Test Booklet No. _____

**This booklet consists of 100 questions and __ printed pages.**

**RGUCET/2025/34**

**Series** A

# RGUCET 2025
## Common Entrance Test, 2025
## MASTER OF SCIENCE IN ZOOLOGY

**Full Marks: 100** **Time: 2 Hours**

Roll No. | | | | | | | | |

Day and Date of Examination: _____

Signature of Invigilator(s) _____

Signature of Candidate _____

*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 100 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark. There shall be negative marking of 0.25 against each wrong attempt.
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 before completion of Examination.
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

| | | | | | |
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| 1 | The equation f(x) is given as $x^2$-4=0. Considering the initial approximation at x=6 then the value of $x_1$ is given as: | | | | a) 10/3 |
| | a) 10/3 | b) 4/3 | c) 7/3 | d) 13/3 | |
| 2 | If f(x) = x² + 3x + 2, then what is the value of f(2)? | | | | |
| | a) 4 | b) 12 | c) 32 | d) 20 | b) 12 |
| 3 | What is the order of the differential equation x²d²y/dx² + 3dy/dx + y = 0? | | | | (b) 2 |
| | a) 1 | b) 2 | c) 3 | d) 0 | |
| 4 | Which of the following city is the host of World Audio Visual & Entertainment Summit (WAVES) 2025? | | | | |
| | a) New Delhi | b) Chennai | c) Mumbai | d) Hyderabad | C) Mumbai |
| 5 | Bandhavgarh National Park is located in: | | | | |
| | a) Madhya Pradesh | b) Odisha | c) Karnataka | d) Tamil Nadu | a) Madhya Pradesh |
| 6 | Ayushman Bharat Diwas is observed annually on: | | | | b) April 30 |
| | a) April 29 | b) April 30 | c) May 1 | d) May 1 | |
| 7 | The European Red Admiral butterfly (Vanessa atalanta) was recently spotted in which Indian state? | | | | |
| | a) Uttarakhand | b) Uttar Pradesh | c) Himachal Pradesh | d) Punjab | c) Himachal Pradesh |
| 8 | The Small Hive Beetle (SHB), a non-native or alien species, was recorded for the first time in which Indian state? | | | | |
| | a) West Bengal | b) Telangana | c) Odisha | d) Goa | A) West Bengal |
| 9 | The Bamiyan Buddhas were monumental statues of standing Buddhas located in which country? | | | | |
| | a) Afghanistan | b) Nepal | c) Bhutan | d) Myanmar | a) Afghanistan |
| 10 | What is “Chlorpyrifos” that was recently seen in news? | | | | |
| | a) A type of Mineral | b) Pesticide | c) Traditional medicinal herb | d) Newly discovered species of Butterfly | b) Pesticide |

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| 11 | Which day is celebrated as International Hyena Day? | | | | |
| | a) April 26 | b) April 27 | c) April 28 | d) April 29 | b) April 27 |
| 12 | ΔABC is right-angled at C. If AC = 5 cm and BC = 12 cm, find the length of AB. | | | | |
| | a)17cm | b)7cm | c)13 cm | d) None of these | c).13 cm |
| 13 | Fill in the blanks with the correct use of tenses.<br><br>The children _____ in the field now. | | | | |
| | a) has played | b) are playing | c) plays | d) will had played | b) are playing |
| 14 | Complete the statement by using the correct form of the verb given in brackets.<br><br>At the end of January next year, my father _____ (retire). | | | | |
| | a) retire | b)will be retire | c)will retired | d)will have retired | retire |
| 15 | Fill up the blanks with correct verb/tense.<br><br>The train _____ before he reached the station. | | | | |
| | a) has left | b) was left | c) had left | d) is left | c) had left |
| 16 | Fill up the blanks with correct verb.<br><br>This road _____ to the post office. | | | | |
| | a) is leading | b) has lead | c) leads | d) lead | c) leads |
| 17 | Fill up the blanks with correct verb.<br><br>The candidate _____ speaking for ten minutes. | | | | |
| | a) had | b) had been | c) was | d) is | b) had been |
| 18 | Neeraj Chopra won gold at the 2020 Tokyo Olympics in: | | | | Answer |
| | a) Boxing | b) Chess | c) Javelin | d) Jodo | (c) |

