapid unfolding and expansion of leaves

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41. Nitrogen gas is reduced to ammonia during nitrogen fixation. Which of the following compound is necessary for this process ?

(A) ADP (B) UDP

(C) ATP (D) GTP

42. Following are some of the statements regarding phytohormones :

i. Ethylene regulates abscission.

ii. Gibberellins do not play any role in flowering.

iii. Auxins and Cytokinins promote cell division.

iv. Overexpression of cytokinin oxidase would promote root growth.

v. ABA inhibits root growth and promotes shoot growth at low water potential.

vi. ABA promotes leaf senescence independent of ethylene.

Which one of the following combinations of the above statements is correct ?

(A) i, iii and vi

(B) ii, iii and iv

(C) iv, v and vi

(D) ii, iv and v

43. Which one of the following compounds is normally translocated in the phloem ?

(A) D-Fructose

(B) Sucrose

(C) D-Glucose

(D) D-Mannose

44. The Krebs cycle in respiration yields :

(A) 4 GTP, 6 NADH, 4 $FADH_2$, 2 CO_2

(B) 32 GTP, 2 NADH, 4 $FADH_2$, 4 CO_2

(C) 2 GTP, 2 $FADH_2$, 6 $NADH_2$, 2 CO_2

(D) 1 GTP, 3 NADH, 1 $FADH_2$, 2 CO_2

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45. The changes in lung volume can be measured by :

(A) Micrometer
(B) Sphygmomanometer
(C) Thermometer
(D) Spirometer

46. Renin functions as an enzyme to convert :

(A) Angiotensin II to Angiotensin I
(B) Angiotensin I to Angiotensin II
(C) Angiotensinogen to Angiotensin I
(D) Angiotensinogen to Angiotensin II

47. The tissue capable of converting chemical energy into heat is

(A) White adipose tissue
(B) Brown adipose tissue
(C) Liver (Hepatic tissue)
(D) Connective tissue

48. _____ gland secretes an alkaline fluid that neutralizes the acidic vaginal secretions.

(A) Vesicular
(B) Prostate
(C) Bulbourethral
(D) Preputial

49. Reduced O_2 delivery to the kidneys stimulates secretion of the hormone :

(A) ADH
(B) Vasopressin
(C) Erythropoietin
(D) Oxytocin

50. In ECG, the QRS complex represents :

(A) Atrial depolarization
(B) Ventricular depolarization
(C) Ventricular repolarization
(D) Atrial repolarization

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51. The point on the retina at which the optic nerve leaves and through which blood vessels pass in the optic disc, is called :

(A) Rods
(B) Cones
(C) Blind spot
(D) Visual streak

52. Stress relaxation response is an inherent property of :

(A) Cardiac muscle
(B) Connective tissue
(C) Smooth muscle
(D) Cardiomyocytes

53. Which of the following statement is correct ?

(A) Both penetrance and expressivity are qualitative concepts.
(B) Both penetrance and expressivity are quantitative concepts.
(C) Penetrance is a qualitative concept and expressivity is a quantitative concept.
(D) Penetrance is a quantitative concept and expressivity is a qualitative concept.

54. Angelman Syndrome is caused by :

(A) Terminal deletions
(B) Ring chromosomes
(C) Interstitial deletions
(D) Microdeletions

55. Choose the ***incorrect*** statement about Robertsonian translocations :

(A) It is the centric fusion of the long arm of two acrocentric chromosomes with loss of short arms.
(B) The carrier will not show any abnormality until reproduction.
(C) Reproduction may result in trisomics or monosomics.
(D) Robertsonian translocation involves only chromosomes 17, 18 and 20.

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56. Match the following :

a.	Epistasis	i.	One gene affects multiple, apparently unrelated phenotypes.
b.	Pleiotropy	ii.	One of the dominant genes inhibit or suppress the expression of the other dominant gene.
c.	Inhibitory factor	iii.	Masking of effect of one dominant gene by the other gene.
d.	Duplicate factor	iv.	Dominant forms of both genes either alone, or in combination, produce same phenotypic expression.

