

Test Booklet No. \_\_\_\_\_

**This booklet consists of 150 questions and 20 printed pages.**

**RGUPET/2024/\_\_\_/\_\_\_**

**RGUPET 2024  
Common Entrance Test, 2024**

**DOCTOR OF PHILOSOPHY IN ZOOLOGY**

**Full Marks: 150  
Hours**

**Time: 3**

Roll No.

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Day and Date of Examination: \_\_\_\_\_

Signature of Invigilator(s) \_\_\_\_\_

Signature of Candidate \_\_\_\_\_



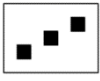
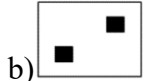
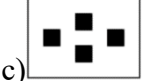
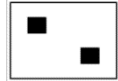
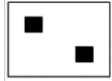
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*General Instructions:*

***PLEASE READ ALL THE INSTRUCTIONS CAREFULLY BEFORE MAKING ANY ENTRY.***

1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. Candidate must write his/her Roll Number on the space provided.
3. This Test Booklet contains 150 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark.
4. Please check the Test Booklet to verify that the total pages and total number of questions contained in the test booklet are the same as those printed on the top of the first page. Also check whether the questions are in sequential order or not.
5. Candidates are not permitted to enter into the examination hall after the commencement of the entrance test or leave the examination hall within two hour.
6. Making any identification mark in the OMR Answer Sheet or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.
7. Candidates shall maintain silence inside and outside the examination hall. If candidates are found violating the instructions mentioned herein or announced in the examination hall, they will be summarily disqualified from the entrance test.
8. In case of any dispute, the decision of the Entrance Test Committee shall be final and binding.
9. The OMR Answer Sheet consists of two copies, the Original copy and the Student's copy.

1	The English _____ English ?				a
	a) Speak	b) Spoke	c) Spoken	d) is spoken	a) Speak
2	What is the meaning of – “to keep ones temper” ?				b
	a) to become happy	b) to be in good mood	c) to be aloof from	d) to preserve ones energy	b) to be in good mood
3	What is the synonym of “Propel”				a
	a) Drive	b) Burst	c) Modify	d) Run	a) Drive
4	What is the antonym of “Mighty” ?				c
	a) Forcible	b) Forceful	c) weak	d) Tough	c) weak
5	Find the correctly spelt word :				d
	a) Affedevit	b) Afidevit	c) Affidevit	d) Affidavit	d) Affidavit
6	The green planet in the solar system is?				b
	a) Mars	b) Uranus	c) Venus	d) Earth	b) Uranus
7	The father of Indian missile technology is _____ ?				a
	a) Dr A.P.J. Abdul Kalam	b) Dr U.R. Rao	c) Dr Chidambaram	d) Dr Homi Bhabha	a) Dr A.P.J. Abdul Kalam
8	Which of these is the plant important in sericulture?				d
	a) Cassia	b) Legumes	c) Pea	d) Mulberry	d) Mulberry
9	At which place on earth are there days & nights of equal length always?				a
	a) Equator	b) Poles	c) Prime Meridian	d) Nowhere	a) Equator
10	Why is the color of papaya yellow?				b
	a) Carotene	b) Caricaxanthin	c) Papain	d) Lycopene	b) Caricaxanthin
11	Who won the 2023 Nobel prize in Physiology and Medicine?				a
	a) Katalin Karikó and Drew Weissman	b) Svante Pääbo	c) David Julius and Ardem Patapoutian	d) Shinya Yamanaka	a) Katalin Karikó and Drew Weissman
12	Which rocket is set to be used for the launch of ‘Chandrayaan-3’ mission?				b
	a) LVM-1	b) LVM-3	c) LVM-5	d) LVM-9	b) LVM-3
13	Which energy is released from the antennas of mobile towers and mobile handsets ?				a
	a) Electromagnetic Field radiation	b) Extreme Field radiation	c) Ionizing Field radiation	d) Magnetic Field radiation	a) Electromagnetic Field radiation
14	Indian Council for Medical Research (ICMR) approves to conduct “Truenat test” to detect which infection?				b
	a) Dengue	b) Nipah	c) Malaria	d) Tuberculosis	b) Nipah
15	Genetically modified (GMO) mosquitoes were recently released in which country of Africa to fight malaria?				b
	a) Kenya	b) Djibouti	c) Tanzania	d) Botswana	b) Djibouti
16	The sum of ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest child?				a
	a) 4 years	b) 8 years	c) 10 years	d) 12 years	a) 4 years

