Hall Ticket Number

Q.B.No. 1 4 4 3 2 1

Booklet Code : A

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 ¼ 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.

SPACE FOR ROUGH WORK

3PB1S **Booklet Code A**

Time : 2 Hours **Marks : 100**

Instructions :

i) Each question carries ***one*** mark and ¼ 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.

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

(1) Ethology (2) Transgenics

(3) Eugenics (4) Euthenics

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2. Match the following:

	List - I National Institutes		List - II Location
a)	Central Food Technological Research Institute	I)	New Delhi
b)	Indian Institute of Science	II)	Dehradun
c)	National Institute of Immunology	III)	Hyderabad
d)	Forest Research Institute	IV)	Mysuru
		V)	Benguluru

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

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3. 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.

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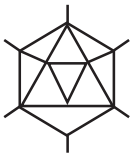
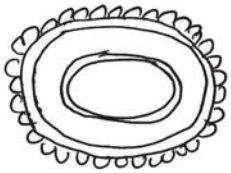
4. Match the following:

List - I Virus shape		List - II Virus Name
a)		i) Vaccinia virus
b)		ii) Polio virus
c)		iii) Tobacco Mosaic virus
d)		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

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5. 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

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6. Match the following animals with their corresponding phylum :

List - I Organism		List - II Phylum
a)	*Taenia solium*	i) Mollusca
b)	*Haemadipsa*	ii) Nemathelminthes
c)	*Wuchereria bancrofti*	iii) Platyhelminthes
d)	*Pila*	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

7. *Mycobacterium tuberculosis* is detected by

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

8. 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

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

(1) Alcalegenes Xylosox (2) Pseudomonas Putida
(3) Flavobacterium ATCC27551 (4) Arthobacter Sps. TE1

10. '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

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

12. Match the following:

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

13. 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

14. 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'

15. 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.

16. Which of the following enzyme is localized in the mitochondrial matrix?
(1) Glyceraldehyde dehydrogenase (2) Hexokinase
(3) Pyruvate dehydrogenase (4) Phospho-fructokinase

17. Match the following:

List - I	List - II
a) Leptotene	i) synapsis
b) Zygotene	ii) dissolution of synaptonemal complex
c) Diplotene	iii) compaction of chromosomes
d) Pachytene	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

18. Match the following:

List - I	List - II
a) Anisocytic	i) Tridax procumbens
b) Anomocytic	ii) Alternanthera panicoides
c) Paracytic	iii) Lycopercium esculentum
d) Diacytic	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

19. 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

20. 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

21. 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.

22. 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

23. Match the following:

	List - I		List - II
a)	Solitary cyme	I)	Cauliflower
b)	Cyathium	II)	*Datura*
c)	Hypanthodium	III)	*Euphorbia*
d)	Corymb	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

24. Match the following:

	List - I		List - II
a)	Valvate aestivation	I)	Gulmohur
b)	Twisted	II)	*Pisum*
c)	Imbricate	III)	*Calotropis*
d)	Vexillary	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

25. Match the following:

	List - I		List - II
a)	Hesperidium	I)	Custard apple
b)	Pome	II)	*Citrus*
c)	Pepo	III)	*Cucumber*
d)	Schizocarpic	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

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

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

28. Match the following:

	List - I		List - II
a)	Juicy succulent placental hairs of endocarp	I)	*Pyrus malus*
b)	Cotyledons and fleshy pedicel (False fruit)	II)	*Citrus sinensis*
c)	Succelent perianth	III)	*Anacardium Occidentalis*
d)	Fleshy Thalamus	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

29. Match the following:

	List - I		List - II
a)	Indole-3-acetic acid	I)	Methionine
b)	Ethylene	II)	Isopentenyl pyrophosphate
c)	Gibberellins	III)	Tryptophan
d)	Cytokinins	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

30. Match the following:

List - I		List - II	
a)	*Artemesia*	I)	Cardiotonic
b)	*Datura*	II)	Stimulant action
c)	*Nux Vomica*	III)	Antimalarial
d)	*Digitalis*	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

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31. Match the following:

List - I		List - II	
a)	Anthracnose of Mango	I)	*Plasmopara Viticola*
b)	Downy mildew of Grapes	II)	*Xanthomonas*
c)	Foot rot of Papaya	III)	*Colletotrichum gloeosporioides*
d)	Citrus Canker	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

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32. Match the following :

List - I Crop variety		List - II Resistance to disease	
a)	Wheat	I)	Tobacco Mosaic virus and leaf curl
b)	Brassica	II)	Bacterial blight
c)	Cowpea	III)	Leaf and stripe rust
d)	Chilli	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

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33. 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.

