

**PUMDET-2019**  
**Subject : LIFE SCIENCES**

(Booklet Number)

Full Marks : 100

Duration : 90 Minutes

**INSTRUCTIONS**

1. All questions are of objective type having four answer options for each. Only one option is correct. Correct answer will carry full marks 2. In case of incorrect answer or any combination of more than one answer,  $\frac{1}{2}$  mark will be deducted.
2. Questions must be answered on OMR sheet by darkening the appropriate bubble marked A, B, C or D.
3. Use only **Black/Blue ball point pen** to mark the answer by complete filling up of the respective bubbles.
4. Mark the answers only in the space provided. Do not make any stray mark on the OMR.
5. Write question booklet number and your roll number carefully in the specified locations of the OMR. Also fill appropriate bubbles.
6. Write your name (in block letter), name of the examination centre and put your full signature in appropriate boxes in the OMR.
7. The OMR is liable to become invalid if there is any mistake in filling the correct bubbles for question booklet number/roll number or if there is any discrepancy in the name/signature of the candidate, name of the examination centre. The OMR may also become invalid due to folding or putting stray marks on it or any damage to it. The consequence of such invalidation due to incorrect marking or careless handling by the candidate will be sole responsibility of candidate.
8. Candidates are not allowed to carry any written or printed material, calculator, pen, docu-pen, log table, wristwatch, any communication device like mobile phones etc. inside the examination hall. Any candidate found with such items will be **reported against** and his/her candidature will be summarily cancelled.
9. Rough work must be done on the question paper itself. Additional blank pages are given in the question paper for rough work.
10. Hand over the OMR to the invigilator before leaving the Examination Hall.

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1. Bacillariophyceae is a class to include
- (A) Unicellular marine fungi
  - (B) Unicellular bryophyta
  - (C) Unicellular algae with characteristic frustule
  - (D) Filamentous bacteria
2. The term 'Biocoenosis' means
- (A) an ecosystem
  - (B) a biome
  - (C) a community
  - (D) an association of plants and animals forming a closely integrated community
3. Leptosporangium is a
- (A) spore bearing structure in Filicales that develop from a single initial
  - (B) spore bearing structure in Chlorophyceae
  - (C) spore bearing structure in Filicales that develops from multiple number of initials
  - (D) spore bearing structure in Fungi

7. Substrate level phosphorylation and photophosphorylation are concerned with
- (A) respiration
  - (B) photosynthesis
  - (C) respiration and photosynthesis respectively
  - (D) photosynthesis and respiration respectively
8. Which one of the following statements is correct ?
- (A) Radial loop model is a common model of organisation of a metaphase chromosome that involves a histone core (scaffold).
  - (B) Radial loop model is a common model of organisation of cell membrane.
  - (C) Radial loop model is a common model of organisation of ribosome in a eukaryotic cell.
  - (D) Radial loop model is a common model of organisation of a metaphase chromosome that involves a non-histone core (scaffold).
9. Lectins, in particular from plants, are
- (A) proteins of non-immune origin that are able to hydrolyse carbohydrates with high specificity
  - (B) proteins of non-immune origin that are able to bind carbohydrate with high specificity
  - (C) a carbohydrate derived from lactose
  - (D) proteins of immune origin that are able to bind fatty acids

13. Biomagnification refers to

- (A) accumulation of toxicants at high level in organisms
- (B) conversion of non-toxic compounds to toxic form in an organism
- (C) enrichment of nutrients in aquatic ecosystem
- (D) enrichment of toxicants through successive trophic level

14. The process of successful establishment of the species in a new area is called

- (A) Sere
- (B) Climax
- (C) Invasion
- (D) Ecesis

15. K-selected animals are characterized by

- (A) larger bodies, smaller clutches and longer life span
- (B) larger bodies, larger clutches and longer life span
- (C) smaller bodies, smaller clutches and shorter life span
- (D) smaller bodies, smaller clutches and longer life span

16. Which one of the following ecosystems has the lowest net primary productivity per square metre ?

- (A) A grassland
- (B) An open ocean
- (C) A salt marsh
- (D) A coral reef

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21. The Indian Salamander belongs to which one of the following genus ?