17	 <p>The ratio of the area of the inscribed circle to the area of the circumscribed circle of an equilateral triangle is _____ ?</p>				d
	a) 1/8	b) 1/6	c) 1/2	d) 1/4	d) 1/4
18	A batsman makes a score of 97 runs in 15 <sup>th</sup> innings and thus increases his average by 5. Find his average after 15 <sup>th</sup> inning.				c
	a) 15	b) 82	c) 27	d) 92	c) 27
19	A bus travels from station P to station Q at a speed of 70km/h, and from station Q to station P at a speed of 90km/h. What is the average speed of the bus during the entire journey?				b
	a) 75.78km/h	b) 78.75km/h	c) 80.25km.h	d) 82.35km/h	b) 78.75km/h
20	 <p>What comes next?</p>				d
	a) 	b) 	c) 	d) 	d) 
21	A null hypothesis is				Answer option
	a) When there is no difference between the variables	b) The same as research hypothesis	c) Subjective is nature	d) when there is difference between the variables	a) When there is no difference between the variables correct explanation of A
22	In research, something that does not vary is called a				Answer option
	a) Variable	b) Method	c) Constant	d) None of above	c) Constant
23	Which of the following variable cannot be expressed in quantitative terms?				Answer option
	a) Socio-economics	b) Marital status	c) Numerical attitude	d) Professional attitude	d) Professional attitude
24	Manipulation is always a part of				Answer option
	a) Historical research	b) Fundamental research	c) Descriptive research	d) Experimental research	d) Experimental research
25	Which scale is the simplest form of measurement?				Answer option
	a) Nominal	b) Ordinal	c) Interval	d) Ratio	a) Nominal
26	The study in which the investigators attempt to trace an effect is known as				Answer option
	a) Survey research	b) Historical research	c) 'Ex-post facto' research	d) Summative research	c) 'Ex-post facto' research
27	Bibliography given in a research report				Answer option

	a) Helps those interested in further research	b) Has no relevance to research	c) Shows vast knowledge of the researcher	d) Both b and c	a) Helps those interested in further research
28	Which form of reasoning is the process of drawing a specific conclusion from a set of premises?				Answer option
	a) Rationalism	b) Deductive reasoning	c) Inductive reasoning	d) Probabilistic	c) Inductive reasoning
29	Which of the figures reflect the highest value of Karl Pearson's coefficient of correlation?				Answer option
	a) +0.22	b) +0.91	c) -0.49	d) -0.92	d) -0.92
30	The F-test				Answer option
	a) Is essentially a two tailed test	b) Can never be a one tailed test	c) Can be one tailed as well as two tailed depending on the hypothesis	d) Is essentially a one tailed test	c) Can be one tailed as well as two tailed depending on the hypothesis
31	The method of drawing conclusion based on the observation of each and every instance of a population is called.				Answer option
	a) Scientific method	b) Deductive method	c) Inductive method	d) Dialective method	b) Deductive method
32	In the context of survey , the following steps are taken in a certain order I) Sampling II) Inference III) Data analysis IV) Data collection				Answer option
	a) II, III, I, IV	b) I, IV, III, II	c) III, II, IV, I	d) IV, I, II, III	b) I, IV, III, II
33	Match the following				Answer option
	List I		List II		
	A. Historical Method		I. Past event		
	B. Survey method		II. Vision		
	C. Philosophical method		III. Present event		
	D. Experimental Method		IV. Future action		
	a) A-I, B-III, C-II, D-IV	b) A-I, B-II, C-III, D-IV	c) A-I, B-II, C-IV, C-III	d) A—II, B-III, C-I, D-IV	a) A-I, B-III, C-II, D-IV
34	The experimental studies are based on				Answer option
	a) the manipulation of the variables	b) Conceptual parameters	c) Replication of research	d) Survey of literature	a) the manipulation of the variables
35	Which of the following is an example of a non-random sampling method?				Answer option
	a) Convenience sampling	b) Stratified random sampling	c) Simple random	d) Cluster random	a) Convenience sampling
36	Research is not considered ethical if it				Answer option

	a) Tries to prove a particular point	b) Does not ensure privacy and anonymity of the respondent	c) Does not investigate the data scientifically	d) Is not of a very high standard	b) Does not ensure privacy and anonymity of the respondent
37	Which of the following is a form of harm that might be suffered by research participants?				Answer option
	a) Psychological distress	b) Physical injury	c) Loss of self-esteem	d) All of the above	d) All of the above
38	UGC insists on research papers to be published in Journals with				Answer option
	a) ISBN number	b) ISSN number	c) ISNN number	d) Serial number	b) ISSN number
39	The quality of research journal may be indicated by its				Answer option
	a) Impact factor	b) i10-score	c) h-index	d) g-index	a) Impact factor
40	What are the variables whose calculation is done according to the weight, height, and length known as?				Answer option
	a) Flowchart variables	b) Discrete variables	c) Continuous variables	d) Measuring variables	c) Continuous variables
41	A number in the data-set which is very different than other is called				Answer option
	a) Error	b) Mode	c) Outliers	d) Median	c) Outliers
42	What is the scale applied in statistics, which imparts a difference of magnitude and proportions, is considered as?				Answer option
	a) Exponential scale	b) Goodness scale	c) Ratio scale	d) Satisfactory scale	c) Ratio scale
43	Which of the following is NOT a type of connective tissue?				C
	A) Cartilage	B) Adipose tissue	C) Epithelium	D) Bone	Epithelium
44	Which of the following is NOT a method of ex-situ conservation?				C
	A) Seed banks	B) Botanical gardens	C) Wildlife corridors	D) Zoos	Wildlife corridors
45	What is the main cause of coral reef degradation?				B
	A) Overfishing	B) Ocean acidification	C) Pollution	D) Habitat destruction	Ocean acidification
46	Vitamin B1 is also known as:				B
	A) Riboflavin	B) Thiamine	C) Niacin	D) Pyridoxine	Thiamine
47	What is the causative agent of the common sexually transmitted infection known as "the clap"?				A