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| 19 | Match the Padma awardee from Arunachal with their contribution.<br><br>A. JumdeYomgam Gamlin — i. Sports<br>B. Anshu Jamsenpa — ii. Spiritualism<br>C. Yeshe Dorjee Thongchi — iii. Social Work<br>D. Guru Tulku Rinpoche — Iv. Literature and education | | | | Answer |
| | a) A-iii, B-i, C-iv, D-ii | b) A-iii, B-i, C-ii, D-iv | c) A-iii, B-iv, C-i, D-ii | d) A-ii, b-i, C-iv, D-iii | (a) |
| 20 | The Dadasaheb Phalke Awards were introduced in the year: | | | | Answer |
| | a) 1969 | b) 1978 | c) 1954 | d) 1985 | (a) |
| 21 | The functions of contractile vacuole of protozoa is: | | | | Answer |
| | a) Respiration | b) Excretion | c) Osmoregulation | d) Digestion | (c) Osmoregulation |
| 22 | Which of the following mammal can store sperm in female genital tract for more than one month? | | | | Answer |
| | a) Elephant | b) Bat | c) Whale | d) Duck bill platipus | (b) Bat |
| 23 | The pH of gastric juice in mammal is: | | | | |
| | a) 1.0- 2.5 | b) 3.0 – 4.5 | c) 4.0 – 5.6 | d) 6.0 - 7.0 | a) 1.0 – 2.5 |
| 24 | *Ornithorhynchus anatinus* is: | | | | |
| | a) An aves and lay eggs | b) A mammal and lay eggs | c) An aquatic mammals | d) An aves but do not lay eggs | b) A mammal and lay eggs |
| 25 | A Raptor is a: | | | | |
| | a) Reptile | b) Meat eating bird | c) Herbivours mammal | d) Nocturnal bird | b) Meat eating bird |
| 26 | Aurelia is an organism with body plan of: | | | | |
| | a) Asymmetrical | b) Bilateral symmetrical | c) Radially symmetrical | d) Dorso-ventrally symmetrical | c) Radially symmetrical |
| 27 | **The Singer and Nicolson model of plasma membrane**:<br><br>i. A Lipid bilayer with polar head in opposite side.<br>ii. Membrane contains protein and lipid only.<br>iii. Membrane contains lipid, protein and carbohydrate.<br>iv. It consists of one layer of lipid and one layer of protein.<br><br>Select the correct answer from the following options given below: | | | | a)<br>i-True, ii-False, iii-True,<br>iv-False |
| | a) i-True, ii-False, iii-True, iv-False | b) i-True, ii-True, iii-False, iv-True, | c) i-False, ii-True, iii-False, iv-False | d) i-False, ii-False, iii-True, iv-True | |

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| 28 | **The properties of cell membrane is**:<br><br>i. Cross membrane movement of small molecules are done by diffusion and active transport.<br>ii. Ionophores are molecules that act as membrane shuttle for various ions.<br>iii. Glucose molecules pass through membrane by active transport.<br>iv. Cross membrane movement of large molecules takes place by endocytosis.<br><br>Select the correct answer from the following options given below: | d<br>i- True, ii-True, iii-False, iv-True |

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| | a) i-False, ii-True, iii-True, iv-True | b) i-True, ii-False, iii-True, iv-False | c) i- False, ii-True, iii-True, iv-False | d) i- True, ii-True, iii-False, iv-True | |

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| 29 | **The secretary functions of endocrine glands in mammals is/are:**<br><br>i. Hypothalamus synthesize only releasing hormone.<br>ii. Posterior pituitary synthesize peptide hormone.<br>iii. Adenohypophysis synthesize tropic hormones.<br>iv. Adenohypophysis does not synthesize peptide hormones.<br><br>Select the correct answer from the following options given below: | d)<br>i-True, ii-False, iii-True, iv-False |

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| | a) i-True, ii-True, iii-False, iv- True | b) i- False, ii-False, iii-False, iv-True | c) i-False, ii-True, iii-True, iv- False | d) i- True, ii-False, iii- True, iv-False | |

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| 30 | **The composition of gastric juice is:**<br>i. Mucin, amylase, Trypsin, Cholic acid<br>ii. Mucin, HCl, Pepsin, $H_2O$<br>iii. Mucin, bile salts, pepsin and chymotrypsin<br>iv. Trypsin, chymotrypsin, HCl, $H_2O$ and cholesterol<br><br>Select the correct answer from the following options given below: | b<br>i-False, ii-True, iii-False, iv-False |

| | | | | | |
|---|---|---|---|---|---|
| | a) i-True, ii-False, iii-True, iv-False | b) i-False, ii-True, iii-False, iv-False | c) i-False, ii-True, iii-False, iv-True | d) i-False, ii-False, iii-True, iv-True | |

