

Hall Ticket Number

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Q.B.No.

1	4	3	2	1	4
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Booklet Code :

D

Marks : 100

Time : 120 minutes

3PB1S

Signature of the Candidate

Signature of the Invigilator

INSTRUCTIONS TO THE CANDIDATE

(Read the Instructions carefully before Answering)

1. Separate Optical Mark Reader (OMR) Answer Sheet is supplied to you along with Question Paper Booklet. Please read and follow the instructions on the OMR Answer Sheet for marking the responses and the required data.
2. The candidate should ensure that the Booklet Code printed on OMR Answer Sheet and Booklet Code supplied are same.
3. **Immediately on opening the Question Paper Booklet by tearing off the paper seal, please check for (i) The same booklet code (A/B/C/D) on each page, (ii) Serial Number of the questions (1-100), (iii) The number of pages and (iv) Correct Printing.** In case of any defect, please report to the invigilator and ask for replacement of booklet with same code within five minutes from the commencement of the test.
4. Electronic gadgets like Cell Phone, Calculator, Watches and Mathematical/Log Tables are not permitted into the examination hall.
5. **There will be $\frac{1}{4}$ negative mark for every wrong answer.** If the response to the question is left blank without answering, there will be no penalty of negative mark for that question.
6. Using Blue/Black ball point pen to darken the appropriate circles of (1), (2), (3) or (4) in the OMR Answer Sheet corresponding to correct or the most appropriate answer to the concerned question number in the sheet. Darkening of more than one circle against any question automatically gets invalidated and will be treated as wrong answer.
7. Change of an answer is NOT allowed.
8. Rough work should be done only in the space provided in the Question Paper Booklet.
9. Return the OMR Answer Sheet and Question Paper Booklet to the invigilator before leaving the examination hall. Failure to return the OMR sheet and Question Paper Booklet is liable for criminal action.

This Booklet consists of 21 Pages for 100 Questions + 2 Pages of Rough Work + 1 Title Page i.e. Total 24 Pages.

3PB1S

Booklet Code **D**

SPACE FOR ROUGH WORK

Time : 2 Hours**Marks : 100****Instructions :**

- i) Each question carries **one** mark and $\frac{1}{4}$ negative mark for every wrong answer.
- ii) Choose the correct or most appropriate answer from the given options to the following questions and darken, with Blue/Black Ball Point Pen, the corresponding digit **1, 2, 3** or **4** in the circle pertaining to the question number concerned in the OMR Answer Sheet, separately supplied to you.
-

1. Respiration is primarily regulated by

- (1) Pneumotaxic centre in pons
 - (2) Respiratory rhythm centre in medulla
 - (3) Receptors on aortic arch and carotid arch
 - (4) Hypothalamus
-

2. Statement (S) : Lymph is similar to blood in composition except absence of RBC and low protein concentration.

Reason (R) : Lymph is formed by filtration in capillaries due to high filtration pressure.

- (1) Both (S) and (R) are correct and (R) is the correct explanation to (S).
 - (2) Both (S) and (R) are correct but (R) is not the correct explanation to (S).
 - (3) (S) is correct but (R) is not correct.
 - (4) (S) is not correct but (R) is correct.
-

3. Match the following:

List - I (Valves)

- A) Mitral valve (bicuspid)
- B) Tricuspid valve
- C) Valve of Thebesius
- D) Eustachean valve

List - II (Location)

- I) Opening of post caval vein
- II) Right atrium and coronary sinus
- III) Between right auricle and right ventricle
- IV) Between left auricle and left ventricle
- V) At the base of pulmonary arch

Choose the correct answer

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

4. Most of the solutes, water and all of the glucose and amino acids are reabsorbed from the filtrate in

- (1) Proximal convoluted tubule
 - (2) Distal convoluted tubule
 - (3) Loop of Henle
 - (4) Collecting ducts
-