	A) Neisseria gonorrhoeae	B) Treponema pallidum	C) Chlamydia trachomatis	D) Haemophilus ducreyi	Neisseria gonorrhoeae
48	What is the main product of the pentose phosphate pathway?				C
	A) ATP	B) NADH	C) NADPH	D) FADH <sub>2</sub>	NADPH
49	Which of the following is an example of a keystone species?				C
	A) Deer	B) Rabbit	C) Sea otter	D) Squirrel	Sea otter
50	Which of the following component is not present in the human stomach?				D
	A) Pepsin	B) Hydrochloric acid	C) Mucus	D) Trypsin	Trypsin
51	Graves disease is associated with				Answer option (a,b,c or d)
	a). Insufficiency of thyroid hormone	b) Excessive of thyroid hormones	c). Insufficiency of growth hormones	d). Excessive of growth hormones	b) Excessive of thyroid hormones
52	Match the items of right and left column and find out the correct match				Answer option (a,b,c or d)
	a. Zygotene	i). Separation of homologous Chromosome			
	b. Pachytene	ii). Paring of homologous chromosome			
	c. Meiotic division I	iii). Separation of sister centromere			
	d. Meiotic division II.	iv). Binomial nomenclature			
	a) a-iv, b-i, c-ii, d-iii	c) a-iii, b-iv, c-i, d-iv	c) a-ii, b-iv, c-i, d-iii	c) a-iv, b-i, c-ii, d-iii	c) a-ii, b-iv, c-i, d-iii
53	Which of the following receptors activate signaling pathway by forming molecular dimer that results in protein phosphorylation				Answer option (a,b,c or d)
	a) Steroid hormone receptor	b) G-protein coupled receptors	c) Ligand gated receptors	d) Receptor tyrosine kinases	d) Receptor tyrosine kinases
54	Choose the correct option:				Answer option (a,b,c or d)

	A: Assertion: The enzymes present in bile possess lipolytic properties B: Justification: Bile is essential for lipid digestion				
	a) Both A and B are correct	b) Both A and B are wrong	c) A is correct, but B is wrong	d) A is wrong, but B is correct	d). A is wrong, but B is correct
55	Which of the statement(s) are not true about eicosanoids.				Answer option (a,b,c or d)
	a) derivative of arachidonic acid	b).Include prostaglandins, thromboxanes and leukotrienes	c). autocrine signaling molecules	d). synthesized from fatty acids	c).autocrine signaling molecules
56	Which of the following is false about G proteins				Answer option (a,b,c or d)
	a) involved in signal cascades	b) bind to and are regulated by guanine nucleotides	c)become activated when bound to GDP	d) must be active before cell can make needed cAMP	c)become activated when bound to GDP
57	Match the items of right and left column and find out the correct match on major nitrogenous end product of group of animals				Answer option (a,b,c or d)
	A. Urea		i. Chelonid reptiles		
	B. Urea and Uric acid		ii. Scorpions and spiders		
	C. NH <sup>+</sup> and Uric acid		iii. Adult amphibians		
	D. Guanine		iv. Crocodilid reptiles		
	a) A-iv, B-i, C-iii, D-ii	b) A-i, B-iv, C-iii, D-ii	c) a) A-iii, B-i, C-iv, D-ii	d) A-ii, B-i, C-iii, D-iv	c) a) A-iii, B-i, C-iv, D-ii
58	Which one of the following pair is incorrectly matched				Answer option (a,b,c or d)
	a) Glucagon-beta cells	b) Insulin-diabetes mellitus	c) Somatostatin-delta cells	d) Corpus luteum-relaxin	a) Glucagon-beta cells
59	Choose the correct option  A: Assertion: Glomerulus is considered as an endocrine structure  B: Justification: Because it can secrete Renin				Answer option (a,b,c or d)
	a) A is correct, but B is wrong	b) Both A and B are correct	c) Both A and B are wrong	d) A is wrong, but B is correct	d) A is wrong, but B is correct
60	Monoclonal antibodies are produced by hybridoma formed by				Answer option (a,b,c or d)
	a) Culturing cancerous cells	b) Fusion between normal cell and myeloma cells	c) Stimulating cell division	d) Fusion of lymphocyte and myeloma cells	d) Fusion of lymphocyte and myeloma cells
61	Match the items of right and left column and find out the correct match				Answer option (a,b,c or d)