Codes :

	a	**b**	**c**	**d**
(A)	iv	iii	i	ii
(B)	iii	i	ii	iv
(C)	i	iii	ii	iv
(D)	i	iii	iv	ii

57. Who coined the term "QTL (Quantitative Trait Loci)" ?

(A) Richard (B) Botstein (C) Geldermann (D) Wagner

58. Which of the following is ***not*** an example for sex-limited inheritance ?

(A) Premature baldness
(B) Genes for milk production in humans
(C) Some type of white forelock
(D) Absence of upper lateral incisor teeth

59. Which of the following is an example for incomplete dominance ?

(A) Flower colour in garden pea
(B) Flower colour in snapdragon
(C) Eye colour in Drosophila
(D) Coat colour in mice

60. Codominance is the condition in which there is :

(A) Joint expression of both alleles in a homozygote.
(B) Joint expression of both alleles in a heterozygote.
(C) Domination of one allele due to the presence of another allele.
(D) Alteration of one allele due to the influence of another allele.

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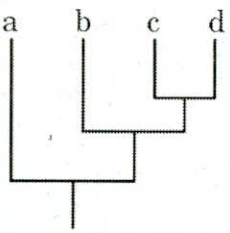
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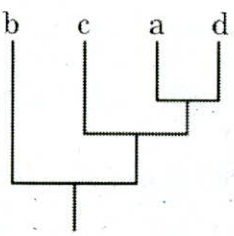
61. Which of the following structures are formed due to adaptive radiation ?

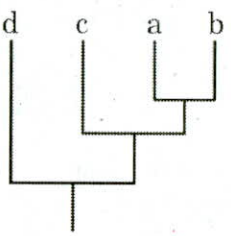
(A) Analogous structures
(B) Vestigial structures
(C) Homologous structures
(D) Rudimentary structures

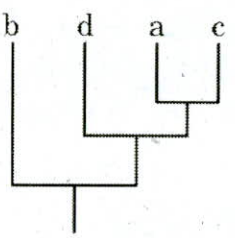
62. Identify the most appropriate cladogram that can be considered using the data matrix for four hypothetical species (a – d) given below, assuming '0' are plesiomorphic and '1' are apomorphic characters.

	1	2	3	4	5
a	0	1	1	0	0
b	0	0	0	0	0
c	0	1	0	0	0
d	0	1	1	0	1

(A)


(B)


(C)


(D)


63. Plants forms symbioses with different groups of soil fungi called Mycorrhiza. Which one of the following statement is ***not*** correct ?

(A) Vesicles are produced by arbuscular mycorrhizal fungi.
(B) Hartig net is an intraradical structure.
(C) Hyphal coils in orchid mycorrhiza are called pelotons.
(D) Ectendomycorrhiza forms arbuscules.

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64. In which Indian State are mangroves mostly found ?

(A) Gujarat
(B) Andaman and Nicobar Islands
(C) Tamil Nadu
(D) West Bengal

65. Which of the following criteria are essential to designate a region as a hot spot ?

i. It should contain at least 0·5% or 1500 species of vascular plants as endemics.
ii. It should contain more than 500 animal species.
iii. It must have lost 70% of its original natural vegetation.
iv. Its vegetation area should be more than 1000 sq. km.