5. Statement (S) : Mammals have the ability to produce concentrated urine.
Reason (R) : Mammals have loop of Henle and vasa recta with counter current mechanism to concentrate urine.
- (1) Both (S) and (R) are correct and (R) is the correct explanation to (S).
 - (2) Both (S) and (R) are correct but (R) is not the correct explanation to (S).
 - (3) (S) is correct but (R) is not correct.
 - (4) (S) is not correct but (R) is correct.
-
6. The part of the brain that is responsible for the control and co-ordination of body movements is
- (1) Diencephalon
 - (2) Medulla oblongata
 - (3) Cerebrum
 - (4) Cerebellum
-
7. The channels that are involved in synaptic transmission are
- (1) Leaky channels
 - (2) Voltage-gated channels
 - (3) Ligand-gated channels
 - (4) Gap junctions
-
8. Statement (S) : Somatomammotropin is secreted by placenta.
Reason (R) : Increased plasma glucose levels in pregnant women has anti-insulin effect.
- (1) Both (S) and (R) are correct and (R) is the correct explanation to (S).
 - (2) Both (S) and (R) are correct but (R) is not the correct explanation to (S).
 - (3) (S) is correct but (R) is not correct.
 - (4) (S) is not correct but (R) is correct.
-
9. Ptyalin enzyme catalyses the following biochemical reaction :
- (1) Starch \rightarrow Maltose
 - (2) Proteins \rightarrow Proteases + Peptones
 - (3) Monoglycerates \rightarrow Fatty acids + Glycerol
 - (4) Dipeptides \rightarrow Amino acids
-
10. The function of phrenic muscles are
- (1) They increase the volume of thoracic chamber in the dorso-ventral axis.
 - (2) They increase the volume of right atrium.
 - (3) They increase the volume of thoracic chamber in the antero-posterior axis.
 - (4) They decrease the volume of thoracic chamber in the dorso-ventral axis.
-
11. 'Delhi boils' or 'Tashkent' ulcers are caused by
- (1) *Wuchereria bancrofti*
 - (2) *Trypanosoma gambiense*
 - (3) *Leishmania donovani*
 - (4) *Leishmania tropica*
-
12. 'Relapse of malaria' is due to
- (1) mammilated eggs
 - (2) hypnozoites
 - (3) Gambusia
 - (4) Improper anisogamy
-

13. Match the following:

List - I

Disease

- a) Porphyria cutanea tarda
- b) Hereditary coproporphyria
- c) Variegate porphyria
- d) Protoporphyria

List - II

Deficiency

- i) Ferrochelatase
- ii) Coproporphyrinogen oxidase
- iii) Protoporphyrinogen oxidase
- iv) Uroporphyrinogen decarboxylase

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | i | ii | iii | iv |
| (2) | iv | ii | iii | i |
| (3) | iv | iii | ii | i |
| (4) | iii | i | ii | iv |

14. The branch of biology that aims at improving the genetic quality of human population is

- (1) Ethology
- (2) Transgenics
- (3) Eugenics
- (4) Euthenics

15. Match the following:

List - I

National Institutes

- a) Central Food Technological Research Institute
- b) Indian Institute of Science
- c) National Institute of Immunology
- d) Forest Research Institute

List - II

Location

- I) New Delhi
- II) Dehradun
- III) Hyderabad
- IV) Mysuru
- V) Bengaluru

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | V | III | I | II |
| (2) | IV | V | II | I |
| (3) | IV | III | I | II |
| (4) | IV | V | I | II |

16. Statement (S) : Ernst Mayr is considered 'The Darwin of 20th Century'.

Reason (R) : Evolution in terms of allelic frequencies in a population that remain constant from generation to generation.

- (1) Both (S) and (R) are correct and (R) is the correct explanation to (S).
- (2) Both (S) and (R) are correct but (R) is not the correct explanation to (S).
- (3) (S) is correct and (R) is not correct.
- (4) (S) is not correct but (R) is correct.

17. Match the following:

List - I

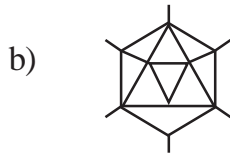
Virus shape

List - II

Virus Name



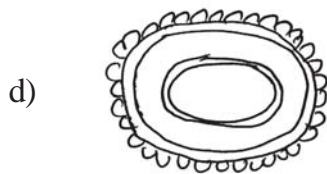
i) Vaccinia virus



ii) Polio virus



iii) Tobacco Mosaic virus



iv) Adeno virus

v) Alfalfa virus

Choose the correct answer

	(a)	(b)	(c)	(d)
(1)	i	ii	iv	v
(2)	iv	iii	ii	i
(3)	iii	iv	ii	i
(4)	ii	iii	v	iv

18. Which of the following characteristic features between Euglena and Trypanosoma are TRUE?

- (1) Nutrition of both organisms is holophytic
- (2) Both organisms multiplies by longitudinal binary fission
- (3) Trypanosoma uses cilia for its locomotion whereas Euglena moves using flagellum
- (4) Euglena contains nucleoli in its nucleus but not is Trypanosoma

19. Match the following animals with their corresponding phylum :

List - I Organism	List - II Phylum
a) <i>Taenia solium</i>	i) Mollusca
b) <i>Haemadipsa</i>	ii) Nematelminthes
c) <i>Wuchereria bancrofti</i>	iii) Platyhelminthes
d) <i>Pila</i>	iv) Annelida