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| 31 | **Two statements are given below, one is Assertion (A) and the other is Justification (B).**<br><br>Assertion (A): Nuclear membrane and plasma membrane are similar in structure and function.<br><br>Justification (B): Both the membrane possesses similar lipid bilayer | |

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| | structure.<br><br>In the light of above statements, choose the correct answer from the following options given below: | | | | |
| | a)<br>A is not correct, B is true | b)<br>B is not the justification of A | c)<br>Both A and B is true | d)<br>Both A and B is false | a)<br>A is not correct, B is true |
| 32 | **Two statements are given below, one is Assertion (A) and the other is Justification (B).**<br><br>Assertion (A): Eukaryotic DNA is a double helical coiled structure.<br><br>Justification (B): Both the helix run antiparellel in direction.<br><br>In the light of above statements, choose the correct answer from the following options given below: | | | | b)<br><br>B is not the reason of A |
| | a) A is true, B is false | b) B is not the reason of A | c) A is false B is true | d) Both A and B is false | |
| 33 | **Two statements are given below, one is Assertion (A) and the other is Justification (B).**<br><br>Assertion (A): Osphradium is an organ in Mollusc.<br><br>Justification (B): It helps in water filtration and food selection by the animal.<br><br>In the light of above statements, choose the correct answer from the following options given below: | | | | c)<br><br>Both A and B are true |
| | a) A is true, B is not true | b) A is true, B is not the justification | c) Both A and B are true | d) Both A and B are false | |
| 34 | **Two statements are given below, one is Assertion (A) and the other is Justification (B).**<br><br>Assertion (A): The Membrane structure of endoplasmic reticulum and golgi body are similar.<br><br>Justification (B): Functionally both are similar.<br><br>In the light of above statements, choose the correct answer from the following options given below: | | | | a)<br><br>B is not the justification of A |
| | a) B is not the justification of A | b) B is the true justification of A | c) A is not true , B is true | d) Both A and B are not true | |

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| 35 | **Two statements are given below, one is Assertion (A) and the other is Justification (B).**<br><br>Assertion (A): Hydra and aurellia both are coelenterates.<br><br>Justification (B): Both contain polypoid and medusa stage.<br><br>In the light of above statements, choose the correct answer from the following options given below: | | | | c)<br>A is true, B is not true and B is not justification of A |
| | a) A is not true, B is true | b) Both A and B are true | c) A is true, B is not true and B is not justification of A | d) A is true , B is the justification of A | |
| 36 | **Two statements are given below, one is Assertion (A) and the other is Justification (B).**<br><br>Assertion (A): Coelenterates are sexually reproducing animals.<br><br>Justification (B): Sperms and Oocytes form by male and female medusa colony respectively.<br><br>In the light of above statements, choose the correct answer from the following options given below: | | | | b)<br>A is true, B is not the justification of A |
| | a) Both A and B are not true | b) A is true, B is not the justification of A | c) A is not true, B is true | d) A is true , B is the justification of A | |
| 37 | **Two statements are given below, one is Assertion (A) and the other is Justification (B).**<br><br>Assertion (A): Mitosis and meiosis are both the methods of cell division and exchange of genetic material takes in both cases.<br><br>Justification (B): Exchange of genetic material takes place during cell division only.<br><br>In the light of above statements, choose the correct answer from the following options given below: | | | | b)<br>A is not true, B is true |
| | a) A is true, B is false | b) A is not true, B is true | c) A is true, B is not the justification of A | d) A is true , B is the justification of A | |
| 38 | **Two statements are given below, one is Assertion (A) and the other is Justification (B).**<br><br>Assertion (A): ATP is formed in mitochondrial matrix.<br><br>Justification (B): because, F0 and F1 particle of mitochondrial membrane | | | | A. Both A and B are true |

