8. Biology (202)

Specification grid 2078

Grade: 12 **Subject: Biology Theory (Bio. 202)**

SN	Content Area	Working hour	Competency level														Unit wise Marks	Group wise score
			Remembering				Understanding						Applying				Higher Ability							
			MCQ		SAQ		MCQ		SAQ		LAQ		MCQ		SAQ		LAQ		MCQ		SAQ		LAQ	
			No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks	No. of Questions	Marks		
1	Plant Anatomy	8	4	4	2	8	3	3	2	8	1	8	2	2	3	12	1	8	2	2	1	4	2	16	5	37
2	Plant Physiology	20																							11	
3	Embryology	8																							5	
4	Genetics	21																							12	
5	Biotechnology	7																							4	
6	Applied Biology	16																							9	38
7	Animal tissue	8																							5	
8	Developmental Biology	6																							4	
9	Human biology	28																							16	
10	Human Population and Health Disorders	6																							4	
Total Marks			**12**				**19**						**22**						**22**						**75**	**75**

Item format plan

S.N.	Type of item	Score per item	Total item	Total score	Time
1	Multiple Choice Questions	1	11	11	25 minutes
2	Short Question Answer	4	8	32	155 minutes
3	Long Question Answer	8	4	32	
	Grand Total		**23**	**75**	**3 hours**

Remarks:

- Item format in composite should be met as per the specification grid.
- Designated weightage in the combined cell should be met, but ±3 marks variation will be allowed within a unit/content area. But no unit can be nil.
- In the case of SAQ and LAQ, these should ensure that 1 mark will be assigned per element expected as correct response.
- The distribution of cognitive domain of questions should be nearly 15% knowledge/remembering, 25% understanding, 30% applying and 30% higher ability level, but ±5 percent variation will be allowed in overall question set.
- SAQ and LAQ can be structured (have two or more sub-items). SAQ and LAQ can be distributed to two or more cognitive behaviors.
- In such case these will be added to their respective cognitive behavior. In sum the distribution of cognitive behavior should be approximately to the required distribution.
- Each group will consist of 4 SAQs questions with one "OR" question and 2 LAQs with one "OR" question. Botany portion will consist of 5 MCAQs and zoology portion consists of 6 MCAQs.

Model Question – 2078

Grade: XII **Subject: Biology** **F.M.: 75**

Attempt all questions.

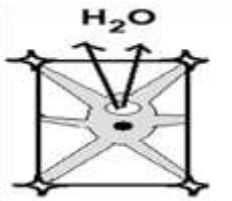
Part: I [Botany]

Group: A

Circle the correct answer from the given alternatives. (5 ×1 = 5)

1. There are many types of chromosomal disorders in organisms, among them euploidy is very common in the population. Which one of the following conditions is true for euploidy?
   a. Addition or deletion of one or more chromosome in diploid chromosome
   b. Addition of one or more chromosome in diploid chromosome
   c. Deletion of one or more chromosome in diploid chromosome
   d. Addition or deletion of one set or more than one set of chromosomes in diploid chromosome
2. The formation of two male gametes is a peculiar feature in angiosperm. If the first male gamete is fused to oosphere, in which part does the second male gamete fuse?
   a. Synergids b. Egg cell c. Polar nuclei d. Antipodal cell
3. The given vascular bundle is highly specialised by centripetal protoxylem. What is it called?
   a. Exarch b. Endarch c. Mesarch d. Centrach

4. Which of the following plants is used as bio fertilizer?
   a. *Volvox* b. *Funaria* c. *Azolla* d. *Rhizopus*
5. When a plant cell is placed in hypertonic solution, it gets plasmolysed as shown in the diagram. Which of the following occupies the space between the cell wall and the shrunken protoplast in such plasmolysed cell?
   a. Water b. Hypertonic solution
   c. Isotonic solution d. Hypotonic solution



Group –B Botany

Give short answers to the following questions. **[4× 4 =16]**

1. The anatomical structure of vascular plant is given. Study the given diagram and answer the following questions. (1+3=4)
   (a) Write the main characteristics of the given layer Y.
   (b) Draw the given diagram and label the tissues which is responsible for secondary growth. Elaborate the activities of this tissue up to the formation of cambial ring.