Choose the correct answer

	(a)	(b)	(c)	(d)
(1)	iii	i	ii	iv
(2)	iv	iii	i	ii
(3)	ii	iv	iii	i
(4)	iii	iv	ii	i

20. *Mycobacterium tuberculosis* is detected by

- | | |
|------------------------|-----------------------------|
| (1) Acid fast staining | (2) Methylene blue staining |
| (3) Gram staining | (4) Indian ink staining |

21. Match the following:

List - I Micro organisms	List - II Mineralisation of organic compounds
a) Disulfovibrio	i) Phosphorus
b) Flavobacterium	ii) Sulfur
c) Alcaligenes	iii) Iron
d) Klebsiella	iv) Nitrogen

Choose the correct answer

	(a)	(b)	(c)	(d)
(1)	i	iii	iv	ii
(2)	ii	iii	iv	i
(3)	iii	ii	i	iv
(4)	ii	i	iii	iv

22. Which of the following bacterial strain represents 'Superbug' developed by Anand Chakrabarty?

- | | |
|-------------------------------------|---------------------------------|
| (1) <i>Alcaligenes Xylosox</i> | (2) <i>Pseudomonas Putida</i> |
| (3) <i>Flavobacterium ATCC27551</i> | (4) <i>Arthobacter Sps. TE1</i> |

23. 'Pasteurization' involves

- (1) heating of milk to 62.8°C for 30 minutes
- (2) removal of water from the milk by heating
- (3) freezing of milk at -40°C to inactivate microbes
- (4) sterilisation of milk by γ -radiation

24. The cellular organelle which is involved in conversion of stored lipids to carbohydrates
- (1) Glyoxysomes (2) Lysosomes
(3) Peroxisomes (4) Ribosomes
-

25. Match the following:

List - I

- a) Non-polar compounds pass through the membrane more easily than water soluble compounds
b) Lipids orient themselves with heads towards water and away from organic solvents
c) Lipoprotein sandwich model
d) Extracted lipids from known number of red blood cells

List - II

- I) David Robertson
II) Overton
III) Langmuir
IV) Gorter & Grendel
V) Davson & Danielle

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | II | V | III | IV |
| (2) | II | III | V | IV |
| (3) | I | II | IV | III |
| (4) | III | I | II | V |
-

26. The small subunit of prokaryotic ribosomes consists of

- (1) 5 S rRNA and 34 proteins
(2) 16 S rRNA bound to 21 proteins
(3) 5 S and 23 S rRNA bound to 34 proteins
(4) 23 S rRNA and 21 proteins
-

27. Which of the following anticodon sequence of an aminoacyl t-RNA is used for initiation of protein synthesis?

- (1) 3' – UAC – 5' (2) 3' – AUG – 5' (3) 5' – UAC – 3' (4) 5' – AUG – 3'
-

28. Assertion (A) : The cytosolic molecules and organelles are not destroyed in case there is leakage of hydrolytic enzymes from the lysosome.

Reason (R) : The cytosolic pH is relatively more acidic than the interior pH of lysosome.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A).
(2) Both (A) and (R) are true. But (R) is not the correct explanation of (A).
(3) (A) is true, but (R) is false.
(4) (A) is false, but (R) is true.
-

29. Which of the following enzyme is localized in the mitochondrial matrix?

- (1) Glyceraldehyde dehydrogenase (2) Hexokinase
(3) Pyruvate dehydrogenase (4) Phospho-fructokinase
-

30. Match the following:

List - I

- a) Leptotene
- b) Zygotene
- c) Diplotene
- d) Pachytene

List - II

- i) synapsis
- ii) dissolution of synaptonemal complex
- iii) compaction of chromosomes
- iv) meiotic spindle assembly
- v) appearance of recombination nodules

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | iii | i | ii | v |
| (2) | i | iii | ii | iv |
| (3) | ii | iv | iii | i |
| (4) | v | ii | i | iii |

31. Match the following:

List - I

- a) Anisocytic
- b) Anomocytic
- c) Paracytic
- d) Diacytic

List - II

- i) *Tridax procumbens*
- ii) *Alternanthera panicoides*
- iii) *Lycopersium esculentum*
- iv) *Alternanthera philexezoides*
- v) *Potamogeton*

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | iv | v | i | ii |
| (2) | v | iii | ii | i |
| (3) | i | ii | iv | iii |
| (4) | iii | i | ii | iv |

32. Which of the following plant tissue consists of cells, much thickened at the corners due to deposits of cellulose, hemicellulose and pectin?