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| | is present in mitochondrial cristae.<br><br>In the light of above statements, choose the correct answer from the following options given below: | |
| | A. Both A and B are true / B. A is true, B is not true justification / C. A is not true B is true / D. Both A and B are false | |
| 39 | **Match the item of column-I and with those column –II and find out the correct match from the given code on temporal opening of reptiles.**<br><br>A.Anapsida – i. Two temporal opening<br>B. Synapsida – ii. Temporal opening high behind eye<br>C. Parapsida – iii. No temporal opening<br>D. Diapsida – iv. Temporal opening low behind eye<br><br>a) A-ii, B-iii, C-iv, D-i / b) A- iv, B-ii, C-i, D- iii / c)A –iv, B-i, C-iii, D-ii / d) A-iii, B-iv, C-ii, D-i | d)<br>A-iii<br>B-iv<br>C-ii<br>D-i |
| 40 | **Match the item of column-I and with those column –II and find out the correct match from the given code on Embryonic stage of invertebrates**<br><br>A. Parenchymula – i. Helminth<br>B. Planula – ii. Sponges<br>C. Sporocyst – iii. Anneledia<br>D. Trochophore – iv. Coelenterate<br><br>a) A-iv, B-i, C-ii, D-iii / b) A-ii, B-iv, C-i, D-iii / c) A-iii, B-iv, C-ii, D-i / d) A-iv, B-iii, C-ii, D-i | b)<br>A-ii, B-iv, C-i, D-iii |
| 41 | Match the item of column-I and with those column –II and find out the correct match from the given code on endocrine cell types and its secretion<br><br>A. Juxtaglomerular apparatus – i. Aldosterone<br>B. Granulosa cells – ii. hCG<br>C. Zona glomerulosa – iii. Estradiol-17β<br>D. Trophoblast – iv. Renin<br><br>a) A-ii, B-iv, C-i, D-iii / b) A-iv, B-iii, C-i, D-ii / c) A-iii, B-iv, C-ii, D-i / d) A-iv, B-i, C-ii, D-iii | b)<br>A-iv, B-iii, C-i, D-ii |

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| 42 | Match the item of column-I and with those column –II and find out the correct match from the given code on Order of mammals with species name<br><br>Perossodactyla – Tachyglossus aculeata<br>Artiodactyla – Elephas<br>Monotremata – Rhinoceros<br>Proboscidia – Musk deer<br><br>a) A-iii, B-iv, C-i, D-ii<br>b) A- iii, B- i, C-iv, D-ii<br>c) A-iv, B-i, C-ii, D-iii<br>d) A-ii, B-iii, C-iv, D-i | a)<br>A-iii, B-iv,<br>C-i, D-ii |
| 43 | Match the item of column-I and with those column –II and find out the correct match from the given code<br><br>A. Beta cells – i. Lysozyme<br>B. Mast cells – ii. Pancreatic enzyme<br>C. Paneth cells – iii. Histamine<br>D. Acinar cells – iv. Insulin<br><br>a) A-iv, B-ii, C-i, D-ii<br>b) A-iii, B-ii, C-iv, D-i<br>c) A-iv, B-iii, C- i, D-ii<br>d) A- ii, B- iii, C- i, D- iv | c)<br>A-iv, B-iii,<br>C- i, D-ii |
| 44 | Match the item of column-I and with those column –II and find out the correct match from the given code of neuronal cells<br><br>A. Monocytes – i. Forms the myelin sheath<br>B. Schwan's cell – ii. Round densely stained nucleus<br>C. Lympocytes – iii. Non neuronal cells in CNS<br>D. Astrocytes – iv. Eccentric bilobed nucleus<br><br>a) A-iv, B-i, C-ii, D-iii<br>b) A-iii, B-i, C-iv, D-ii<br>c) A-ii, B-iii, C-iv, D-i<br>d) A-iv, B-iii, C-i, D-ii | a)<br>A-iv, B-i,<br>C-ii, D-iii |
| 45 | Match the item of column-I and with those column –II and find out the correct match from the given code of mammalian hormone<br><br>A. FSH – i. Tropic hormone<br>B. TRH – ii. Steroid hormone<br>C. Glucocorticoid – iii. Glycoprotein hormone<br>D. Prolactin – iv. hypothalamic hormone<br><br>a) A-ii, B-iv, C-i, D-iii<br>b)A-iv, B-iii, C-i, D-ii<br>c) A-iii, B-iv, C-ii, D-i<br>d) A-iii, B-i, C-iv, D-ii | c)<br>A-iii, B-iv,<br>C-ii, D-i |

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| 46 | Macrophage-like cells of liver is known as: | | | | Answer |
| | a) Kupffer cells | b) Mesangial cells | c) Natural killer cells | d) Microglial cells | (a) |