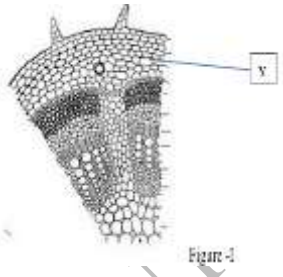


Figure-1

2. Write the salient features of a monocot embryo in reference to its development pattern with diagrams. (3+1=4)
3. "Micropropagation is an analytical and conventional bulk breeding technique for rapid cloning of desirable stock". Justify the statement by describing it briefly with the various stages of micropropagation technique in plants. (4)
4. What is genetic material? Describe the structure and functions of RNA. (1+2+1=4)

OR

What are plant growth hormones? Write the physiological functions of auxin. Mention its shortcoming of hyper use in crops.

Group –C Botany

Give long answers to the following questions. **[2 ×8=16]**

5. One of the Mendelian inheritances states that "The alleles of different traits can be segregated during gametogenesis and passed independently". State and explain the essential pattern of inheritance verifying the statement with examples showing cross up to second filial generation with chart and ratio. (1+ 3+2+2= 8)

OR

In *Drosophila*, an eye colour is X-linked. Explain. If white eye female *Drosophila* is crossed to red eye male *Drosophila*, what result do you expect? Analyse briefly with the help of crosses.

6. How are the Glycolysis and Krebs (TCA) cycle linked? Draw a detailed flow chart of the Krebs cycle? 4+ 4= 8

Part: II (Zoology)

Group –A

Circle the correct answer from the given alternatives. (6 ×1 = 6)

1. The parasympathetic nervous system releases a hormone acetylcholine. Which one of the following is activated by this hormone?
   a. Regulate the involuntary response
   b. Decrease the rate of heart beat
   c. Increase blood pressure
   d. Increase myocardial contractility
2. After the release of mature ovum from the ovary, the Graffian follicle changes into corpus luteum which is the source of female sex hormones. In the woman, what would be the condition of corpus luteum in absence of pregnancy?
   a. Secretes FSH and LH continuously
   b. Secretes oxytocin and relaxin
   c. Automatically degenerates after sometime
   d. Remains intact and active
3. Which of the following statement is more appropriate for early an amniocentesis test?
   a. It takes place between 15^{th} and 20^{th} weeks of pregnancy
   b. It may cause fetal injury and lethality
   c. It helps to detect fetal complications
   d. It may cause infertility
4. What are the main processes involved in gastrulation of a frog?
   a. Epiboly, involution, cleavage
   b. Epiboly, invagination, Involution
   c. Involution, epiboly, invagination
   d. Involution, invagination, cleavage
5. Blood cells are formed in the bone marrow. What is the process of formation of blood called?
   a. Haemopoiesis
   b. Haemolysis
   c. Lymphopoiesis
   d. Erythroblastosis
6. A person suddenly falls down and becomes unconscious. A doctor checked and said that it is due to inadequate blood supply to the brain. What would be the type of disorder?
   a. Asthma
   b. Syncope
   c. Heart attack
   d. Oedema

Group –B Zoology

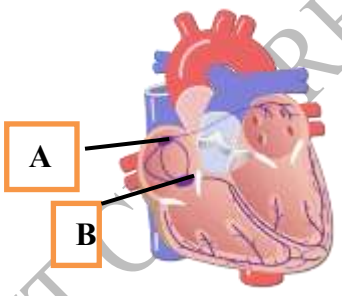
Give short answers to the following questions. **4× 4 =16**

1. Compare and contrast areolar tissue and adipose tissue. 2+2=4
2. Describe the process of fertilization of an egg with reference a frog. 4

OR

Describe the various steps applied in poultry farming. 4

3. Study the given diagram and answer the following questions. 1+3=4



(a) Label A and B.

