

Sikkim Public Service Commission

Written Examination for the post of Lecturer (Science), DIETs

Time Allowed: 3.00 hours

PAPER – 2
SCIENCE
(BIOLOGY)

Maximum Marks: 100

INSTRUCTIONS TO CANDIDATES

Read the instructions carefully before answering the questions: -

1. **IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES NOT HAVE ANY UNPRINTED, TORN OR MISSING PAGES OR ITEMS. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.**
2. **Use only Black Ball Point Pen to fill the OMR Sheet.**
3. Please note that it is the candidate's responsibility to fill in the Roll Number carefully without any omission or discrepancy at the appropriate places in the **OMR ANSWER SHEET** as well as on **SEPARATE ANSWER BOOKLET** for Conventional Type Questions. Any omission/discrepancy will render the Answer Sheet liable for rejection.
4. Do not write anything else on the OMR Answer Sheet except the required information.
5. This Test Booklet is divided into two sections – **Section A** and **Section B**.
6. **Section A is Methodology and carries 60 marks whereas Section B is Content and carries 40 marks.**
7. Both Sections are **Compulsory**.
8. The objective type questions for Section A and Section B have to be marked in two **separate** OMR Sheets.
9. The conventional type questions for Section A and Section B have to be answered in two **separate** Answer Booklets.
10. Before you proceed to mark in the OMR Answer Sheet, you have to fill in some particulars as per given instructions.
11. After you have completed filling in all your responses on the OMR Answer Sheet and the examination has concluded, you should hand over the OMR Answer Sheets and the Answer Booklets to the Invigilator only. You are permitted to take with you the Test Booklet.
12. **Marking Scheme**
THERE WILL BE **NEGATIVE MARKING** FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTIONS
 - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to the question will be deducted as penalty.
 - (ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to the question.
 - (iii) If a question is left blank. i.e., no answer is given by the candidate, there will be no penalty for that question.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

SECTION A

(Multiple Choice Questions)

*Answer Questions 1 to 20 by choosing the correct option. Each question carries 1 mark.
[20 x 1 = 20]*

1. "Science is an attempt to make the chaotic diversity of our sense experience correspond to logically uniform system of thought". Who gave this definition of Science?
 - (a) Conant
 - (b) Einstein
 - (c) Griggs
 - (d) Karl Popper
2. In which year did Science get a place as a subject in the secondary classes of the University?
 - (a) 1840
 - (b) 1855
 - (c) 1862
 - (d) 1825
3. Which language has the word "Science" originated from?
 - (a) Latin
 - (b) Greek
 - (c) Arabic
 - (d) Persian
4. Which fundamental fact has an importance in the knowledge of science?
 - (a) Direct and Indirect observation
 - (b) Scientific investigation
 - (c) Conclusions from the proofs
 - (d) All of these
5. Which is directly related to the course content?
 - (a) Disciplinary Approach
 - (b) Interdisciplinary Approach
 - (c) Integrated Approach
 - (d) System Approach
6. Which is a process skill in science?
 - (a) Knowledge
 - (b) Observation
 - (c) Reinforcement
 - (d) Demonstration

7. Which one is not a type of Concept map?
 - (a) Spider like map
 - (b) Hierarchical map
 - (c) Topographical map
 - (d) Flow chart
8. The propounder of program instruction method is:
 - (a) Thorndike
 - (b) B. F. Skinner
 - (c) E. Z. Rainkapt
 - (d) T. F. Gilbert
9. Which method gives training of scientific method to students?
 - (a) Lecture Method
 - (b) Demonstration Method
 - (c) Laboratory Method
 - (d) Historical Method
10. Which of the following is not a method of teaching science?
 - (a) Project method
 - (b) Problem solving method
 - (c) Lecture method
 - (d) Evaluation method
11. The other name of Action Research is:
 - (a) Experimental project
 - (b) Historical research
 - (c) Descriptive research
 - (d) Experimental research
12. Heuristic method was propagated by:
 - (a) W. H. Kilpatrik
 - (b) H. E. Armstrong
 - (c) Carter Good
 - (d) B. F. Skinner
13. Which of the following is a teacher-centered method?
 - (a) Heuristic method
 - (b) Project method
 - (c) Demonstration method
 - (d) Discussion method