	(A) Inhibin	i) Maintain the corpus luteum during the first trimester of pregnancy			
	(B) Estrogen	ii) Maintains the uterine lining during the first trimester of pregnancy			
	(C) Progesterone	iii) Inhibits production of FSH by the anterior pituitary			
	(D) Human Chorionic Gonadotropin (HCG)	iv) Promotes development of female reproductive structures; lowers blood cholesterol			
	a) a-i, b-iv, c-iii, d-ii	b) a-iii, b-ii, c-iv, d-i	c) a-iii, b-iv, c-i, d-ii	d) a-iii, b-iv, c-ii, d-i	d) a-iii, b-iv, c-ii, d-i
62	Coenozoic era refers to the age of				Answer option (a,b,c or d)
	a) Fishes and reptiles	b) Birds and mammals	c) Amphibians and fishes	d) Amphibians and reptiles	b) Birds and mammals
63	Choose the correct option: A: Assertion: Persons suffering from haemophilia fail to produce blood clotting factor VIII B: Prothrombin producing platelets in such person are found in very low concentration				Answer option (a,b,c or d)
	a) Both A and B are correct	b) Both A and B are wrong	c) A is correct, but B is wrong	d) A is wrong, but B is correct	c) A is correct, but B is wrong
64	Which one of the following states that two different species cannot exist for long in the same niche or habitat				Answer option (a,b,c or d)
	a) Weismann's theory	b) Dollo's rule	c) Gause's hypothesis	d) Allen's law	c) Gause's hypothesis
65	An alternative high energy source stored within all muscle fibres				Answer option (a,b,c or d)
	a) Ascorbic acid	b) Vitamin K	c) Creatine phosphate	d) Lactate	c) Creatine phosphate
66	Match the items of right and left column and find out the correct match on major nitrogenous end product of group of animals				Answer option (a,b,c or d)
	A. Interferon	i. Non-specific defense mechanism			
	B. Plasma Cell	ii. Viruses			
	C. NK Cell	iii. Humoral Immunity			
	D. B lymphocyte	iv. Production of Immunoglobulins			
	a) A-iii, B-ii, C-i, D-iv	b) A-ii, B-iv, C-i, D-iii	c) A-iii, B-iv, C-ii, D-i	d) A-ii, B-iii, C-i, D-iv	b) A-ii, B-iv, C-i, D-iii



67	DNA fingerprinting uses a specific type of DNA sequence known as				Answer option (a,b,c or d)
	a) Palindromic sequence	b) Microsatellite DNA	c) Chimeric DNA	d) CDNA	b) Microsatellite DNA
68	Choose the correct option  A: In humans the gametes contributed by the male determines whether the child produced will be male or female.  B: Sex in humans is a polygenic trait depending upon a cumulative effect of some genes of X chromosome and some of Y chromosome.				Answer option (a,b,c or d)
	a) A is correct, but B is wrong	b) Both A and B are correct	c) Both A and B are wrong	d) A is wrong, but B is correct	a) A is correct, but B is wrong
69	Chemical ions responsible for muscle contraction are				Answer option (a,b,c or d)
	a) $Ca^{2+}$ and $K^+$	b) $Na^+$ and $Ca^{2+}$	c) $Na^+$ and $K^+$	d) $Ca^{2+}$ and $Mg^{2+}$	d) $Ca^{2+}$ and $Mg^{2+}$
70	Hormone regulating the production of testosterone from Leydig cell				Answer option (a,b,c or d)
	a) LH	b) FSH	c) GH	d) ACTH	a) LH
71	Discovery of new species has recently picked up due to initiatives under the project i) Species 2000 ii) Global diversity and information facility iii) Agenda 21 iv) Climate change				Answer option (a,b,c or d)
	a) (i) and (ii)	b) (ii) and (iii)	c) (i)(ii) and (iii)	d) (i) and (iii)	d) (i) and (iii)
72	Major type of bond between antigen and antibody is				Answer option (a,b,c or d)
	a) Hydrogen bond	b) Covalent bond	c) Hydrophobic interactions	d) Van der Waals forces	a) Hydrogen bond
73	Match the items of right and left column and find out the correct match				Answer option (a,b,c or d)
	(A) Charles Darwin		i) Molecular biology		
	(B) Konrad Lorenz		ii) Genetics		
	(C) Gregor Mendel		iii) Ethology		
	(D) James Watson		iv) Evolution		
	a) a-i, b-iii, c-ii, d-iv	b) a-iii, b-iv, c-ii, d-i	c) a-iv, b-iii, c-ii, d-i	d) a-ii, b-iii, c-i, d-iv	c) a-iv, b-iii, c-ii, d-i
74	In which type of cells of human mitochondria are absent				Answer option (a,b,c or d)
	a) Liver cells	b) Brain cells	c) Erythrocytes	d) Osteoblasts	c) Erythrocytes