<table>
<tr><td>47</td><td colspan="4">T- cell recognizes:</td><td>Answer</td></tr>
<tr><td></td><td>a) Free antigen</td><td>b) Antigen bound with MHC</td><td>c) Antigen bound with CD8</td><td>d) Free antibody</td><td>(b)</td></tr>
<tr><td>48</td><td colspan="4">Which of the following is/are true statement(s)?<br><br>A. Graves disease is an autoimmune disease.<br>B. IgM have 4 constant regions.<br>C. Skin is part of adaptive immunity.<br>D. Karl Landsteiner discovered human blood group.</td><td>Answer</td></tr>
<tr><td></td><td>a) A, B and D</td><td>b) A and C</td><td>c) B, C and D</td><td>d) All A, B, C and D</td><td>(a)</td></tr>
<tr><td>49</td><td colspan="4">Assertion (A): Number of cases of many infectious diseases are going down.<br><br>Justification (B): Effectiveness of vaccination is one of the causes of this.<br><br>In the light of above statements, choose the correct answer from the following options given below:</td><td>Answer</td></tr>
<tr><td></td><td>a) Both A and B are correct and B is the correct justification of A</td><td>b) Both A and B are correct but B not the correct justification of A</td><td>c) A is correct but B is not correct</td><td>d) A is not correct but B is correct</td><td>(a)</td></tr>
<tr><td>50</td><td colspan="4">Matching the following pairs:<br><br><table><tr><td>A. Alveolar macrophages</td><td>i. Liver</td></tr><tr><td>B. Histiocytes</td><td>ii. Lung</td></tr><tr><td>C. Kupffer cells</td><td>iii. Kidney</td></tr><tr><td>D. Mesangial cells</td><td>iv. Connective tissue</td></tr></table></td><td>Answer</td></tr>
<tr><td></td><td>a) A-iv, B-i, C-ii, D-iii</td><td>b) A-ii, B-iv, C-i, D-iii</td><td>c) A-ii, B-iv, C-iii, D-i</td><td>d) A-ii, B-i, C-iv, D-iii</td><td>(b)</td></tr>
<tr><td>51</td><td colspan="4">Which of the following technique are usually used to detect HIV?</td><td>Answer</td></tr>
<tr><td></td><td>a)Western blot</td><td>b) ELISA</td><td>c) Dot blot</td><td>d) RIA</td><td>(b)</td></tr>
<tr><td>52</td><td colspan="4">Which of the following is/are true?<br><br>A. Machine used for PCR is known as thermal cycler.<br>B. PCR is used for gene amplification.<br>C. Annealing in PCR usually occur at 74°C.<br>D. Taq DNA polymerase cannot work on temperature above 60°C.</td><td>Answer</td></tr>
<tr><td></td><td>a) Both A and D</td><td>b) Both A and C</td><td>c) Both A and B</td><td>d) Both B and C</td><td>(c)</td></tr>
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| 53 | Assertion (A): *E. coli* is usually used for gene cloning.<br><br>Justification (B): *E. coli* divides in about 20 minutes.<br><br>In the light of above statements, choose the correct answer from the following options given below: | | | | Answer |
| | a) Both A and B are correct and B is the correct justification of A | b)Both A and B are correct but B not the correct justification of A | c) A is correct but B is not correct | d) A is not correct but B is correct | (a) |
| 54 | Match the following pairs:<br><br>A. Col Plasmid — i.Virulence plasmid<br>B.Ti plasmids — ii.Resistance plasmid<br>C. RP4 — iii.Selectable marker<br>D. Antibiotic resistance — iv. Codes for colicins | | | | Answer |
| | a) A-i, B-iii, C-iv, D-ii | b)A-iv, B-i, C-iii, D-ii | c) A-iv, B-i, C-ii, D-iii | d) A-iv, B-iii, C-ii, D-i | (c) |
| 55 | Which of the following is/are true?<br><br>A. Klenow fragment is generated form RNA polymerase.<br>B. Bal31 is an example of restriction endonuclease.<br>C. BamH1 is an example of restriction endonuclease.<br>D. Polynucleotide kinase add phosphate groups onto free 5′ termini of DNA. | | | | Answer |
| | a) Both A and B | b) Both A and C | c) Both C and D | d) All A, B, C and D | (c) |
| 56 | Which of the following is used for visualization of DNA? | | | | Answer |
| | a) EtBr | b) Syber green | c) $MgCl_2$ | d) Both a and b | (d) |
| 57 | Which of the following is required proper function of DNA polymerase? | | | | Answer |
| | a) $Mg^{2+}$ | b) $K^+$ | c) $Na^+$ | d) He | (a) |
| 58 | The movement of water through aquaporins is an example of: | | | | Answer |
| | Facilitated diffusion | b) Active transport | c) Osmosis | d) Endocytosis | **a** |
| 59 | Identify the correct statements:<br>A. Cholesterol in the cell membrane reduces membrane fluidity at high temperatures.<br>B. Gap junctions in animal cells function similarly to plasmodesmata in plant cells.<br>C. Cilia and flagella are composed of microfilaments.<br>D. A cell placed in a hypertonic solution will swell. | | | | Answer |