14. Which one is not a criterion for evaluation of textbook?

- (a) Mechanical aspect
- (b) Presentation
- (c) Author
- (d) Publisher

15. Following is an example of a Visual aid?

- (a) Radio
- (b) Tape recorder
- (c) Model
- (d) Television

16. Which of the following is not an objective of teaching science?

- (a) Cognitive
- (b) Affective
- (c) Psychomotor
- (d) Social

17. On what basis, can prediction be done in relation to future achievements of the students?

- (a) Observation
- (b) Test
- (c) Knowledge
- (d) Evaluation

18. The process to identify the area of weakness of science students is called:

- (a) Written work
- (b) Oral work
- (c) Diagnosis
- (d) Remedial action

19. Which assessment method is used in the primary classes?

- (a) Check list
- (b) Observation
- (c) Cumulative record
- (d) Rating scale

20. Who proposed the evaluation process as triangular form?

- (a) B. S. Bloom
- (b) E. V. Wesley
- (c) M. P. Moffat
- (d) Michallis

(Short Answer Type Questions)

Attempt any 4 (four) from Questions 21 to 26. Each question carries 5 marks.

[4 x 5 = 20]

- 21. Define the concept of Science.
- 22. How will you develop values in a science student?
- 23. Explain the objective of teaching science at the secondary level.
- 24. Clarify the differences between Unit plan and Period plan.
- 25. What do you understand by concept mapping?
- 26. Write a short note on formative assessment.

(Long Answer Type Questions)

Attempt any 2 (two) from Questions 27 to 29. Each question carries 10 marks.

[2 x 10 = 20]

- 27. "Development of Scientific Attitude is the most important aim of teaching science in our schools." – Comment upon it and discuss different techniques through which this aim can be achieved?
- 28. What is the importance of continuous and comprehensive evaluation in the teaching learning field?
- 29. "In the present conditions the lecture-cum demonstration method is the only method that suits best for the teaching of Science in our schools." – Critically comment on the statement and discuss the process and applications of this method.

SECTION B

(Multiple Choice Questions)

*Answer Questions 1 to 10 by choosing the correct option. Each question carries 1 mark.
[10 x 1 = 10]*

- Name the non-membrane bound organelle exclusively found only in animal cell:
 - Sphaerosome
 - Glyoxisome
 - Centriole
 - Peroxisome
- Component of Plant Cell absent in Animal cells is:
 - Cytoplasm
 - Cell membrane
 - Cell wall
 - Nucleus
- In Angiosperms, Xylem is made up of:
 - Tracheid and Fibres
 - Tracheid and vessels
 - Vessels and Fibres
 - All of the above
- Epithelial tissues are characterized on the basis of:
 - Function
 - Type of matrix
 - Structural modification
 - Non voluntary or voluntary action
- Geocarpic fruits are formed in:
 - Onion
 - Carrot
 - Groundnut
 - Watermelon
- Recycling of the nutrients will be blocked in the absence of:
 - Producers
 - Consumers
 - Decomposers
 - None of the above
- Enzymes involved in respiration in plants are activated by which mineral?
 - Sulphur and Iron
 - Potassium and Calcium
 - Nitrogen and Phosphorus
 - Magnesium and Manganese
- Homozygosity and heterozygosity of an individual can be determined by:
 - Back cross
 - Self-fertilization
 - Test Cross
 - All of the above
- Control of Gene expression takes place at the level of:
 - DNA-Replication
 - Transcription
 - Translation
 - None of the above
- Which of the following microbes is used for commercial production of Citric Acid?
 - Xanthomonas citri
 - Asparagine
 - Asparagus
 - Aspergillus

(Short Answer Type Questions)

Space for rough work

Attempt all questions from 11 to 14. Each question carries 5 marks.

[4 x 5 = 20]

11. (a) Differentiate between Eukaryotic and Prokaryotic Cells. *[5]*
OR
(b) Describe the S-Phase of Cell cycle. *[5]*
12. (a) What is intercalary meristem? How does it differ from lateral meristem? *[5]*
OR
(b) Discuss the factors affecting Photosynthesis. *[5]*
13. (a) Describe in - situ and ex- situ conservation. *[5]*
OR
(b) Write a note on Hotspots of Biodiversity. *[5]*
14. (a) Discuss Neo-Darwinism. *[5]*
OR
(b) What are Transgenic animals? Discuss the ethical issues associated with them. *[5]*

Long Answer Type Questions

Attempt any 1 (one) from Question no. 15 to 16. Each question carries 10 marks.

[1 x 10 = 10]

15. A colour-blind father has a daughter with normal vision. The daughter marries a man with normal vision. What is the probability of her children to be colour-blind? Explain with Pedigree chart.
16. Explain in detail the Transport and Mineral nutrition in Plants.

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Space for rough work

Space for rough work