Test Booklet No.

Subject : BIOLOGY
Code : 304 E (New)
Medium : English

(Do not open this Test Booklet until you are asked to do so)

Test Booklet Code

B

*Time Allowed : **45** minutes*	*Maximum Marks : **200***	*Total Questions : **50***	*Number of questions to be answered : **40***

Kindly read the Instructions given on this Page and Back Page carefully before attempting this Question Paper.

Important Instructions for the Candidates :

1. This Test Booklet contains **50** questions printed in English. Out of these, the candidate is required to answer any **40** questions. If a candidate answers more than 40 questions, the first 40 answered questions will be considered for evaluation.
2. When you are given the OMR Answer Sheet, fill in your particulars on it carefully with **blue/black** ball point pen only.
3. Use only Blue/Black Ball Point Pen for marking responses.
4. The CODE for this Test Booklet is **B**. Make sure that the CODE printed on the OMR Answer Sheet is the same as that on this Test Booklet. Also ensure that your Test Booklet No. and OMR Answer Sheet No. are exactly the same. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the OMR Answer Sheet. No claim in this regard will be entertained after five minutes from the start of the examination.
5. Before attempting the question paper kindly check that this Test Booklet has total **16** pages and OMR Answer Sheet consists of one sheet. At the start of the examination within first five minutes, candidates are advised to ensure that all pages of Test Booklet and OMR Answer Sheet are properly printed and they are not damaged in any manner.
6. Each question has four answer options. Out of these four options choose the **MOST APPROPRIATE OPTION** and darken/blacken the corresponding circle on the OMR Answer Sheet with a Blue/Black Ball Point Pen.
7. Five (5) marks will be given for each correct answer. One (1) mark will be deducted for each incorrect answer. If more than one circle is found darkened/blackened for a question, then it will be considered as an incorrect answer. Unanswered questions will be given no mark.

P.T.O.

Name of the Candidate (in Capital Letters) : _____

Application Number (in figures) : _____

Roll Number (in figures) : _____

Centre of Examination (in Capital Letters) : _____

Candidate's Signature : _____ Invigilator's Signature : _____

Facsimile signature stamp of Centre Superintendent : _____

1. Arrange the following steps of DNA fingerprinting in proper sequence :

(A) Hybridisation using labelled VNTR probe

(B) Separation of DNA fragments by electrophoresis

(C) Digestion of DNA by restriction endonucleases

(D) Blotting of separated DNA fragments to nylon

(E) Isolation of DNA

Choose the correct answer from the options given below :

(1) (C), (A), (B), (D), (E)

(2) (E), (C), (B), (D), (A)

(3) (B), (C), (D), (E), (A)

(4) (C), (D), (B), (A), (E)

2. Nucleosome is :

(1) Positively charged DNA wrapped around negatively charged histone octamer

(2) Negatively charged DNA wrapped around positively charged histone octamer

(3) Positively charged DNA wrapped around positively charged histone octamer

(4) Negatively charged DNA wrapped around negatively charged histone octamer

3. "Transforming Principle" was given by :

(1) Maclyn McCarty

(2) Frederick Griffith

(3) Alfred Hershey

(4) Watson and Crick

4. Which disorder is caused by the substitution of Glutamic acid (Glu) by Valine (Val) at the sixth position of the beta globin chain of the haemoglobin ?

(1) Phenylketonuria

(2) Sickle-cell Anaemia

(3) Haemophilia

(4) Thalassemia

SPACE FOR ROUGH WORK

5. Match **List-I** with **List-II** :

	List-I **Disease**		**List-II** **Pathogen/Genera**
(A)	Amoebiasis	(I)	*Wuchereria*
(B)	Filariasis	(II)	*Entamoeba histolytica*
(C)	Ringworm	(III)	*Hemophilus influenzae*
(D)	Pneumonia	(IV)	*Epidermophyton*

Choose the correct answer from the options given below :

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

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

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

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

6. Streptokinase enzyme is used for :

(1) removing clot from blood vessels

(2) clarifying fruit juices

(3) synthesis of cholesterol

(4) removing oily stains

7. Select the ***incorrect*** statement :

(1) Chromosome 1 has the most genes and chromosome Y has the fewest.

(2) Chromosome 21 has the most genes and chromosome Y has the fewest.

(3) Less than 2 percent of the genome codes for proteins.

(4) The functions of over 50 percent of discovered genes are unknown.

