SECTION B

NAME: **ROLL NO:** **SIGNATURE:**

Answer any 9 questions in Section – B, and return it along with answer script. **[9 marks]**

1. Plant phenolics substances are potent inducers of
   (A) T-DNA border sequences (B) opine catabolism genes
   (C) **virulence genes** (D) opine biosynthesis genes

2. Following Vir protein protect the T-DNA from exonuclease activity in plant cells
   (A) VirD1 (B) **VirD2** (C) VirE2 (D) VirE1

3. Nuclear import of T-DNA complex is assisted by
   (A) **VirD2 and VirE2** (B) VirA and VirG (C) VirD4 and VirB11 (D) VirD1 and VirD2

4. Right border (RB) and left border (LB) sequences are almost identical, however, DNA transfer is still directional i.e., DNA left of the RB (the T-DNA) rather than for the DNA left for the LB because of
   (A) VirD2 cleaves T-DNA near RB (B) VirD1 relaxes the supercoiling near RB
   (C) **Presence of overdrive sequence near RB** (D) combined action of VirD1 and VirD2

5. Following enzyme converts mRNA into dsRNA form upon its accumulation beyond threshold level
   (A) RNA polymerase (B) RISC complex (C) Dicer protein (D) **RdRP**

6. Early translated viral protein is
   (A) coat protein (B) nuclear shuttle protein (C) **replicase** (D) movement protein

7. Movement protein is responsible for
   (A) **Systemic infection** (B) Nuclear shuttling (C) Virus assembly (D) Vector borne transfer

8. Most effective way for silencing a target endogenous gene is
   (A) Sense overexpression (B) **dsRNA expression** (C) Antisense expression (D) None

9. Chloroplast genes are expressed
   (A) **as operons** (B) as polycistonic mRNAs
   (C) by eukaryotic promoters (D) through transplicing of mRNAs

10. An antisense vector to downregulate an endogenous gene consists of
    (A) direct repeats of target gene sequence separated by a spacer sequence
    (B) target gene antisense sequence under control of a strong promoter
    (C) inverted repeat sequences separated by a spacer sequence
    (D) target gene sense sequence under control of a strong promoter

11. RNAi suppression of following viral proteins could confer host plant strong resistance to virus infection:
    (A) Coat protein (B) Replicase (C) Movement protein (D) **Host silencing suppressor**

12. The Bt toxin is made in
    (A) Bt cells (B) Bt spores (C) **Insect midgut** (D) Bt cell membrane

13. Dual binary vector system have
    (A) two T-DNA plasmids (B) one each T-DNA plasmid and a vir plasmid
    (C) two vir plasmids (D) **two T-DNA plasmids and a vir plasmid**

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Answer the multiple choice Questions, and return Section B along with answer script. **[15 marks]**

1. Cellular totipotency is demonstrated by
   (a) Only gymnosperm cells (b) All plant cells (c) All eukaryotic cells (d) Only bacterial cells

2. Which of the following best describes totipotency of a plant cell?
   A. Ability to divide and differentiate into a single cell type
   B. Ability to divide and differentiate to form an entire organism
   C. Ability to continuously divide without any cell cycle regulation
   D. Ability to divide and differentiate into a few specific cell types

3. Movement protein is responsible for
   (A) **Systemic infection** (B) Nuclear shuttling (C) Virus assembly (D) Vector borne transfer

4. Most effective way for silencing a target endogenous gene is
   (A) Sense overexpression (B) **dsRNA expression** (C) Antisense expression (D) None

5. Following enzyme converts mRNA into dsRNA form upon its accumulation beyond threshold level
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8. RNAi suppression of following viral proteins could confer host plant strong resistance to virus infection:
   (A) Coat protein (B) Replicase (C) Movement protein (D) **Host silencing suppressor**

9. Which of the following genes can be used for making resistances against viral infection?
   (A) genes for capsid protein (B) gene for nucleocapsid protein (C) satellite RNA (D) All of these

10. Meristem culture of banana enables
    (A) rapid multiplication (B) elimination of bunch top virus disease (C) both (a) and (b) (D) slow growth

11. In Bt cotton, the Bt toxin present in plant tissue as pro-toxin is converted to active toxin due to
    (A) alkaline pH of the insect gut (B) acidic pH of the insect gut
    (C) action of gut microbes. (D) presence of conversion factors in insect gut

12. Following virus encoded protein is responsible for systemic infection
    (A) coat protein (B) nuclear shuttle protein (C) host suppressor (D) movement protein

13. Replication of plant DNA virus genome takes place in
    (A) cytoplasm (B) nucleus
    (C) both cytoplasm and nucleus (D) chloroplast

14. Following viral proteins is lately translated
    (A) coat protein (B) nuclear shuttle protein (C) host suppressor (D) movement protein

15. Metabolic interference to prevent the synthesis of following compound(s) lead to delayed ripening in tomato?
    (A) ACC (1-aminocyclopropane-1-carboxylic acid) (B) SAM (S-adenosylmethionine)
    (C) both (a) and (b) (D) AOA (aminooxyacetic acid)