(A) i and iv (B) i and iii (C) ii and iv (D) iii and iv

66. The principle 'One fungus, one name' came into existence from which of the following dates ?

(A) 1st July, 2011
(B) 14th September, 2013
(C) 1st January, 2013
(D) 1st January, 2015

67. Buffer Zone is a part of which of the following in-situ conservation method ?

(A) Biosphere Reserve
(B) Sacred Groves
(C) National Parks
(D) Wildlife Sanctuaries

68. Imperfect fungi is a group represented by fungal species which have

(A) Simple mycelia
(B) Unknown phylogenetic relationship
(C) Unknown mechanism of sexual reproduction
(D) Lost its survival mechanism against harsh environment

69. Arrange the following ecosystems in descending order of Net Primary Productivity (NPP) :

i. Alpine and Tundra
ii. Desert
iii. Tropical rainforest
iv. Temperate forest

(A) iii, iv, ii, i
(B) ii, iii, iv, i
(C) iii, i, iv, ii
(D) iii, iv, i, ii

70. Which of the following is ***not*** a qualitative character of a community ?

(A) Physiognomy
(B) Phenology
(C) Abundance
(D) Dominance

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71. What is the criteria to select Biodiversity hotspots in the world ?

(A) Maximum number of threatened plants

(B) Maximum number of threatened plants and loss of original habitat

(C) Maximum number of endemic flowering plants

(D) Maximum number of endemic flowering plants and loss of original habitat

72. Nudation, invasion, competition, reaction and stabilization are the various steps involved during the development of :

(A) A plant community

(B) An ecosystem

(C) Plant succession

(D) A food chain

73. Which of the following is ***not*** a popular theory of climax concept ?

(A) Monoclimax Theory

(B) Heteroclimax Theory

(C) Climax Pattern Hypothesis

(D) Polyclimax Theory

74. Which of the following is ***not*** a factor which affects the density of a population in a given habitat during a given period ?

(A) Natality

(B) Immigration

(C) Mortality

(D) Age of population

75. Which of the following is ***not*** a feature of energy flow in an ecosystem ?

(A) The energy captured by autotrophs does not revert back to solar input.

(B) At each trophic level there is a progressive increase in energy.

(C) Due to one-way flow of energy, the system will collapse if the primary source of energy is cut off.

(D) A lot of energy is lost during metabolic reactions coupled with unutilized energy.

76. Which of the statements is ***wrong*** about ecological pyramids ?

(A) Pyramid of numbers may be upright or inverted.

(B) Pyramid of energy may be upright or inverted.

(C) Pyramid of biomass may be upright or inverted.

(D) They are the graphical representation of different trophic levels.

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77. Theory of inheritance of acquired characters is stated in :
(A) Darwinism (B) Lamarckism
(C) Species concept (D) Neo-Lamarckism

78. The term Evolution was first used by :
(A) Lamarck (B) Herbert Spencer
(C) Darwin (D) Hugo de Vries

79. The change in allele frequency over a period of time within a population is known as :
(A) Mega evolution (B) Microevolution
(C) Macroevolution (D) Coevolution

80. The raw material of Evolution is :
(A) Mutation (B) Acquired characters
(C) Sexual reproduction (D) Natural Selection

81. Muller was the first to produce induced mutation in :
(A) Drosophila (B) Xenopus
(C) Paramecium (D) Arabidopsis

82. Origin of Species was written by :
(A) Oparin (B) Weismann (C) Lamarck (D) Darwin

83. Species inhabiting different geographical areas is known as :
(A) Sympatric (B) Allopatric (C) Siblings (D) Biospecies

84. Which geological epoch period is marked by dinosaur dominance ?
(A) Paleozoic Era (B) Mesozoic Era
(C) Cenozoic Era (D) Proterozoic Era

85. Which of the following is essential for fermentation process to occur ?
(A) Inorganic Substrate (B) Organic Substrate
(C) Sodium Salts (D) Ethanol

86. Which of the following vaccines do ***not*** have age restriction for administration ?
(A) MMR Vaccines (B) Polio Vaccines
(C) HPV Vaccines (D) Rabies Vaccines

87. Biofortification using transgenic animals by gene manipulation can be achieved by carrying out which one of the following ?
(A) Improving Disease Resistance (B) Improving Reproductive Performance
(C) Improving Carcass Composition (D) Improving Growth Rate