SPACE FOR ROUGH WORK

8. Which of the following is ***not*** a step of Polymerase Chain Reaction ?

(1) Extension

(2) Downstream processing

(3) Annealing

(4) Denaturation

9. Which of the following equation is correct about Verhulst-Pearl Logistic Growth ?

(1) $dN/dt = (h - d)\ \frac{(K - N)}{K}$

(2) $dN/dt = rN\ \frac{(N - K)}{K}$

(3) $dN/dt = rN \frac{(K - N)}{K}$

(4) $dN/dt = (h - d)\ \frac{(N - K)}{N}$

10. Match **List-I** with **List-II** :

	List-I **Genes**		**List-II** **Proteins – codes for lac operon**
(A)	'i'	(I)	permease
(B)	'a'	(II)	β-galactosidase
(C)	'y'	(III)	transacetylase
(D)	'z'	(IV)	repressor

Choose the correct answer from the options given below :

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

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

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

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

11. Analogous structures are a result of :

(1) Divergent evolution

(2) Convergent evolution

(3) Genetic drift

(4) Point mutations

SPACE FOR ROUGH WORK

12. Amino acid is attached to which site of tRNA ?

(1) Anticodon loop

(2) 3′ end

(3) 5′ end

(4) D-loop

13. Which one of the following lymphoid organ is large at birth but reduces with age ?

(1) Bone marrow

(2) Thymus

(3) Spleen

(4) Peyer's patches

14. Which of the following plays a significant role in our stomach in checking disease causing microbes ?

(1) *Penicillium notatum* (2) *Monascus purpureus*

(3) *Trichoderma polysporum* (4) *Lactobacillus*

15. Given below are two statements :

Statement I :

Whisky, brandy and rum are produced without distillation of the fermented broth.

Statement II :

Saccharomyces cerevisiae is called doctor's yeast.

In the light of the above statements, choose the correct answer from the options given below :

(1) Both Statement I and Statement II are true

(2) Both Statement I and Statement II are false

(3) Statement I is true, but Statement II is false

(4) Statement I is false, but Statement II is true

16. Given below is the DNA coding sequence. Its complementary strand would read as :

5′ – GTATTACG – 3′

(1) 5′ – CUTUUTGC – 3′ (2) 3′ – CATAATGC – 5′

(3) 3′ – CUTUUTGC – 5′ (4) 5′ – CTUTTUGC – 3′

SPACE FOR ROUGH WORK

17. Which of the following statements is ***not correct*** for Restriction enzymes ?

(1) Exonuleases remove nucleotide from ends of the DNA.

(2) Endonucleases make cuts at specific positions within the DNA.

(3) Ligases join sticky ends of DNA together.

(4) The first restriction endonuclease was Hind II.

18. Match **List-I** with **List-II** :

	List-I **Recent Extinction**		**List-II** **Place**
(A)	Dodo	(I)	Africa
(B)	Quagga	(II)	Russia
(C)	Thylacine	(III)	Mauritius
(D)	Stellar's Sea Cow	(IV)	Australia

Choose the correct answer from the options given below :

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

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

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

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

19. Which one of the following is ***not*** associated with megasporangium ?

(1) Funicle (2) Integument

(3) Generative cell (4) Micropyle

Read the following passage and answer the next five questions :

The reproductive cycle of female primates is called menstrual cycle. Menstrual cycle starts only after attaining sexual maturation (puberty). Generally, during ovulation only one ovum is released per menstrual cycle. The cyclical changes in the ovary and the uterus during menstrual cycle are induced by changes in the levels of pituitary and ovarian hormones. After coitus, sperms are transported to the junction of the isthmus and ampulla, where the sperm fertilises the ovum leading to formation of a diploid zygote.

SPACE FOR ROUGH WORK

20. Which of the following does ***not*** constitute accessory duct of female reproductive system ?

(1) Fallopian tubes (2) Uterus

(3) Cervix (4) Vagina

21. The female external genitalia include :

(A) Mons pubis

(B) Hymen

(C) Mammary ducts

(D) Clitoris

(E) Cervix

Choose the correct answer from the options given below :

(1) (A), (C) and (D) only

(2) (B), (D) and (E) only

(3) (A), (B) and (D) only

(4) (C), (D) and (E) only

22. Select the organ of female reproductive system where the sperm is ***not*** transported at the time of coitus :

(1) Cervix

(2) Ovary

(3) Uterus

(4) Fallopian tube

23. Which of the following does ***not*** take place before ovulation in human female ?

(1) The secretion of LH and FSH increases during follicular phase.

(2) The corpus luteum secretes large amounts of progesterone.

(3) LH and FSH attains a peak level in the middle of the cycle.

(4) Maximum secretion of LH induces rupture of Graafian follicle.