- (A) *Siren* (B) *Trylotriton*  
 (C) *Ambystoma* (D) *Necturus*

22. Which of the following options show the correct sequence of stages in a cell cycle ?

- (A) S-G<sub>1</sub>-G<sub>2</sub>-M (B) S-M-G<sub>1</sub>-G<sub>2</sub>  
 (C) G<sub>1</sub>-S-G<sub>2</sub>-M (D) M-G<sub>1</sub>-G<sub>2</sub>-S

23. Match Column – A with Column – B :

Column-A	Column-B
a. Monoplacophora	1. <i>Limax</i>
b. Polyplacophora	2. <i>Chiton</i>
c. Gastropoda	3. <i>Nautilus</i>
d. Cephalopoda	4. <i>Neopilina</i>

- (A) a-4, b-2, c-1, d-3 (B) a-4, b-1, c-2, d-3  
 (C) a-3, b-2, c-1, d-4 (D) a-2, b-3, c-4, d-1

24. *Vibrio fischeri* exhibits bioluminescence only when a certain population has been reached.

This is an example of

- (A) Shelford's law of tolerance (B) Quorum sensing  
 (C) Liebig's law of tolerance (D) Heisenberg's principle of uncertainty

30. Which of the following does **not** happen during binary fission in bacteria ?

(A) Cell elongation

(B) DNA duplication

(C) Spindle formation

(D) Cytokinesis

31. Quantitative measure of pathogenicity refers to

(A) virulent factor

(B) infectious particle titre

(C) disease measurement

(D) virulence

32. The melting temperature of double stranded DNA increases with increasing content of

(A) T+C

(C) A+G

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(D) C+G

33. Which one of the following is **not** correctly paired ?

(A) Proteins – peptide bond

(B) Nucleic acid – hydrogen bond

(C) Phospholipid – phosphate linkage

(D) Polysaccharide – glycosidic bond

34. The type of RNA that participates in processing of RNA is

(A) rRNA

(B) tRNA

(C) snRNA

(D) siRNA

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40. Cholesterol is **not** a precursor of which of the following ?

- (A) Vitamin-D (B) Bile salt  
(C) Bile pigment (D) Sex hormones

41. The defect in lipid metabolism that results in the genetic disorder familial hypercholesterolemia is due to

- (A) impairment in uptake of cholesterol by tissues  
(B) transport of cholesterol from extra hepatic tissue to the liver  
(C) impairment of cholesterol degradation pathway  
(D) impairment of HDL metabolism due to deficiency of Apo A

42. Which gene on the Y chromosome is essential to initiate the male developmental cascade ?

- (A) MIF (B) SRY  
(C) ANP (D) HBA

43. Which one is the principal buffer in plasma and other extracellular fluids ?

- (A) Hemoglobin buffer (B) Phosphate buffer  
(C) Bicarbonate buffer (D) Acetate buffer

48. Human Immunoglobulin A (IgA) can be described by which of the following statements ?

- (A) It has the shortest half life of the five classes of Immunoglobulin.
- (B) It exists in four subclasses, of which IgA<sub>2</sub> is predominant.
- (C) It can prevent attachment of micro-organisms to epithelial cell membranes.
- (D) It is the predominant immunoglobulin in plasma.

49. Which of the following glucose transporter is stimulated by insulin for glucose uptake in adipose tissues and striated muscle ?

- (A) GLUT1
- (B) GLUT1 and GLUT2
- (C) GLUT3
- (D) GLUT4

50. Which one of the following statements concerning leucocyte is **incorrect** ?

- (A) Monocytes are transformed into macrophages.
- (B) T-lymphocytes are transformed into plasma cells that secrete anti-bodies.
- (C) Neutrophils are highly mobile phagocytes.
- (D) Lymphocytes arise in large part from lymphoid tissues.