75	From which of the following is the Klenow fragment derived?				Answer option (a,b,c or d)
	a). DNA Ligase	b) DNA Pol-I	c). DNA Pol-II	d). Reverse Transcriptase	b) DNA Pol-I
76	Match the items of right and left column and find out the correct match				Answer option (a,b,c or d)
	(A) Pineal		i). Epinephrine		
	(B) Thyroid		ii). Medulla		
	(C) Ovary		iii). Estrogen		
	(D Adrenal medulla		iv). Tetraiodothyronine		
	a) a-iv, b-ii, c-iii, d-i	c) a-ii, b-iv, c-i, d-iii	c) a-iv, b-ii, c-i, d-iii	d) a-ii, b-iv, c-iii, d-i	d) a-ii, b-iv, c-iii, d-i
77	What is Southern blotting?				Answer option (a,b,c or d)
	a) Comparison of DNA fragments to two sources	b) Transfer of DNA fragments to electrophoretic gel from cellulose membrane	c) Attachment of probes to DNA fragments	d) Transfer of DNA fragments from electrophoretic gel to a nitrocellulose sheet	d) Transfer of DNA fragments from electrophoretic gel to a nitrocellulose sheet
78	In the mechanism of action of a protein hormone, one of the second messengers is				Answer option (a,b,c or d)
	a) Cyclic AMP	b) Insulin	c) T3	d) Gastrin	d). Cyclic AMP
79	Which is the most abundant RNA in the cell?				Answer option (a,b,c or d)
	a) rRNA	b) mRNA	c) tRNA	d) tRNA threonine	a) rRNA
80	The DNA fragments have sticky ends due to				Answer option (a,b,c or d)
	a) Endonuclease	b) Unpaired bases	c) Calcium ions	d) Free methylation	c) Unpaired bases
81	Match the items of right and left column				Answer option (a,b,c or d)
	E. Oxytocin		i. Amino acid derivative		
	F. Epinephrine		ii. Steroid		
	G. Progesterone		iii. Protein		
	H. Growth hormone		iv. Peptide		
	a) A-iv, B-i, C-ii, D-iii	b) A-i, B-iv, C-iii, D-ii	c) a) A-iii, B-i, C-iv, D-ii	d) A-ii, B-i, C-iii, D-iv	a) A-iv, B-i, C-ii, D-iii

82	Haemoglobin has				Answer option (a,b,c or d)
	a) Primary structure	b) Secondary structure	c) Tertiary structure	d) Quaternary structure	d) Quaternary structure
83	When there is an increase in the condensation of chromatin during the process of cell division				Answer option (a,b,c or d)
	a) Heterochromatin increases	b) Euchromatin increases	c) Differentiation of euchromatin & heterochromatin decreases	d) Differentiation of euchromatin & heterochromatin increases	c) Differentiation of euchromatin & heterochromatin decreases
84	Which among the following is incorrect about Chordata?				Answer option (a,b,c or d)
	a) They have paired muscles	b) Post anal tail must be present in chordates	c) Their notochord vanishes after certain period of time	d) Pharyngeal gill slits are present	b) Post anal tail must be present in chordates
85	Why is haemophilia a disease that is more commonly seen in males?				Answer option (a,b,c or d)
	a) The disease is Y- linked	b) The disease is X- linked	c) both a) & b)	d) None of the above	b) The disease is X- linked
86	Antibodies are				Answer d
	a) prostaglandins	b) steroids	c) lipoproteins	d) glycoproteins	glycoproteins
87	What type of microscope would you need to view a cellular structure that is 5 nm in size?				Answer b
	a. a light microscope	b) an electron microscope	c) a compound microscope	d) no microscope can resolve down to 5 nm	an electron microscope
88	DNA finger printing is based on				Answer a
	a) RFLP	b) RAPD	c) Transposon	d) Transgene	RFLP
89	1. The size of viruses is usually measured in				Answer c

