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**63/2 (SEM-3) BOT 303**

**2021**

(held in 2022)

**BOTANY**

(Theory Paper)

Paper Code : BOT-303

**(Reproductive and Developmental Biology)**

Full Marks – 80

Time – Three hours

The figures in the margin indicate full marks  
for the questions.

1. Choose the correct answer : 1×6=6

(a) Bones of vertebrates are derived from  
embryonic \_\_\_\_\_.

(i) ectoderm

(ii) epiderm

(iii) mesoderm

(iv) endoderm

[Turn over

- (b) Gray crescent is present in
- (i) eye of frog
  - (ii) retina of frog
  - (iii) zygote of frog
  - (iv) brain of frog
- (c) A mature pollen grain contains
- (i) 2 tube cells and 2 generative cells
  - (ii) 2 tube cells and 1 generative cell
  - (iii) 1 tube cell and 1 generative cell
  - (iv) 1 tube cell and 2 generative cells
- (d) Lomentum is type of
- (i) dehiscent fruit
  - (ii) indehiscent fruit
  - (iii) schizocarpic fruit
  - (iv) succulent fruit
- (e) The endosperm of coconut is
- (i) both Nuclear and Cellular
  - (ii) both Nuclear and Helobial
  - (iii) both Cellular and Helobial
  - (iv) only Helobial

- (f) Suspensor is a tissue which connects between
- (i) nucellus and embryo
  - (ii) embryo and endosperm
  - (iii) nucellus and endosperm
  - (iv) embryo sac and pollen tube

2. Answer the following short questions :  $2 \times 5 = 10$

- (a) Write any two objectives of developmental biology.
- (b) What is cell commitment ?
- (c) Define cell fate. How cell fate is determined ?
- (d) What are germ layers ? Mention its names.
- (e) Define aeropalynology. State its significance.

3. Write any six explanatory notes on the following :  
 $5 \times 6 = 30$

- (a) Nuclear endosperm.
- (b) Double fertilization and its significance.

- (c) Structure of amphitropous ovule.
- (d) Anther culture.
- (e) Define aeropalynology. State its significance.
- (f) Stem cell application.
- (g) Process of megagametogenesis
- (h) Importance of pollen study.
- (i) Dicotyledonous seeds.

4. Answer any *two* of the following questions :

$10 \times 2 = 20$

- (a) What is Grey crescent? Explain grey crescent formation in an amphibian egg.

$1 + 6 + 3 = 10$

- (b) Distinguish true and false fruits. Discuss the different types of simple fruits found in angiosperm.

$2 + 8 = 10$

- (c) Differentiate between endosperm and perisperm. Describe the types of endosperm. Mention the functions of endosperm.

$2 + 6 + 2 = 10$

5. Answer any *one* of the following questions :

$14 \times 1 = 14$

- (a) What is embryo culture? Discuss elaborately on the types of embryo culture. Write applications of embryo culture.  $2 + 8 + 4 = 14$

- (b) Define potency. Elaborate the different types of potency citing appropriate examples. Add the importance of potency.  $2 + 8 + 4 = 14$