- (1) Parenchyma (2) Sclerenchyma (3) Collenchyma (4) Sclereids

33. Large, empty and colourless cells in grasses make the leaves curl inwards to minimise water loss are called

- (1) Epidermis (2) Endodermis (3) Mesophyll (4) Bulliform

34. In telocentric chromosome

- (1) Centromere is located nearer to one end of the chromosome resulting into one shorter and one larger arm.
- (2) Centromere is found in the middle forming two equal arms of the chromosome.
- (3) The centromere is situated close to its end forming one extremely short and one very long arm.
- (4) Chromosome has a terminal centromere.

35. In epiphytic plants, adventitious roots are specialized to absorb moisture from atmosphere. Such roots are called

- (1) pillar roots (2) stilt roots (3) nodular roots (4) velamen roots

36. Match the following:

List - I

- a) Solitary cyme
b) Cyathium
c) Hypanthodium
d) Corymb

List - II

- I) Cauliflower
II) *Datura*
III) *Euphorbia*
IV) *Ficus*

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | II | I | III | IV |
| (2) | IV | II | I | III |
| (3) | II | III | IV | I |
| (4) | II | IV | III | I |

37. Match the following:

List - I

- a) Valvate aestivation
b) Twisted
c) Imbricate
d) Vexillary

List - II

- I) Gulmohur
II) *Pisum*
III) *Calotropis*
IV) *Hibiscus*
V) *Gloriosa*

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | V | II | I | III |
| (2) | III | V | IV | I |
| (3) | IV | III | V | II |
| (4) | III | IV | I | II |

38. Match the following:

List - I

- a) Hesperidium
b) Pome
c) Pepo
d) Schizocarpic

List - II

- I) Custard apple
II) *Citrus*
III) *Cucumber*
IV) Apple
V) *Recinus*

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | II | IV | III | V |
| (2) | I | IV | V | III |
| (3) | II | I | IV | V |
| (4) | IV | V | II | III |

39. Arrange the following equations in the order of their occurrence in Calvin cycle.
- I) Xylulose 5-phosphate \rightarrow Ribulose 5-phosphate
 - II) Sedoheptulose-7-phosphate + 3-phospho glycerinaldehyde \rightarrow Ribose 5-phosphate + Xylulose 5-phosphate
 - III) Fructose-1, 6-bisphosphate \rightarrow Fructose-6-phosphate + P_i
 - IV) 3-Phosphoglyceric acid \rightarrow 1, 3-diphosphoglyceric acid

The correct answer is

- (1) II, IV, III and I
- (2) IV, III, II and I
- (3) I, IV, II and III
- (4) III, II, I and IV

40. The turgidity of guard cells is brought about by
- (1) iso-osmotic pressure
 - (2) hyper-osmotic pressure
 - (3) hypo-osmotic pressure
 - (4) exo-osomosis

41. Match the following:

List - I

- a) Juicy succulent placental hairs of endocarp
- b) Cotyledons and fleshy pedicel (False fruit)
- c) Succulent perianth
- d) Fleshy Thalamus

List - II

- I) *Pyrus malus*
- II) *Citrus sinensis*
- III) *Anacardium Occidentalis*
- IV) *Artocarpus integrifolia*

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | II | IV | I | III |
| (2) | III | II | IV | I |
| (3) | IV | III | I | II |
| (4) | II | III | IV | I |

42. Match the following:

List - I

- a) Indole-3-acetic acid
- b) Ethylene
- c) Gibberellins
- d) Cytokinins

List - II

- I) Methionine
- II) Isopentenyl pyrophosphate
- III) Tryptophan
- IV) Phenylalanine
- V) Purine

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | III | IV | I | II |
| (2) | I | V | II | III |
| (3) | II | IV | I | V |
| (4) | III | I | II | V |

43. Match the following:

List - I

- a) *Artemesia*
- b) *Datura*
- c) *Nux Vomica*
- d) *Digitalis*

List - II

- I) Cardiotoxic
- II) Stimulant action
- III) Antimalarial
- IV) Antispasmodic

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | III | II | I | IV |
| (2) | I | III | IV | II |
| (3) | III | IV | II | I |
| (4) | IV | I | III | II |

44. Match the following:

List - I

- a) Anthracnose of Mango
- b) Downy mildew of Grapes
- c) Foot rot of Papaya
- d) Citrus Canker

List - II

- I) *Plasmopara Viticola*
- II) *Xanthomonas*
- III) *Colletotrichum gloeosporioides*
- IV) *Pythium aphanidermatum*