34. Glucose in the epithelial cells of small intestine is absorbed by
(1) Diffusion (2) Active transport
(3) Secondary active transport (4) Osmosis

35. 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

36. 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

37. Read the following statements regarding oxygen dissociation curve :
A) Increase in CO_2 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 CO_2 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

38. 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

39. 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.

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40. Match the following:

List - I (Valves)	List - II (Location)
A) Mitral valve (bicuspid)	I) Opening of post caval vein
B) Tricuspid valve	II) Right atrium and coronary sinus
C) Valve of Thebesius	III) Between right auricle and right ventricle
D) Eustachean valve	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

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41. 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

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42. 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.

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43. The part of the brain that is responsible for the control and co-ordination of body movements is
(1) Diancephalon (2) Medulla oblongata
(3) Cerebrum (4) Cerebellum

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44. The channels that are involved in synaptic transmission are
(1) Leaky channels (2) Voltage-gated channels
(3) Ligand-gated channels (4) Gap junctions

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45. 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.

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46. Ptyalin enzyme catalyses the following biochemical reaction :
(1) Starch → Maltose
(2) Proteins → Proteases + Peptones
(3) Monoglycerates → Fatty acids + Glycerol
(4) Dipeptides → Amino acids

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47. 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 anterio-posterior axis.
(4) They decrease the volume of thoracic chamber in the dorso-ventral axis.

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48. 'Delhi boils' or 'Tashkent' ulcers are caused by
(1) *Wuchereria bancrafti* (2) *Trypanosoma gambiense*
(3) *Leishmania donovani* (4) *Leishmania tropica*

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49. 'Relapse of malaria' is due to
(1) mammilated eggs (2) hypnozoites
(3) Gambusia (4) Improper anisogamy

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50. Match the following:

List - I Disease	List - II Deficiency
a) Porphyria cutania tarda	i) Ferrochelatase
b) Hereditary coproporphyria	ii) Coproporphyrinogen oxidase
c) Variegate prophyria	iii) Protophorphyrinogen oxidase
d) Protoporphyria	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

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51. Consider the following statements
i) Vit K is essential for coagulation of blood
ii) Vit K is water soluble
iii) Vit C is important for synthesis of collagen
iv) Vit K is fat soluble
Choose the correct answer
(1) (i), (ii) & (iii) (2) (i) & (iii) (3) (i), (iii) & (iv) (4) (ii) & (iv)

52. Most serious and fatal malignant malaria is caused by
(1) *Plasmodium vivax* (2) *Plasmodium falciparum*
(3) *Plasmodium ovale* (4) *Plasmodium malariae*

53. The receptors present in the nose are
(1) Chemoreceptors (2) Tangoreceptors
(3) Proprioreceptors (4) Pacinian corpuscles

54. Match the following:

	List - I (ear parts)		List - II (function)
a)	hair cells	i)	horizontal movement
b)	saccule	ii)	vertical movement
c)	utricle	iii)	audatony receptors
d)	cerumen	iv)	ear's wax

Choose the correct answer

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

55. A person can see nearby objects clearly but can not see distant objects distinctly. This condition is known as
(1) Hypermetropia (2) Myopia (3) Presbyopia (4) Cataract

56. Hamberger's phenomenon refers to
(1) Exchange of gases O_2 and CO_2 in the lungs by Hb
(2) Exchange of Cl^- and HCO_3^- between RBC and plasma
(3) Building of action potential in the eye gangleonic layer
(4) Accumulation of atmosphere CO_2 on the earth

57. The environment protection act was passed in year:
(1) 1985 (2) 1987 (3) 1986 (4) 1989

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

59. Read the following statements regarding air pollution of carbon monaxide.
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

60. Match the following:

List - I		List - II	
A)	Biomagnification	I)	Index for measuring pollution load of water
B)	Eutrophication	II)	Heating of Earths atmosphere
C)	Biological Oxygen Demand	III)	Use of fertilizers to increase the productivity
D)	Green house effect	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

61. 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

62. Which one of the following is a non-renewable energy?
(1) Natural gas (2) Geo-thermal energy
(3) Wind energy (4) Tidal energy

63. 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

64. Read the following statements about snake bite.
A) Poisonus 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

65. 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

66. Kaziranga National Park protects.
(1) Tiger (2) Lion
(3) Lion-tailed macaque (4) Rhinoceros

67. Which one of the following is not an endangered species
(1) Asiatic lion (2) Tiger (3) Slender Loris (4) Rhesus monkey

68. 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 compitition.
(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

69. 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

70. The genotypic ratio of a cross between plants having yellow and round seed, (YY RR) and green and wrinkeled 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

