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

Question Paper Code: 52008

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Second Semester

Agriculture Engineering

15UPH207 – PHYSICS FOR AGRICULTURAL ENGINEERING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

1. The unit of mobility is …… CO1- R

(a) $m^2V^{-1}s^{-1}$ (b)$V^{-1}m\ s^{-1}$ (c)$V^{-1}m^2s$ (d) ohm m^{-1}

2. When the temperature increases, the electronic polarization…… CO1 -R

(a) increases

(b) decreases

(c) remains the same

(d) increases while the space charge polarization decreases

3. Which of the following is not a renewable energy source? CO2 -R

(a) Biomass conversion (b) Solar (c) Hydroelectric (d)Oil

4. Solar water heater is an example for _____ energy CO2- R

(a) wind (b) renewable (c) fossil fuel (d) tidal

5. Metallic Glasses exhibit the property of …… CO3 -R

(a) Metals and glass (b) Non-Metals and glass

(c) Metals (d) Glasses

6. Bucky ball is the name of…… CO3 -R

(a) C_{120} structure (b) C_{70} structure (c) C_{60} structure (d) None of these

7. Electromagnetic waves can be visualized as …… CO4 -R

(a) Sine wave (b) Cosine wave

(c) Tangential wave (d) Both sine and cosine wave

8. Passive sensors work during…… CO4 -R

(a) Day (b) Night (c) Day and night (d) None

9. A molecule which acquires a positive or negative charge by gaining or losing electrons to form ions is called CO5 -R

(a) Polarization (b) Magnetization (c) Ionization (d) Electrification

10. Which of the following properties of food irradiation prove a disadvantage? CO5 -R

(a)Flavor (b) Tenderness (c) Microbial growth (d) Water

PART – B (5 x 2= 10Marks)

11. State Wiedemann-Franz law. CO1 -R

12. What is meant by fossil fuel? CO2- R

13. List the applications of nanomaterials. CO3 -R

14. Define radiant energy. CO4 -R

15. How does irradiation affect food? CO5- R

PART – C (5 x 16= 80Marks)

16. (a) (i) Calculate the electrical and thermal conductivity of conductors using classical free electron theory. CO1 -App (12)

(ii) Use the Fermi distribution function to obtain the value of F(E) for $E-E_F=0.01eV$ at 300K. CO1 -App (4)

Or

	(b)	(i) Differentiate polar and non-polar dielectrics	CO1 -App	(4)
		(ii) Determine the internal field experienced by an atom in a solid dielectric material.	CO1 -App	(12)
17.	(a)	Compare conventional with nonconventional energy system.	CO2 -App	(16)
		Or		
	(b)	(i) Analyze the thermo-chemical conversion process with neat diagram.	CO2 -Ana	(10)
		(ii) Compare the various types of biomass gasifiers.	CO2- Ana	(6)
18.	(a)	(i) How will you prepare metallic glass by melt spinning technique?	CO3 -Ana	(10)
		(ii) Differentiate top- down and bottom -up method of nano particle synthesis.	CO3 -Ana	(6)
		Or		
	(b)	(i) Suggest any one top-down method to synthesis nanoparticles.	CO3 Ana	(10)
		(ii) Physical properties of materials vary with geometry. Justify	CO3 Ana	(6)
19.	(a)	(i) Describe the three modes of energy interaction in electromagnetic spectrum	CO4 -U	(12)
		(ii) Discuss briefly the distribution of radiant energies.	CO4- U	(4)
		Or		
	(b)	(i) Differentiate active sensors from passive sensors.	CO4 -Ana	(8)
		(ii) Describe data processing in remote sensing.	CO4 Ana	(8)
20.	(a)	(i) Discuss the effects of ionizing radiation on foods.	CO5- U	(10)
		(ii) List the applications of food irradiation.	CO5 -U	(6)
		Or		

(b)	(i) Describe food irradiation using electron beams and X-rays. Mention its advantages	CO5 U	(8)
	(ii) Explain the method of processing of seeds, fruits and vegetables.	CO5 U	(8)