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | IV | I | III | II |
| (2) | III | IV | II | I |
| (3) | I | II | III | IV |
| (4) | III | I | IV | II |

45. Match the following :

List - I

Crop variety

- a) Wheat
- b) Brassica
- c) Cowpea
- d) Chilli

List - II

Resistance to disease

- I) Tobacco Mosaic virus and leaf curl
- II) Bacterial blight
- III) Leaf and stripe rust
- IV) White rust

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | I | III | IV | II |
| (2) | III | IV | II | I |
| (3) | III | I | IV | II |
| (4) | IV | II | III | I |

46. Assertion (A) : The pollen grains or the male gametophytes reach the stigma through various pollinating agents, and then germinate.
Reason (R) : The pollen does not germinate if water and exudates of the stigma are absent.
(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct, but (R) is not the correct explanation of (A).
(3) (A) is true, but (R) is false.
(4) (A) is false, but (R) is true.
-
47. Glucose in the epithelial cells of small intestine is absorbed by
(1) Diffusion (2) Active transport
(3) Secondary active transport (4) Osmosis
-
48. Study the following statements regarding liver :
A) It secretes bile juice which contains bile pigments that emulsify fats.
B) It secretes the enzyme lipase for the digestion of fats.
C) It stores glycogen and maintains blood glucose levels.
D) It is involved in detoxification.
Choose the correct statements
(1) A, B and C (2) B, C and D (3) A, C and D (4) A, B and D
-
49. Read the following statements regarding breathing :
A) Inspiration is an active process.
B) Expiration is a passive process.
C) Inspiration involves contraction of external inter-costal muscles and diaphragm.
D) Expiration involves relaxation of external inter-costal muscles and diaphragm.
Choose the correct statements
(1) A and B only (2) A, B and C only
(3) A, C and D only (4) A, B, C and D
-
50. Read the following statements regarding oxygen dissociation curve :
A) Increase in CO₂ concentration causes the curve to shift to right side.
B) Increase in temperature shifts the curve towards left side.
C) Decrease in pH shifts the curve to the right side.
D) Increase in CO₂ levels and decrease in pH cause a decrease in affinity of haemoglobin to oxygen.
Choose the correct answer
(1) A, B and C (2) A, B and D (3) B, C and D (4) A, C and D
-
51. The frequency of two alleles in a gene pool is 0.19 & 0.81. Assume that the population is in Hardy-Weinberg equilibrium. Calculate the percentage of heterozygous individuals in the population:
(1) 38% (2) 37% (3) 31% (4) 34%
-

52. The main objection to the theory of evolution by Lamarck is
- (1) Effect of use and disuse
 - (2) Natural selection
 - (3) Struggle for existence
 - (4) Inheritance of acquired characters
-
53. Statement (S) : Darwinism explains the "Survival of fittest" but not "The arrival of fittest".
Reason (R) : Darwinism failed to explain the mechanism by which variations occur.
- (1) Both (S) and (R) are correct and (R) is the correct explanation to (S)
 - (2) Both (S) and (R) are correct, but (R) is not a correct explanation to (S)
 - (3) (S) is correct but (R) is not wrong
 - (4) (S) is not correct but (R) is correct
-
54. Eukaryotes evolved by
- (1) Mutations in Prokaryotes
 - (2) Symbiotic association between aerobic and anaerobic bacteria
 - (3) Formation of endomembrane system by the infoldings of plasma membrane
 - (4) Probably by 2nd and 3rd processes
-
55. Which one of the following disturbs the Hardy-Weinberg equilibrium?
- (1) Small population size
 - (2) Random mating
 - (3) No evolutionary forces
 - (4) No differential reproductive success
-
56. The development of resistance to DDT by mosquitoes is an example for
- (1) Stabilising selection
 - (2) Directional selection
 - (3) Disruptive selection
 - (4) Artificial selection
-
57. Statement (S) : Reproductive isolation is the key for the formation of new species.
Reason (R) : Isolated populations are prevented from interbreeding, develop divergence over time leading to speciation.
- (1) Both (S) and (R) are correct and (R) is the correct explanation to (S)
 - (2) Both (S) and (R) are correct but (R) is not the correct explanation to (S)
 - (3) (S) is correct but (R) is not correct
 - (4) (S) is not correct but (R) is correct
-

58. High milk yielding buffalo sp. *Babalus bubalus* is produced by the following animal breeding methods.

- (1) Cross breeding (2) Interspecific hybridisation
(3) Artificial insemination (4) Inbreeding
-