SPACE FOR ROUGH WORK

24. Match **List-I** with **List-II** :

	List-I **Phase of menstrual cycle**		**List-II** **Days of menstrual cycle**
(A)	Proliferative phase	(I)	14^{th} day
(B)	Menstrual phase	(II)	$15^{th} – 28^{th}/29^{th}$ days
(C)	Secretory phase	(III)	$1^{st} – 5^{th}$ days
(D)	Ovulatory phase	(IV)	$5^{th} – 13^{th}$ days

Choose the correct answer from the options given below :

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

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

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

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

Read the following passage and answer the next five questions :

In nature, populations of different species in a habitat do not live in isolation but interact in many ways. Depending on the outcome, these interactions between two species are classified as competition, predation and parasitism, commensalism, amensalism and mutualism. Through these interactions trophic energy transfer is facilitated. Some predators help in controlling their prey populations, whereas plants have evolved diverse morphological and chemical defences against herbivores.

25. Name the population interaction which takes place when one species is benefitted and another species has no effect (no benefit no harm).

(1) Competition (2) Predation

(3) Commensalism (4) Amensalism

26. Identify the ***incorrect*** matching from the following population interaction :

	Species A	**Species B**	**Name of interaction**
(1)	+	+	Mutualism
(2)	+	–	Parasitism
(3)	–	–	Predation
(4)	–	0	Amensalism

SPACE FOR ROUGH WORK

27. Given below are two statements :

Statement I :

An orchid grows as an epiphyte on a mango branch where mango tree does not derive any apparent benefit from it.

Statement II :

A orchid growing on a mango tree is an example of commensalism.

In the light of the above statements, choose the correct answer from the options given below :

(1) Both Statement I and Statement II are true

(2) Both Statement I and Statement II are false

(3) Statement I is true, but Statement II is false

(4) Statement I is false, but Statement II is true

28. Match **List-I** with **List-II** :

	List-I **Examples**		**List-II** **Interactions**
(A)	Extinction of Abingdon tortoise after introduction of goats on Galapagos Islands	(I)	Parasitism
(B)	Infestations of marine fish by copepods	(II)	Commensalism
(C)	Cattle egret and grazing cattle	(III)	Mutualism
(D)	Fig tree and wasp	(IV)	Competition

Choose the correct answer from the options given below :

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

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

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

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

29. Select the ***incorrect*** pair in response to abiotic factors :

(1) We maintain a constant body temperature of 37°C – Conformer

(2) Every winter Keoladeo National Park hosts the birds coming from Siberia – Migration

(3) Under unfavourable conditions many zooplankton species in ponds enter the stage of suspended development – Diapause

(4) If a predator is too efficient it overexploits its prey – Extinction

SPACE FOR ROUGH WORK

30. Which one is the correct example of hermaphrodites ?

(1) Tapeworm and leech

(2) Cockroach and frog

(3) Cockroach and earthworm

(4) Carp fish and pigeon

31. In diploid organisms, which of the following undergoes meiosis ?

(1) Vegetative cell (2) Sporogenous tissue

(3) Pollen grain (4) Synergids

32. Who proposed that the first form of life could have come from pre-existing non-living organic molecules ?

(1) Darwin (2) Oparin and Haldane

(3) Lamarck (4) Thomas Malthus

33. Given below are two statements :

Statement I :

In a bioreactor, small volume of cultures are developed in which useful bio-products are produced.

Statement II :

In downstream processing, the products formulated with suitable preservatives are ready for marketing without testing of their quality.

In the light of the above statements, choose the correct answer from the options given below :

(1) Both Statement I and Statement II are true

(2) Both Statement I and Statement II are false

(3) Statement I is true, but Statement II is false

(4) Statement I is false, but Statement II is true

34. The method where an ovum is transferred from a donor into the fallopian tube of another female is _____ .

(1) IUI (2) ICSI

(3) GIFT (4) ZIFT

SPACE FOR ROUGH WORK

35. When one of the parents has 'A' blood group and the other parent has 'O' blood group, then their child can have _____ blood group.

(1) Only 'A'

(2) Only 'O'

(3) Both 'A' and 'O'

(4) Either 'A' or 'O'

36. The size of VNTR varies from :

(1) 0·1 to 20 kb

(2) 0·1 to 10 kb

(3) 0·2 to 15 kb

(4) 0·2 to 10 kb

37. The common approach(es) for the treatment of cancer is/are :

(A) Vaccination

(B) Surgery

(C) Physiotherapy

(D) Radiation therapy

(E) Immunotherapy

Choose the correct answer from the options given below :

(1) (A) only

(2) (B), (D) and (E) only

(3) (A), (C) and (D) only

(4) (A) and (C) only

38. Which of the following controls/control the growth of bollworms ?

(1) *CryIAc* and *CryIIAb* genes

(2) *CryIAb* gene

(3) RNAi

(4) dsRNA

SPACE FOR ROUGH WORK

39. ELISA is based on the principle of :

(1) Antigen – Antigen interaction

(2) B-cells and T-cells interaction

(3) Antigen – Antibody interaction

(4) T-cell – Antibody interaction

40. Which of the following represents a test cross in which half the offspring is heterozygous and half would be homozygous recessive ?