	a) Centimeters	b) Micrometers	c) Nanometers	d) Millimeters	Nanometers
90	Transplanted graft may be rejected due to				Answer a
	a) cell-mediated immune response	b) humoral immune response	c) innate immune response	d) passive response	cell-mediated immune response
91	Western Blot is a technique for transferring				Answer c
	a) DNA from an agarose gel of nitrocellulose filter	b) RNA from an agarose gel to nitrocellulose filter	c) Protein from electrophoretic gel to nitrocellulose filter	d) Cloned DNA from one species to DNA from other organism	Protein from electrophoretic gel to nitrocellulose filter
92	Population density means				Answer a
	a) Population of a particular species within a particular area.	b) Population of a different species	c) Interaction of different species	d) The count apply only to human beings	Population of a particular species within a particular area.
93	$H = -\sum p_i * \ln(p_i)$ is the formula to calculate				d
	a) Simpson's index	b) Margalef's index	c) Pielou's index	d) Shanon-weiner index	d) Shanon-weiner index
94	Which of the following is not a keystone species				b
	a) Tiger	b) Wild buffaloes	c) African Elephant	d) Starfish	b) Wild buffaloes
95	The Mono climax theory of succession was proposed by:				c
	a) Robert H. Whittaker	b) A. G Tansley	c) F.E. Clements	d) R.F. Daubenmire	c) F.E. Clements
96	Darwin's Finches is an example of				c
	a) Struggle for existence	b) convergence evolution	c) Adaptive radiation	d) Niche overlap	c) Adaptive radiation
97	Crabs, lobster, oysters and copepods are example of				b
	a) Nekton	b) Benthos	c) Plankton	d) Neuston	b) Benthos
98	An association between two individuals or more where both are benefitted and which are obligatory				b
	a) Commensalism	b) Mutualism	c) Protocooperation	d) Amensalism	b) Mutualism
99	The high Biological Oxygen Demand indicates:				b

	a) Microorganism free water	b) Microorganism contaminated water	c) Pure water	d) All of the above	b) Microorganism contaminated water
100	The organism with narrow range for tolerance of environmental factors is				c
	a) Stenophagic	b) stenohaline	c) stenotopic	d) stenophagic	c) stenotopic
101	The Lincoln index is used to measure				b
	a) Population density	b) Population size	c) population mortality	d) population natality	b) Population size
102	A group of species that theorizes a single common ancestor and all descendants of that ancestor living or extinct:				Answer option (a,b,c or d)
	a) Clade	b) Genus	c) Family	d) Kingdom	(a) Clade
103	Match the following terms with their correct definitions:				Answer option (a,b,c or d)
	(A) A system of naming species with two names, consisting of the genus and species.	(i) Dichotomous key			
	(B) A pair of contrasting characteristics used in a taxonomic key.	(ii) Couplet			
	(C) A tool that allows the identification of organisms by following a series of choices.	(iii) Taxon			
	(D) A group of one or more populations of an organism or organisms seen by taxonomists to form a unit.	(iv) Binomial nomenclature			
	a) i-C, ii-B, iii-D, iv-A	b) i-D, ii-C, iii-B, iv-A	c) i-A, ii-D, iii-B, iv-C	d) i-B, ii-C, iii-A, iv-D	(a) i-C, ii-B, iii-D, iv-A
104	Indicate the true statements on the disease "Nosema" in honey bees:				Answer option (a,b,c or d)
	(A) An adult bee disease (B) A microsporidian disease (C) A protozoan disease (D) A fungal disease				
	a) A and C are true	b) B and D are true	c) A and B are true	d) C and D are true	c) A and B are true
105	Choose the correct option: A: Assertion: All drones of a honey bee colony are clones. B: Justification: Drones are produced from unfertilized eggs and contain only the queen's genetic material				Answer option (a,b,c or d)
	a) Both A and B are correct	b) Both A and B are wrong	c) A is correct, but B is wrong	d) A is wrong, but B is correct	b) Both A and B are wrong

106	Catla is				Answer option (a,b,c or d)
	a) Herbivorous	b) Omnivorous	c) Phytoplankton feeder	d) Zooplankton feeder	d) Zooplankton feeder
107	Wax of the honeycomb is secreted by:				Answer option (a,b,c or d)
	a) Collateral gland	b) Hypopharyngeal gland	c) Mandibular gland	d) Wax gland	d) Wax gland
108	Fibroin is: A A long chain carbohydrate B Secreted by posterior silk gland C Secreted by anterior silk gland D A peptide found in the venom gland of honeybees				Answer option (a,b,c or d)
	a) A, B and C are correct	b) A and B are correct	c) Only B is correct	d) Only D is correct	c) Only B is correct
109	Choose the correct option A: Assertion: Haploid drone is an advantage for honeybees B: Justification: It is a process of genetic filtering				Answer option (a,b,c or d)
	a) A is correct, but B is wrong	b) Both A and B are correct	c) Both A and B are wrong	d) A is wrong, but B is correct	b) Both A and B are correct
110	The category 'Division' in the classification of Plants is equivalent to which category in Animal classification				Answer option (a,b,c or d)
	a) Kingdom	b) Phylum	c) Superclass	d) Class	b) Phylum
111	Which of the following best describes the phenomenon where the expression of one gene is influenced by one or more other genes?				<b>B</b>
	A) Pleiotropy	B) Epistasis	C) Codominance	D) Polygenic Inheritance	Epistasis
112	Match the scientist with their contribution in classical genetics				<b>D</b>
	A Gregor Mendel		i. Establishment of the laws of inheritance through pea plant experiments		
	B Thomas Hunt Morgan		ii. Discovery of sex-linked inheritance in fruit flies		
	C Barbara McClintock		iii. Discovery of transposable elements		
	D Hugo de Vries		iv. Discovery of jumping genes in maize		
	a) Only A	b) Only B	c) Only C	d) Only D	Hugo de Vries- Discovery of jumping genes in maize
113	Find the correct statements related to population genetics:				<b>B</b>