59. 'Bird flu' is caused by avian influenza type

- (1) H₁N₅ (2) H₅N₁ (3) H₁N₁ (4) H₅N₅
-

60. Match the following:

- | List - I | List - II |
|---|-----------------|
| a) It is a fertile, contains diploid genome and only one per bee hive | i) Drones |
| b) It is a fertile, contains haploid genome and are developed from unfertilised ova | ii) Worker bees |
| c) It is a sterile, contains diploid genome and they secrete worm | iii) Queen |

The correct match is:

- | | (a) | (b) | (c) |
|-----|-----|-----|-----|
| (1) | iii | i | ii |
| (2) | ii | iii | i |
| (3) | i | ii | iii |
| (4) | iii | ii | i |
-

61. The following hormone is used for induced seed production in fishes

- (1) Gonadotropins (2) Thyroropins
(3) Estrogens (4) Progesterons
-

62. Match the following:

- | List - I | List - II |
|--------------------|---------------------------|
| a) Hepatitis | i) Toxoid |
| b) Measles vaccine | ii) Protein subunit |
| c) Tetanus vaccine | iii) Killed whole microbe |
| d) Polio vaccine | iv) Disabled live microbe |

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | ii | iii | iv | i |
| (2) | iii | iv | ii | i |
| (3) | ii | iv | i | iii |
| (4) | ii | i | iv | iii |
-

63. Match the following:

- | List - I | | List - II | |
|----------|--|-----------|-----------------|
| a) | transfer of DNA into eukaryotic cells by synthetic lipid coats | i) | transformation |
| b) | transfer of DNA into mammalian cells by viral vectors | ii) | transduction |
| c) | transfer of DNA into eukaryotic/prokaryotic cells by electric pulses | iii) | electroporation |
| d) | transfer of DNA into bacterial cells by chemical reagents | iv) | transfection |

Choose the correct answer:

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | iv | ii | iii | i |
| (2) | iv | iii | ii | i |
| (3) | iii | ii | i | iv |
| (4) | ii | iv | iii | i |

64. Statement (S) : P⁵³ is often called as 'guardian angel of cell's genome'.

Reason (R) : P⁵³ potentiates cell division to ensure the integrity of the DNA.

- (1) Both (S) and (R) are correct
- (2) Both (S) and (R) are correct but (R) is the correct explanation to (S)
- (3) (S) is correct but (R) is wrong
- (4) Both (S) and (R) incorrect

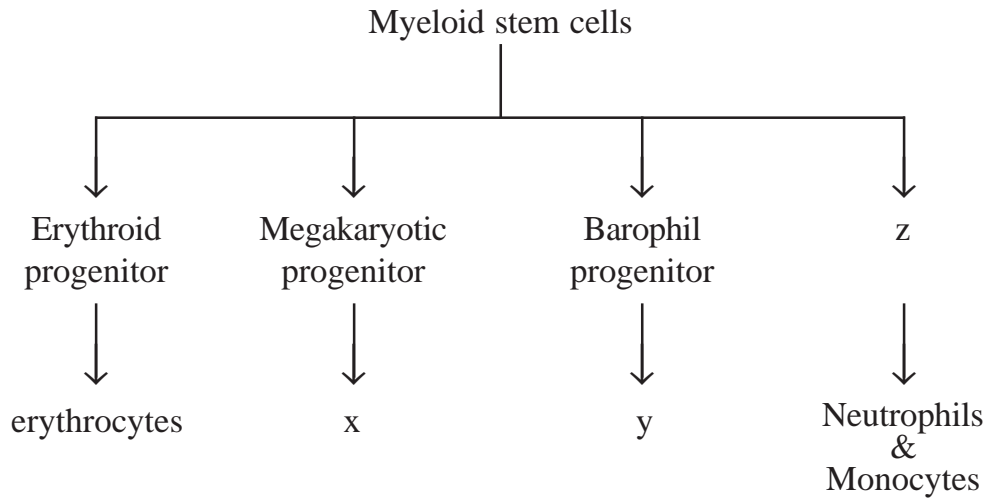
65. Match the following:

- | List - I | | List - II | |
|----------|----------------------------------|-----------|-----------------|
| a) | MRI (Magnetic Resonance Imaging) | i) | Breast cancer |
| b) | Blood test | ii) | Prostate cancer |
| c) | PSA test | iii) | Leukemia |
| d) | Physical Examination | iv) | Tumor |

Choose the correct answer:

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | iv | i | iii | ii |
| (2) | ii | iv | iii | i |
| (3) | iv | iii | i | ii |
| (4) | iv | iii | ii | i |