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88. The use of genomics in diagnostics has significant benefits in terms of quickly identifying disease etiology for :

(A) Monogenic Diseases
(B) Polygenic Diseases
(C) X-linked Disorders
(D) Trisomies

89. Resins of medicinal value are an example of :

(A) Primary Bioresource
(B) Secondary Bioresource
(C) Value-added plant product
(D) Biofortified entity

90. Thriving of diverse living species on the Earth is solely due to :

(A) Inbreeding
(B) Outbreeding
(C) Selective breeding
(D) Pure breeding

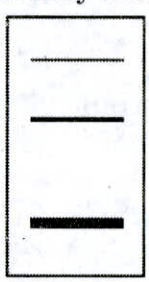
91. At which stage of waste treatment do methanogenic microbes play a role in detoxification ?

(A) Primary treatment
(B) Secondary treatment
(C) Sludge digestion
(D) Biological oxidation

92. What are the elements of biosensors ?

(A) Substrate, Receptor, Signal amplifier, Signal receiver
(B) Analyte, Receptor, Transducer, Signal output
(C) Analyte, Signal amplifier, Transducer, Signal receiver
(D) Substrate, Signal amplifier, Transducer, Signal output

93. In the image given below, different conformations of plasmid were resolved in a 1% agarose gel. Identify which conformation migrates Slower → Faster ?



(A) Linear, Nicked, Supercoiled
(B) Linear, Supercoiled, Nicked
(C) Supercoiled, Linear, Nicked
(D) Nicked, Linear, Supercoiled

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94. What is the main limitation for using Edman degradation method for protein sequencing ?

(A) It cannot determine the N-terminal sequence.

(B) It requires a large amount of protein.

(C) It cannot sequence proteins with modified amino acids.

(D) It cannot be automated.

95. What does the total sum of squares in ANOVA represent ?

(A) The sum of squares between groups

(B) The sum of squares within groups

(C) The total variation in data

(D) The mean of the data

96. If the values of the two variables move in opposite directions, the correlation is said to be :

(A) Positive (B) Negative (C) Linear (D) Non-linear

97. Radioactive isotopes used in Hershey-Chase experiment were :

(A) ^{3}H and ^{14}C (B) ^{14}C and ^{35}S

(C) ^{32}P and ^{35}S (D) ^{14}C and ^{32}P

98. Freeze-fracture method for microscopic examination does ***not*** involve :

(A) Rapid freezing (B) Fracturing

(C) Cytoprotection (D) Sublimation

99. PET scan techniques are used to study :

(A) Abnormal activity in our body (B) The cause of pathogenesis in our body

(C) The progress of pregnancy (D) The activity of babies

100. In a field study, to estimate the number of mongoose in a locality, 60 mongoose were initially captured, marked and released. 80 mongoose were captured after one month from the same field of which 10 were previously marked. From these findings, estimate the population size of mongoose in that field.

(A) 320 (B) 480 (C) 420 (D) 380

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Serial No.

Version Code

A1

COMPETITIVE EXAMINATION-2023

PAPER – II

SUBJECT: LIFE SCIENCES **SUBJECT CODE:28**

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LIF202328	TWO HOURS	100	200	

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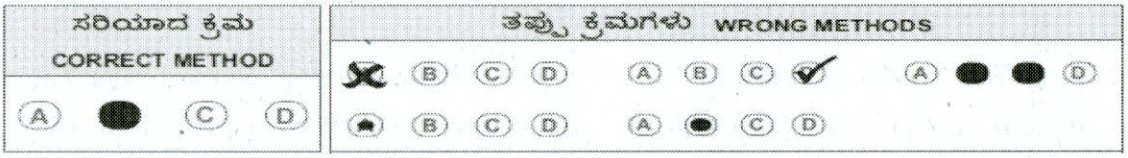
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2. Check whether the Register Number has been entered and shaded in the respective circles on the OMR answer sheet.
3. The version code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
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