(1) $TT \times tt$ (2) $Tt \times tt$

(3) $Tt \times Tt$ (4) $tt \times tt$

41. In which phase of cell cycle does replication of DNA take place ?

(1) G_1 phase (2) M phase

(3) S phase (4) G_2 phase

42. In Hershey and Chase experiment, some viruses grew on medium that contained :

(1) $^{35}S, ^{32}P$ (2) $^{36}S, ^{34}P$

(3) $^{32}S, ^{36}P$ (4) $^{34}S, ^{36}P$

43. Who performed experiments on *Vicia faba* to prove that the DNA replicates semi-conservatively ?

(1) Taylor and colleagues (2) Matthew Meselson

(3) Stahl (4) Hershey and Chase

44. A thermostable DNA polymerase is isolated from :

(1) *Thermus aquaticus*

(2) *Agrobacterium tumefaciens*

(3) *E. coli*

(4) *Salmonella typhimurium*

SPACE FOR ROUGH WORK

45. Which one of the following is ***not*** a process of DNA recombinant technology ?

(1) Isolation of DNA

(2) RNA interference (RNAi)

(3) Introduction of Restriction endonucleases

(4) Culturing the host cells in a medium at a large scale

46. Which of the following gas is found in the Stratosphere ?

(1) Ozone (2) Carbon dioxide

(3) Methane (4) Hydrogen

47. In which of the following units is thickness of ozone layer measured ?

(1) Dobson (2) Joule

(3) Newton (4) Decibel

48. Ex-situ conservation includes :

(1) biosphere reserves

(2) national parks

(3) wildlife sanctuaries

(4) seed banks

49. In a velvet grass seed, the cotyledon is called :

(1) Scutellum (2) Coleorrhiza

(3) Coleoptile (4) Testa

50. Which of the following is a recessive trait for garden pea plant ?

(1) Round seed

(2) Constricted pod

(3) Tall plant

(4) Violet flower

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK

Read carefully the following instructions :

8. No candidate will be allowed to leave the OMR Answer Sheet blank. If any OMR Answer Sheet is found blank, it shall be crossed by the Invigilator with his/her signature, mentioning "Cancelled" on it.

9. Do not tear or fold any page of the Test Booklet and OMR Answer Sheet.

10. Candidates are advised to ensure that they fill the correct particulars on the OMR Answer Sheet, i.e., Application No., Roll No., Test Booklet No., Name, Mother's Name, Father's Name and Signature.

11. Rough work is to be done in the space provided for this purpose in the Test Booklet only.

12. The answers will be evaluated through electronic scanning process. Incomplete or incorrect entries may render the OMR Answer Sheet invalid.

13 Candidates are advised not to fold or make any stray marks on the OMR Answer Sheet. Use of Eraser, Nail, Blade, White Fluid/Whitener, etc., to smudge, scratch or damage in any manner the OMR Answer Sheet during examination is strictly prohibited. Candidature and OMR Answer Sheet of candidates using Eraser, Nail, Blade or White Fluid/Whitener to smudge, scratch or damage in any manner shall be cancelled.

14. There will be one copy of OMR Answer Sheet i.e., the Original Copy. After the examination is over, the candidate shall hand over the OMR Answer Sheet to the Invigilator. The candidate can take away the Test Booklet after the examination is over. If the candidate does not hand over the OMR Answer Sheet to the Invigilator and goes away with the OMR Answer Sheet, his/her candidature shall be cancelled and criminal proceedings shall also be initiated against him/her.

15. Candidates are advised strictly not to carry handkerchief, any mobile phone, any type of watch, belt or wear ornaments like ring, chain, ear-ring, etc., electronic or communication device, pen, pencil, eraser, sharpener and correction fluid to the Examination Centre. If any candidate is found possessing any such item, he/she will not be allowed to enter the examination centre. Possession of a mobile phone or any other aiding material as mentioned above by the candidate in the examination room will be treated as a serious violation and it may lead to cancellation of the candidature and debarring him/her from future examinations.

16. If a candidate violates any instructions or shows any indiscipline or misbehaviour, appropriate action will be taken including cancellation of candidature and debarring from future examinations.

17. Use of electronic/manual calculator is **not** allowed.

NATIONAL TESTING AGENCY

CUET (UG) 2024 : Final Answer Keys

Exam Date : 29.05.2024 Subject :304 - Biology (English)

Q.No	Key	Q.No	Key	Q.No	Key	Q.No	Key	Q.No	Key	Q.No	Key	Q.No	Key	Q.No	Key
Book : A		Book : A		Book : B		Book : B		Book : C		Book : C		Book : D		Book : D	
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2	1	47	4	2	2	47	1	2	2	47	2	2	2	47	3
3	3	48	1	3	2	48	4	3	2	48	3	3	2	48	1
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