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| | a) A and B | b) B and C | c) C and D | d) A and D | **A** |
| 60 | **Assertion (A):** DNA polymerase catalyzes transcription in eukaryotic cells.<br><br>**Justification (B):** Transcription involves the formation of RNA from a DNA template.<br><br>In the light of above statements, choose the correct answer from the options given below: | | | | Answer |
| | a) Both A and B are true, and B is the correct justification of A | b) Both A and B are true, but B is not the correct justification of A. | c) A is true, but B is false. | d) A is false, but B is true. | **d** |
| 61 | Which organelle is directly involved in β-oxidation of fatty acids in animal cells? | | | | Answer |
| | a) Mitochondria | b) Lysosomes | c) Golgi bodies | d) Peroxisomes | **A** |
| 62 | Phospholipids in membranes often undergo: | | | | Answer |
| | a) Passive diffusion | b) Flip-flop movement with flippases | c) Rotational diffusion only | d) Glycosylation | **b** |
| 63 | Which histone modification is associated with active transcription? | | | | Answer |
| | a) Methylation of H5K9 | b) Acetylation of H3 | c) Deacetylation of H4 | d) Phosphorylation of H2A | **b** |
| 64 | **Assertion (A):** The 9+2 arrangement of microtubules is characteristic of eukaryotic cilia and flagella.<br><br>**Justification (B):** Dynein arms are responsible for the bending movement of cilia and flagella.<br><br>In the light of above statements, choose the correct answer from the options given below: | | | | Answer |
| | a) Both A and B are true, and B is the correct justification of A | b) Both A and B are true, but B is not the correct justification of A. | c) A is true, but B is false. | d) A is false, but B is true. | **b** |
| 65 | Which of the following sequences ensures protein retention in the ER? | | | | Answer |
| | a) TATA | b) KDEL | c) NLS | d) PTS1 | **b** |

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| 66 | Identify the true statement (s) regarding mitochondria:<br><br>A.Mitochondrial DNA is inherited from both parents.<br>B. Glycolysis occurs in the mitochondria.<br>C. All cells does not contain the same number of mitochondria.<br>D. Prokaryotic cells possess membrane-bound organelles like mitochondria. | | | | Answer |
| | A and B | b) C | c) A | d) C and D | **c** |
| 67 | The resting membrane potential is primarily maintained by: | | | | Answer |
| | a) $Na^+/K^+$ ATPase | b) $Ca^{2+}$ channels | c ) Proton pumps | d) Endocytosis | **a** |
| 68 | Assertion (A): Juvenile hormones cross the membrane barriers and regulate gene expression directly.<br><br>Justification (B) : They can cross the plasma membrane as juvenile hormones are sterol.<br><br>In the light of above statements, choose the correct answer from the options given below: | | | | Answer |
| | a) A is correct but B is not correct justification | b) Both A and B are correct | c) A is wrong but B is correct | d) Both are wrong | (d) |
| 69 | Type Questions here for matching pairs:<br><br>*Apis cerana* — i. Open nester<br>*Apis florea* — ii. Cavity nester<br>*Bombyx mori* — iii. Lauraceae<br>*Antheraea assamensis* — iv. Moraceae | | | | Answer |
| | a) A-i, B-ii, C-iii, D-iv | b) A-ii, B-i, C-iv,D-iii | c) A-iii, B-iv, C-i,D-ii | d) A-iv, B-iii, C-ii,D-i | (b) |
| 70 | Light production in fireflies does not need: | | | | Answer |
| | a)Luciferin | b) Luciferase | c)Lac | d)Oxygen | (c) |
| 71 | The insect eggs show: | | | | Answer |
| | a) Holoblastic cleavage | b) Radial cleavage | c) Syncytial cleavage | d) Spiral cleavage | (c) |
| 72 | The number of legs of an spiders is | | | | Answer |
| | a) two | b) four | c) six | d) eight | (d) |
| 73 | Which of the following is not a characteristic of honeybee? | | | | Answer |
| | a) Three sub-marginal cells on the forewing | b) Middle submarginal cell like beak of a bird | c) Male has barbed stingers | d) All females are diploid | (c) |