	<p>A The Hardy-Weinberg equilibrium describes a situation where allele frequencies in a population change over time</p> <p>B Gene flow between populations tends to homogenize allele frequencies</p> <p>C Genetic drift increases genetic variation within a population.</p> <p>D Genetic variation is essential for populations to adapt to changing environments.</p>				
	A) A and B	B) B and D	B) C and D	D) A and D	B and D
11 4	<p>A: Assertion: In Mendelian genetics, the principle of segregation states that alleles separate during gamete formation.</p> <p>B: Justification: The principle of segregation is based on Mendel's experiments with pea plants, where he observed that alleles for a trait segregate and are randomly distributed into gametes during meiosis, ensuring genetic variation in offspring.</p>				A
	a) Both A and B are true, and B is the correct explanation of A.	b) Both A and B are true, but B is not the correct explanation of A.	c) A is true, but B is false.	d) A is false, but B is true.	Both A and B are true, and B is the correct explanation of A.
11 5	In which phase of meiosis do homologous chromosomes separate?				C
	A) Prophase I	B) Metaphase I	C) Anaphase I	D) Telophase I	Anaphase I
11 6	In a population at Hardy-Weinberg equilibrium, if $p=0.7$ and $q=0.3$ , what is the frequency of the heterozygous genotype?				B
	A) 0.21	B) 0.42	C) 0.09	D) 0.49	0.42
11 7	Find the correct matching pairs:				B
	A Allele frequency		i The study of the distribution and change of allele frequencies within populations and how they are influenced by evolutionary processes.		
	B Genetic drift		ii. The random fluctuation of allele frequencies in a population due to chance events.		
	C Gene flow		iii. The proportion of a particular allele among all alleles for a gene in a population.		
	D Natural selection		iv. The movement of alleles between populations, leading to a blending of genetic characteristics.		
	a) A, B, and C	b) B	c) B and C	d) None of the above	Genetic drift- The random fluctuation of

					allele frequencies in a population due to chance events.
118	Find the correct statement about X-linked dominant inheritance? A) Males are more frequently affected than females. B) An affected father will pass the trait to all of his daughters. C) Sons cannot inherit the disorder from their mother. D) The disorder skips generations.				B
	a) Only A	b) Only B	c) Only C	d) All of the above are correct	An affected father will pass the trait to all of his daughters.
119	Which technique is commonly used in cytogenetics to visualize chromosomes?				C
	A) PCR (Polymerase Chain Reaction)	B) Southern Blotting	C) Karyotyping	D) Western Blotting	Karyotyping
120	5'-Capping of occurs in				Answer option
	a) Prokaryotic mRNA	b) Eukaryotic mRNA	c) Both a and b	d) tRNA	b) Eukaryotic mRNA
121	Which of the following post-translational modification of proteins occurs in lumen of endoplasmic reticulum?				Answer option
	a) Signal peptide removal	b) Formation of disulfide Cross-Links	c) Ubiquitination of protein	d) Both a and b	d) Both a and b
122	Which of the following is true statements? A. Transcription takes place in nucleus. B. RNA polymerase I synthesizes mRNA. C. RNA polymerase II synthesizes tRNA D. RNA polymerase II synthesizes 5S rRNA				Answer option
	a) Both A and C	b) Both A and D	c) Both A and B	d) Both B and C	b) Both A and D
123	Protein synthesis (translation) in prokaryotes to catalyzed by				
	a) 28S rRNA	b) 16S rRNA	c) 18S r RNA	d) 23S rRNA	d) 23S rRNA
124	Find out the correct option  Assertion (A): DNA Polymerase III is main DNA polymerase in prokaryotes responsible replication of maximum length of DNA.  Reason (R): Processivity of DNA Polymerase III is more than any DNA polymerase in prokaryotes.				Answer option



	a) Both A and R are correct and R is the correct explanation of A	b) Both A and R are correct but R not the correct explanation of A	c) A is correct but R is not correct	d) A is not correct but R is correct	a) Both A and R are correct and R is the correct explanation of A
125	Match the following				Answer option
	A. RNA Polymerase I		i. MicroRNA		
	B. RNA Polymerase II		ii. 5S rRNA		
	C. RNA Polymerase III		iii. pre-rRNA 45S		
	a) A-iii, B- ii, C-i	b) A-iii, B-i, C-ii	c) A-ii, B-i, C-iii	d) A-ii, B-iii, C-i	b) A-iii, B-i, C-ii
126	Which of the following is false statement? A. Insulin regulates glucose synthesis. B. Prolactin stimulates milk production. C. Enkephalin is analgesic. D. Follicle stimulating hormone is synthesized by ovary.				Answer option
	a) Both A and B.	b) Both A and C	c) Both A and D	d) Both C and D	c) Both A and D
127	G Protein				Answer option
	a) can binds to GTP	b) can hydrolyze GTP	c) is a monomeric protein	d) Both a and b	d) Both a and b
128	Ras protein				Answer option
	a) binds to ATP	b) binds to GTP	c) Activated by MAP or ERK	d) All of the above	d) All of the above
129	What term refers to the potential of a cell to develop into different cell types?				b) Potency
	a)Commitment	b)Potency	c) Specification	d) Determination	b
130	Imprinting refers to:				c)Parent-of-origin specific gene expression
	a)A process where genes are activated based on environmental cues	b)Modification of DNA sequences during development	c)Parent-of-origin specific gene expression	d)Cellular reprogramming during differentiation	c
131	In animals, the process of sperm-egg recognition primarily involves the interaction between:				c) Cell surface molecules