71. 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

72. 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

73. Match the following:

List - I Sex linked inheritance		List - II Characters in human
a)	Y-linked inheritance	i) Development of breast in woman
b)	Sex-limited inheritance	ii) hypertrichosis
c)	Sex-influenced inheritance	iii) baldness
d)	X-linked dominant inheritance	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

74. 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 (R) is not wrong
(4) Both (S) and (R) are wrong

75. The number of genotypes for a single gene with four alleles:
(1) 6 (2) 4 (3) 10 (4) 8

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

77. 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

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

79. 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'

80. Match the following:

List - I Genetic diffect		List - II Disease	
a)	Loss of HBB gene	i)	Phenylketonuria
b)	Inactivation of tyrosinase gene	ii)	Alkaptonuria
c)	Homogenetisic acid oxidase gene inactivation	iii)	Albinism
d)	Inactivation of phenylalamine hydroxylase gene	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

81. 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

82. Match the following:

List - I (Connecting links)	List - II (Link between groups)
A) *Eusthenopteron*	I) Reptiles and mammals
B) *Archaeopteryx*	II) Amphibians and reptiles
C) *Seymouria*	III) Fishes and amphibians
D) *Cyanognathus*	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

83. 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

84. 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%

85. 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

86. 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

87. Eukaryotes evolved by
(1) Mutations in Prokaryotes
(2) Symboitic association between aerobic and anerobic bacteria
(3) Formation of endomembrane system by the inflodings of plasmamembrane
(4) Probably by 2nd and 3rd processes

88. 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

89. The development of resistance to DDT by mosquitoes is an example for
(1) Stabilising selection
(2) Directional selection
(3) Disruptive selection
(4) Artificial selection

90. 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

91. 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

92. 'Bird flu' is caused by avian influenza type
(1) H_1N_5 (2) H_5N_1
(3) H_1N_1 (4) H_5N_5

93. 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

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94. The following harmone is used for induced seed production in fishes

(1) Gonadotropins (2) Thyroropins

(3) Estrogens (4) Progesterons

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95. 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

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96. Match the following:

	List - I		List - II
a)	transfer of DNA into eykaryotic cells by synthetic lipid coats	i)	transformation
b)	transfer of DNA into mammalian cells by viral vectors	ii)	transduction
c)	tranfer 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

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97. Statement (S) : P^{53} is often called as 'gaudian angel of cell's genome'.
Reason (R) : P^{53} 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

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98. 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

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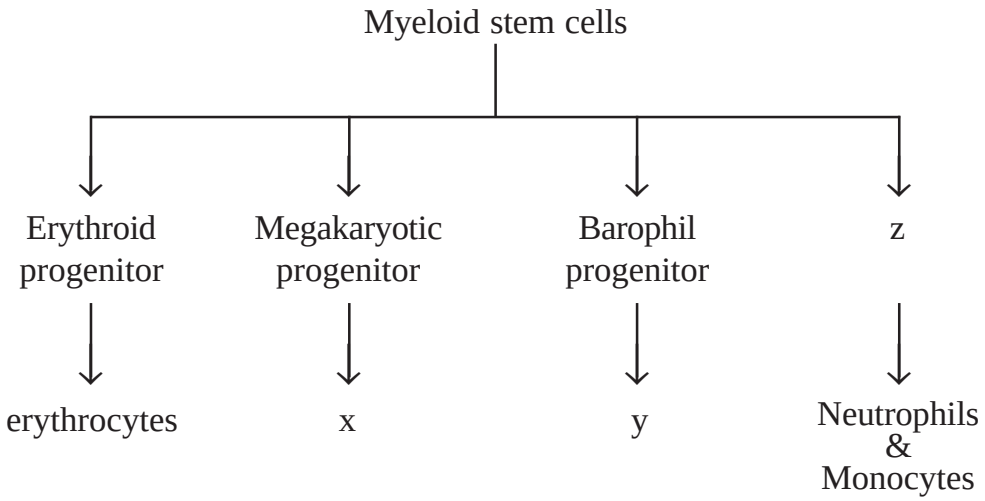
99. In the following haematopoitic stem cell lineage tree x, y and z represents.



(1) x - eolinophils ; y - Mast cells ; z - lymploid progenitor
(2) x - Mast cell ; y - Plalelets ; z - T cell progenitor
(3) x - Plalelets ; y - Macrophage ; z - granulocyte progenitor
(4) x - plalelets ; y - Mast cells ; z - granulocyte progenistor

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100. Match the following:

List - I (ECG components)		List - II (Functional representation)
a)	Q-T interval	i) ventricular re-polarisation
b)	R-R interval	ii) ventricular depolarisation
c)	T-wave	iii) zero voltage period
d)	ST segment	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

SPACE FOR ROUGH WORK