<table>
<tr><td>74</td><td>Type Questions here for matching pairs:<br><br><table><tr><td>A. Acetylcholine</td><td>i. Neurotransmitter</td></tr><tr><td>B. Acetylcholinesterase</td><td>ii. Hormone</td></tr><tr><td>C.Insulin</td><td>iii. Enzyme</td></tr><tr><td>D. Sericin</td><td>iv. Peptide</td></tr></table></td><td>Answer</td></tr>
<tr><td></td><td>a) A-i, B-ii, C-iii, D-iv</td><td>b) A-ii, B-i, C-iii, D-iv</td><td>c) A-i, B-iii, C-ii, D-iv</td><td>d) A-i, B-iv C-iii, D-ii</td><td>(c)</td></tr>
<tr><td>75</td><td colspan="4">Find out the false statement:</td><td>Answer</td></tr>
<tr><td></td><td>a) Male honeybees are always haploid</td><td>b) Males can also be diploid but diploid males are cannibalized</td><td>c) Males may be diploid if they are homozygous for CSD gene</td><td>d) Haploid male is an evolutionary mechanism for gene filtration</td><td>(a)</td></tr>
<tr><td>76</td><td colspan="4">Leptocorisa oratorius is a pest of:</td><td>Answer</td></tr>
<tr><td></td><td>a) Maize</td><td>b) Pea</td><td>c) Rice</td><td>d)Stored grains</td><td>(c)</td></tr>
<tr><td>77</td><td colspan="4">Corbiculate leg of honeybees is present on:</td><td>Answer</td></tr>
<tr><td></td><td>a)Coxa of foreleg</td><td>b)Basitarsus of the foreleg</td><td>c)Femur of hind leg</td><td>d) Tibia of the hindleg</td><td>(d)</td></tr>
<tr><td>78</td><td colspan="4">Which of the following is NOT a function of the smooth endoplasmic reticulum?</td><td>Answer</td></tr>
<tr><td></td><td>a)Lipid synthesis</td><td>b)Detoxification</td><td>c)Protein modification</td><td>d)Calcium storage</td><td>Answer c) Protein modification</td></tr>
<tr><td>79</td><td colspan="4">Which of the following statement is/are false?<br><br>A. Primary productivity is always higher in deserts than in tropical forests.<br>B. Bioaccumulation refers to the build-up of toxins in an organism over time.<br>C. Commensalism is a type of positive interaction<br>D. Ozone depletion is mainly caused by CFCs.</td><td>Answer</td></tr>
<tr><td></td><td>a) A and B</td><td>b) A only</td><td>c) A and C</td><td>d) A and D</td><td>b) A only</td></tr>
<tr><td>80</td><td colspan="4">Which part of the brain regulates temperature?</td><td>Answer</td></tr>
<tr><td></td><td>a) Medulla</td><td>b) Cerebrum</td><td>c) Hypothalamus</td><td>d) Cerebellum</td><td>Answer: c</td></tr>
<tr><td>81</td><td colspan="4">Which of the following statement is/are false?<br><br>A. Parthenogenesis is a type of asexual reproduction.<br>B. Primary succession occurs on newly exposed surfaces.<br>C. RNA polymerase synthesizes DNA.<br>D. Blood pressure is higher in veins than arteries.</td><td>Answer</td></tr>
</table>