66. In the following haematopoietic stem cell lineage tree x, y and z represents.



- (1) x - eosinophils ; y - Mast cells ; z - lymphoid progenitor
- (2) x - Mast cell ; y - Platelets ; z - T cell progenitor
- (3) x - Platelets ; y - Macrophage ; z - granulocyte progenitor
- (4) x - platelets ; y - Mast cells ; z - granulocyte progenitor

67. Match the following:

- | | |
|---|--|
| <p>List - I
(ECG components)</p> <ol style="list-style-type: none"> a) Q-T interval b) R-R interval c) T-wave d) ST segment | <p>List - II
(Functional representation)</p> <ol style="list-style-type: none"> i) ventricular re-polarisation ii) ventricular depolarisation iii) zero voltage period iv) cardiac cycle |
|---|--|

Choose the correct answer

- | | | | | |
|-----|-----|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| (1) | ii | i | iv | iii |
| (2) | iii | i | iv | ii |
| (3) | ii | iv | i | iii |
| (4) | ii | iii | i | iv |

75. The movement of organisms away from the direction of light is
- (1) Photokinesis (2) Phototaxis
(3) Photoperiodism (4) Phototropism
-

76. Read the following statements regarding air pollution of carbon monoxide.

- A) It is produced due to incomplete burning of fossil fuels.
B) Haemoglobin has a very low affinity for carbon monoxide.
C) In higher concentrations, it leads to coma and death.
D) Haemoglobin of smokers has low oxygen transporting capacity.

Choose the correct statements

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

77. Match the following:

List - I

- A) Biomagnification
B) Eutrophication
C) Biological Oxygen Demand
D) Green house effect

List - II

- I) Index for measuring pollution load of water
II) Heating of Earth's atmosphere
III) Use of fertilizers to increase the productivity
IV) Enrichment of a lake by nutrients
V) Increase in the concentration of pollutant at successive trophic levels in a food chain

Choose the correct match:

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

78. Statement (S) : Ozone is a poisonous to living organisms.

Reason (R) : At higher levels of atmosphere ozone forms a layer and shields the organisms from UV radiation.

- (1) Both (S) and (R) are correct and (R) is the correct explanation to (S)
(2) Both (S) and (R) are correct but (R) is not the correct explanation to (S)
(3) (S) is correct (R) is not correct
(4) (S) is not correct (R) is correct
-

79. Which one of the following is a non-renewable energy?

- (1) Natural gas (2) Geo-thermal energy
(3) Wind energy (4) Tidal energy
-

80. Statement (S) : Despite bountiful monsoons, India is facing water shortage.
Reason (R) : Failure to harvest and store water are the causes of water shortage.
(1) Both (S) and (R) are correct and (R) is the correct explanation to (S)
(2) Both (S) and (R) are correct but (R) is not the correct explanation to (S)
(3) (S) is correct but (R) is not correct
(4) (S) is not correct but (R) is correct
-
81. Read the following statements about snake bite.
A) Poisonous snake bite has two puncture wounds
B) The toxin of Vipers is neurotoxic
C) The toxins of Cobra is haemotoxic
D) Treatment for snake bite is the infusion of anti snake venom which is passive immunity.
Choose the correct answer
(1) A, B & C (2) B, C & D (3) A & B (4) A & D
-
82. Assertion (A) : Natural ageing of a lake by nutrient enrichment is known as eutrophication.
Reason (R) : Enrichment of lakes by phosphates and nitrates leads to Eutrophication.
(1) (A) and (R) both are correct (R) is the correct explanation to (A)
(2) (A) and (R) both are correct but (R) is not the correct explanation to (A)
(3) (A) is correct but (R) is not correct
(4) (A) is not correct but (R) is correct
-
83. Kaziranga National Park protects.
(1) Tiger (2) Lion
(3) Lion-tailed macaque (4) Rhinoceros
-
84. Which one of the following is not an endangered species
(1) Asiatic lion (2) Tiger (3) Slender Loris (4) Rhesus monkey
-
85. Statement (S) : When animals of a species enter into different environments, they evolve into different forms.
Reason (R) : The animals of the species occupy different 'niche' to avoid competition.
(1) Both (S) and (R) are correct and (R) is the correct explanation to (S)
(2) Both (S) and (R) are correct but (R) is not the correct explanation to (S)
(3) (S) is correct but (R) is not correct
(4) (S) is not correct but (R) is correct
-
86. The failure of homologous chromosomes to separate at anaphase during mitosis or meiosis.
(1) Robertsonian fusion (2) Chromosomal lagging
(3) Chromosomal fusion (4) Non-disjunction
-

87. The genotypic ratio of a cross between plants having yellow and round seed, (YY RR) and green and wrinkled seed (gg ww) is

