**A** **Reg. No. :** | | | | | | | | | | |

# Question Paper Code: 52008

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Second Semester

Agriculture Engineering

15UPH207 – PHYSICS FOR AGRICULTURAL ENGINEERING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. If E =$E_F$, and T = 0 K, then F(E) is CO1- R

   (a) 1 (b) 0 (c) 0.5 (d) 0.75

2. A dielectric can be made a conductor by _____ CO1- R

   (a) Compression (b) Heating (c) Doping (d) Freezing

3. The term biomass most often refers to _____ CO2- R

   (a) Inorganic matter (b) Organic matter (c) Chemicals (d) Ammonium compounds

4. What is the percentage at which rated power from biogas in petrol engine can be developed? CO2- R

   (a) 45% (b) 65% (c) 75% (d) 85%

5. Which of the following is the most commonly used technique for the preparation of metallic glass? CO3- R

   (a) Melt spinning system (b) Twin roller system

   (c) Melt extraction system (d) Sputtering

6. Multi walled CNT are _____ concentric nano tubes. CO3- R

   (a) Single (b) Double (c) Triple (d) Multiple

7. Which of the following is not a form of energy? CO4- R

   (a) Thermal energy (b) Radiant energy (c) Nuclear energy (d) Potassium energy

8. A component whose property changes when there is a change in any physical quantity of a device is CO4- R

(a) Processor (b) Sensor (c) Output device (d) Portable device

9. Which of the following fact about radiation / irradiation is true? CO5 R

(a) All food items consumed by man are radioactive

(b) Alpha and beta particles and gamma photons are the radiations available for food preservation applications

(c) Energy lost per ion pair formed is greater than the ionization energy

(d) All of the mentioned

10. Germination is inhibited by _____ CO5- R

(a) Red light (b) Blue light (c) UV light (d) IR light

PART – B (5 x 2= 10 Marks)

11. Write the demerits of classical free electron theory. CO1- R

12. What are biofuels? CO2- R

13. What is Metallic glass? CO3- R

14. Give some applications of Remote sensing techniques for Agricultural survey. CO4- U

15. Classify the low-dose, medium-dose and high-dose levels of food irradiation. CO5- Ana

PART – C (5 x 16= 80 Marks)

16. (a) Explain the different types of polarization mechanism in dielectrics. CO1-U (16)

Or

(b) Deduce an expression for the internal field and Classius – Mossotti relation. CO1-U (16)

17. (a) Explain the importance, production and applications of biofuels. CO2-U (16)

Or

(b) Describe in detail conventional and nonconventional energy systems. CO2-U (16)

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| 18. | (a) | Describe the principle, construction and working of Physical Vapor deposition to produce nano materials. | CO3-U | (16) |
| | | Or | | |
| | (b) | (i) Describe the principle, construction and working of Ball Mill to produce nano materials. Give some applications. | CO3-U | (10) |
| | | (ii) Associate an introduction to CNT. | CO3-U | (6) |
| 19. | (a) | Summarize the two types of sensors with suitable examples. | CO4- U | (16) |
| | | Or | | |
| | (b) | (i) Explain the reflection, transmission and absorbance of radiation energy. | CO4- U | (8) |
| | | (ii) Analyze the radiant energy and radiant intensity. | CO4- U | (8) |
| 20. | (a) | Summarize the Food irradiation using electron beams, X-rays - nuclear radiation. | CO5- U | (16) |
| | | Or | | |
| | (b) | Explain the biological effect of ionizing radiation on organisms. | CO5- U | (16) |