(b) Write any three differences between A and B.

4. Overpopulation is a major issue in the development of the nation. Highlight the socio-economic problems caused by overpopulation and mention how to solve such problems. 2+2=4

Group –C

Give long answers to the following questions. **[2 × 8=16]**

5. Mention the causative agent, mode of transmission, symptoms and control measures of tuberculosis in the community. (1+2+3+ 2 =8)
6. Draw a labelled diagram of the alimentary canal of a human being. Explain the mechanism of the digestion of foods that a person under takes. What would happen in digestion when the pancreas is removed? (3+4+1)

OR

Draw a labelled drawing of respiratory system of a human being. Why and how oxygen and carbon dioxide are exchanged rapidly in the lungs? What would happen if a person moves to high altitude? Write your views on how to solve it. (2 +4+ 1+1 =8)

"Best of luck"

Puspa Shrestha

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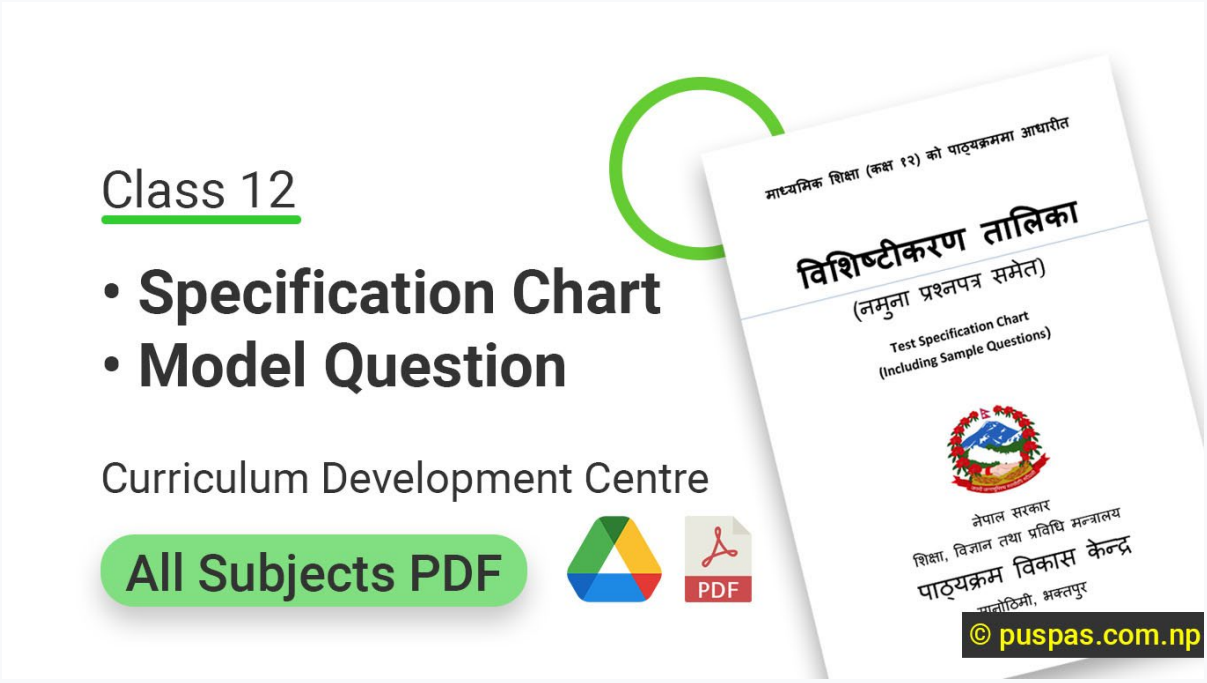
You can find complete pdf of specification chart and model questions on the following post.

Class 12 Model Question 2078 PDF (All Subjects) With Specification Grid

Dinesh Shrestha



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