

AIPMT – 2014

(SET – R)

21. Which one of the following are analogous structures?

- (1) Flippers of Dolphin and Legs of Horse
- (2) Wings of Bat and Wings of Pigeon
- (3) Gills of Prawn and Lungs of Man
- (4) Thorns of *Bougainvillea* and Tendrils of *Cucurbita*

Hint: **Both (2) and (3) are correct.**

Evolution by PK Gupta and Evolution by Ridley – Wings of insects, reptiles, birds and bats are believed to have developed independently and are analogous since they perform same function.

As for Gills of Prawn and Lungs of Man, they are structurally different and functionally serve the same function, and further are modifications which were necessary for survival thus are analogous.

The CBSE has given (3) as the answer

26. Which of the following shows coiled RNA strand and capsomeres?

- (1) Retrovirus
- (2) Poliovirus
- (3) Tobacco mosaic virus
- (4) Measles virus

Hint: TMV and Measles virus both have coiled RNA strand and capsomeres. **Thus options (3) and (4) are both correct.**

Ref-

Ananthanarayan TB of Microbiology and Harrison's Principles of Internal Medicine.

The CBSE has given (3) as the answer

27. Which one of the following is wrongly matched?

- (1) Operon – Structural genes, operator and promoter
- (2) Transcription – Writing information from DNA to tRNA
- (3) Translation – Using information in mRNA to make protein
- (4) Repressor protein – Binds to operator to stop enzyme synthesis

Hint: Biology by Campbell and Reece –

Transcription is the general term for synthesis of any kind of RNA on a DNA template.

NCERT TB Class XII itself on pg 109, 110 and 111 mentions.

- There is a single DNA-dependent RNA polymerase that catalyses transcription of all types of RNA in bacteria.
- The RNA polymerase I transcribes rRNAs and the RNA polymerase III is responsible for transcription of tRNA, 5 srRNA and sn RNA

Thus, none of the given options is wrongly matched.

The CBSE has given (2) as the answer

29. Five kingdom system of classification suggested by R.H. Whittaker is not based on:

- (1) Complexity of body organisation
- (2) Presence or absence of a well-defined nucleus
- (3) Mode of reproduction
- (4) Mode of nutrition

Hint: According to NCERT TB Class XI – pg 17; the table 2.1 gives a list of characters used to describe the five kingdoms and the theory following the table also mentions the criteria for classification used by Whittaker.

From these, it is clear that all the given options were used as criteria by Whittaker for the five kingdom classification. **Thus none of the given options is correct.**

The CBSE has given (3) as the answer

63. During which phase(s) of cell cycle, amount of DNA in a cell remains at 4C level if the initial amount is denoted as 2C?

- (1) G₂ and M
- (2) G₀ and G₁
- (3) G₁ and S
- (4) Only G₂

Ans. **The correct ans should be (4)**

Hint: The key word in this question is "Remains at 4C level". In the M phase the DNA content is 4C in the beginning but is reduced to 2C during the M phase itself. Thus "Only G₂" is the correct answer.

Ref- Cell and Molecular Biology by De Robertis .

The CBSE has given (1) as the answer

65. Dr. F. Went noted that if coleoptile tips were removed and placed on agar for one hour, the agar would produce a bending when placed on one side of freshly-cut coleoptile stumps. Of what significance is this experiment?

- (1) It demonstrated polar movement of auxins.
- (2) It made possible the isolation and exact identification of auxin.
- (3) It is the basis for quantitative determination of small amounts of growth-promoting substances.
- (4) It supports the hypothesis that IAA is auxin.

Ans. The correct ans should be (2)

Hint: Ref- Plant Physiology by Devlin;

Plant physiology by Dr HN Srivastava.

Dr. F Went did experiments on coleoptiles of oat through which in 1928 he first isolated and identified a Growth Promoting substance and named it Auxin. Later his experiments further formed the basis of measuring the Auxin activity – Avena coleoptile test. Since in the Experiment mentioned in the Question all the coleoptile tips were kept on the agar blocks for only one hour and further it has not been mentioned that “ the degree of bending was proportional to the concentration of the growth substance in the block”thus this experiment points towards the one after which Auxin was isolated and identified, not the experiment which indicates the quantitative determination of Auxin.

The CBSE has given (3) as the answer