	a)Cell membrane and cytoplasm	b)DNA molecules	c)Cell surface molecules	d)Mitochondria	c
132	Cleavage in animal development refers to:				c) Rapid cell division without growth
	a)Fusion of sperm and egg nuclei	b)Formation of the blastula	c)Rapid cell division without growth	d)Differentiation of germ layers	c
133	Seed germination is triggered by:				d) Imbibition of water and activation of enzymes
	a)Exposure to light	b)Absence of water	c)Presence of oxygen	d)Imbibition of water and activation of enzymes	d
134	Sex determination in animals can be influenced by:				c) Both genetic and environmental factors
	a)Genetic factors	b)Environmental factors	c)Both genetic and environmental factors	d)None of the above	c
135	Eye lens induction in vertebrates is primarily regulated by:				d) Lens-inducing substances from the optic vesicle
	a)Retinoic acid	b)Fibroblast growth factor (FGF)	c)Bone morphogenetic protein (BMP)	d)Lens-inducing substances from the optic vesicle	d
136	Axis and pattern formation in Drosophila primarily depend on:				d
	a)Maternal effect genes	b)Zygotic genes	c)Homeotic genes	d)Hox genes	d) Hox genes
137	The transition from vegetative to reproductive growth in plants is primarily regulated by:				d
	a)Temperature	b)Day length	c)Nutrient availability	d)All of the above	d) All of the above
138	Oxidation of which substance in the body yields the most calories				d
	a) Glucose	b) Glycogen	c) Protein	d) Lipids	d) Lipids
139	A triose sugar is				a
	a) Glycerose	b)Ribose	c) Erythrose	d)Fructose	a)Glycerose

140	Out of 24 mols of ATP formed in TCA cycle, 2 molecules of ATP can be formed at “substrate level” by which of the following reaction ?				d
	a) Citric acid → Isocitric acid	b) Isocitrate → Oxaloacetate	c) Succinic acid → Fumarate	d) Succinylcat → Succinic acid	d) Succinylcat → Succinic acid
141	Which of the following hormones is not involved in carbohydrate metabolism?				d
	a) Cortisol	b) ACTH	c) Glucogen	d) Vasopressin	d) Vasopressin
142	An amino acid not found in proteins is -				a
	a) Beta-Alanine	b) Proline	c) Lysine	d) Histidine	a) Beta-Alanine
143	An example of a saturated fatty acid is-				a
	a) Palmitic acid	b) Oleic acid	c) Linoleic acid	d) Erucic acid	a) Palmitic acid
144	Vitamin A or retinal is a-				b
	a) Steroid	b) Polyisoprenoid compound containing a cyclohexenyl ring	c) Benzoquinone derivative	d) 6-Hydroxychromane	b) Polyisoprenoid compound containing cyclohexenyl ring
145	The alpha-helix structure of a protein is stabilised by:				a
	a) Hydrogen bonds	b) van der Waals forces	c) Peptide bonds	d) Dipole-dipole interactions	a) Hydrogen bonds
146	Which of the following proteins does not function in cell-cell interaction?				b
	a) Cadherin	b) Cytochrome c	c) Integrin	d) N-CAM	b) Cytochrome c
147	Which of the following makes water a liquid at room temperature?				b
	a) Noncovalent interactions	b) Hydrogen bonds between water molecules	c) Van der Waals forces of attraction	d) Covalent bonding	b) Hydrogen bonds between water molecules
148	Which type of supercoiling takes the form of extended right-handed coils?				c
	a) Positive supercoiling	b) Negative supercoiling	c) Plectonemic supercoiling	d) Solenoidal supercoiling	c) Plectonemic supercoilig
149	Which of the following condenses acyl and malonyl groups?				c
	a) Acetyl co-A ACP transacetylase	b) Malonyl co-A ACP transferase	c) β-ketoacyl ACP synthase	d) Acyl carrier protein	c) β-ketoacyl ACP synthase
150	How many carbons are present in HMG co-A?				d
	a) 12	b) 8	c) 4	d) 6	d) 6