- (1) 9 : 3 : 3 : 1 (2) 1 : 3 : 3 : 2 : 3 : 3 : 1
 (3) 1 : 2 : 1 : 2 : 4 : 2 : 1 : 2 : 1 (4) 1 : 2 : 2 : 3 : 3 : 1

88. A marriage between hemophilic woman and a normal man will results in

- (1) 50% of the girls are hemophilic (2) 50% of the boys are hemophilic
 (3) 25% of the boys are hemophilic (4) All boys are affected

89. If a hetrozygous non-bald women (Bb) marries a hetrozygous bald man (Bb), in the offspring the ratio of non-bald to bald is

- (1) male progeny is 3 : 1, while in females is 1 : 3
 (2) male progeny is 1 : 3, while in females is 3 : 1
 (3) both male and female is 1 : 3
 (4) male progeny is 1 : 1 and female is 3 : 1

90. Match the following:

List - I

Sex linked inheritance

- a) Y-linked inheritance
 b) Sex-limited inheritance
 c) Sex-influenced inheritance
 d) X-linked dominant inheritance

List - II

Characters in human

- i) Development of breast in woman
 ii) hypertrichosis
 iii) baldness
 iv) follicular hyperkeratosis

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | i | iii | iv | ii |
| (2) | ii | i | iv | iii |
| (3) | ii | iii | iv | i |
| (4) | ii | i | iii | iv |

91. Statement (S) : Cri-du-chat syndrome is a genetic disorder with a characteristic features of cat-like cry in the affected children.

Reason (R) : This syndrome is due to gene translocations at chromosome 5.

- (1) Both (S) and (R) are true (R) is the correct explanation to (S)
 (2) Both (S) and (R) are true (R) is not a correct explanation to (S)
 (3) (R) is correct but (S) is not wrong
 (4) Both (S) and (R) are wrong

92. The number of genotypes for a single gene with four alleles:

- (1) 6 (2) 4 (3) 10 (4) 8

93. Number of Barr bodies in the somatic cells of an individual suffering with Turner syndrome
(1) 0 (2) 1 (3) 3 (4) 2
-

94. Which of the following features of human genome is INCORRECT
(1) Approximate number of total genes are 30000
(2) Chromosome 1 contains highest number of genes while chromosome Y has fewest genes
(3) Approximately 20% of the human genome codes for proteins
(4) A small percentage of genes code for miRNA
-

95. Haemophilia is a:
(1) Sex linked dominant disease (2) Sex-linked recessive disease
(3) Autosomal linked recessive disease (4) Autosomal linked dominant disease
-

96. In the given DNA is subjected to spontaneous mutations that can deaminate the DNA, the resulting DNA is
5' - G A T C - 3'
3' - C T A G - 5'
(1) 5' - A A T T - 3'
3' - T T A A - 5'
(2) 5' - C A T G - 3'
3' - G T A C - 5'
(3) 3' - A A T T - 5'
5' - T T A A - 3'
(4) 5' - G T T A - 3'
3' - A A A C - 5'
-

97. Match the following:

List - I

Genetic defect

- a) Loss of HBB gene
- b) Inactivation of tyrosinase gene
- c) Homogenetic acid oxidase gene inactivation
- d) Inactivation of phenylalanine hydroxylase gene

List - II

Disease

- i) Phenylketonuria
- ii) Alkaptonuria
- iii) Albinism
- iv) Thalassemia

Choose the correct answer

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (1) | iii | iv | ii | i |
| (2) | i | ii | iv | iii |
| (3) | iv | ii | iii | i |
| (4) | iv | iii | ii | i |
-

98. Experimental evidence of chemical origin of life was provided by

- (1) Oparin and Haldane
 - (2) Urey and Miller
 - (3) Hugo de Vries
 - (4) Beadle and Tautam
-

99. Match the following:

List - I (Connecting links)

List - II (Link between groups)

- A) *Eusthenopteron*
- B) *Archaeopteryx*
- C) *Seymouria*
- D) *Cyanognathus*

- I) Reptiles and mammals
- II) Amphibians and reptiles
- III) Fishes and amphibians
- IV) Reptiles and birds

Choose the correct answer

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

100. Assertion (A): Thorn of *Bougainvillea* and Tendril of *Cucurbita* are the example of homologous organs.

Reason (R): Homologous organs have same origin and function.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A)
 - (2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
 - (3) (A) is true but (R) is false
 - (4) Both (A) and (R) are incorrect
-

3PB1S

Booklet Code **D**

SPACE FOR ROUGH WORK