| | | | | | |
|---|---|---|---|---|---|
| | a) A and B | b) A and C | c) C and D | d) B and D | c) C and D |
| 82 * | Match the following pairs<br><br>A. Ecology — i. Abiotic and biotic interaction<br>B. Neuron — ii. Photosynthesis<br>C. Chloroplast — iii. Impulse conduction<br>D. Ribosome — iv. Protein synthesis | | | | Answer |
| | a)A-i, B-iii, C-ii, D-iv | b)A-ii, B-i, C-iv, D-iii | c)A-i, B-iii, C-ii, D-iv | d)A-iii, B-i, C-ii, D-iv | a)A-i, B-iii, C-ii, D-iv |
| 83 | Which organelle is known as the "powerhouse of the cell"? | | | | Answer |
| | a) Ribosome | b)Endoplasmic reticulum | c)Mitochondria | d) Golgi apparatus | c)Mitochondria |
| 84 | Which of the following statement is/are false?<br><br>A. DNA replication occurs in G1 phase.<br>B. Sensory neurons carry signals to the CNS.<br>C. Coral bleaching is due to increased temperature.<br>D. Platelets help in clotting. | | | | Answer |
| | a) A and D | b) A and C | c) A only | d) C only | c) A only |
| 85 | Match the following pairs<br>A. Kidney — i. Respiration<br>B. Heart — ii. Circulation<br>C. Lungs — iii. Excretion<br>D. Liver — iv. Detoxification | | | | Answer |
| | a) A-iii, B-ii, C-i, D-iv | b) A-ii, B-i, C-iv, D-iii | c) A-iv, B-iii, C-ii, D-i | d)A-iii, B-iv, C-i, D-ii | a) A-iii, B-ii, C-i, D-iv |
| 86 | Which of the following statement is/are true?<br><br>A. Pulmonary vein carries oxygenated blood.<br>B. Antibodies are produced by T-cells.<br>C. Diaphragm is involved in breathing.<br>D. Enzymes are proteins. | | | | Answer |
| | a) T, F, T, T | b) T, T, F, F | c) F, F, T, T | d) F, T, F, F | A |
| 87 | Which biome is characterized by permafrost? | | | | Answer |
| | a) Desert | b) Tropical rainforest | c) Tundra | d) Grassland | c) Tundra |
| 88 | Which of the following is not true about nucleotides? | | | | Enzymatic molecules |
| | a) Energy rich molecules | b) Monomeric units | c) Ubiquitous substances | d) Enzymatic molecules | d |
| 89 | Which of the following factors do not provide to the separation of DNA fragments during electrophoresis? | | | | Ethidium bromide |

| | | | | | |
|---|---|---|---|---|---|
| | a) Size | b) Matrix density | c) Chargaff's rule | d) Ethidium bromide | d |
| 90 | Identify the correct combination:<br><br>A. Lysosome – i. Cyt C<br>B. Mitochondria – ii. Autophagy<br>C. Golgi Complex – iii. Translation<br>D. Endoplasmic Reticulum – iv. Protein shorting | | | | A-ii, B-i, C-iv, D-iii |
| | a) A-ii, B-i, C-iv, D-iii | b) A-iii, B-i, C-iv, D-ii | c) A-i, B-iii, C-iv, D-iv | d) A-iv, B-i, C-ii, D-iii | a |
| 91 | Which of the following does not contribute to the stability of tRNA? | | | | Hydrophobic interactions |
| | a) Hydrogen bonding | b)Hydrophobic interactions | c)Base and sugar-phosphate backbone interaction | d) Base pairing | b |
| 92 | Which of the following is a termination codon? | | | | UGA |
| | a) UGA | b) AGA | c) AGG | d) UUU | a |
| 93 | The wobble hypothesis was devised by: | | | | Francis Crick |
| | a) Arthur Kornberg | b) Francis Crick | c) James Watson | d) William Asbury | b |
| 94 | The coding sequences found in split genes are called: | | | | Exons |
| | a) Operons | b) introns | c) exons | d) cistrons | c |
| 95 | Which of the following function of DNA is necessary for the purpose of evolution? | | | | Mutation |
| | a) Mutation | b) Replication | c) Translation | d) Transcription | a |
| 96 | RNA viruses are known for their high mutation rates primarily due to: | | | | Lack of proofreading mechanisms |
| | a) DNA proofreading mechanisms | b) High fidelity of RNA polymerase | c) Lack of RNA polymerase | d) Lack of proofreading mechanisms | d |
| 97 | Which of the following is not a feature of the genetic code? | | | | Ambiguous |
| | a) Triplet | b) Degenerate | c) Non – overlapping | d) Ambiguous | d |
| 98 | Which of the following parts of the mRNA determines the specificity of the amino acid attached? | | | | Acceptor stem |
| | a) Acceptor stem | b) D loop | c) ΨU loop | d) Variable loop | a |
| 99 | DNA helicase travels along: | | | | Lagging strand template in 5'→3' direction |
| | a) Leading strand | b) Leading strand template | c) Lagging strand template | d) Lagging strand template in 5'→3' | d |

| | | | | | |
|---|---|---|---|---|---|
| | template in 3'→5' direction | in 5'→3' direction | in 3'→5' direction | direction | |
| 100 | Shine – Dalgarno sequence is also known as the _____. | | | | Ribosome binding site |
| | a) Open reading frame | b) Ribosome binding site | c) Stop codon | d) Start codon | b |

* Q 82 - Forwarded for Grievance Committee Decision