Manimegk

Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – June / July 2021
II Semester

Class : I UG **Time : 3 Hours**
Major : Special Education and Mathematics **Max. Marks : 100**

18BSEI02 DSE – II Physics for Special Education

Part A **10 x 1 = 10**
Choose the Correct Answer

1. The unit of angular velocity is CO1K2
   a. rad.s b. rad/s c. rad/s^2 d. rad.s^2

2. The rate of change of angular displacement is called CO1K1
   a. angular speed b. angular acceleration
   c. relative acceleration d. angular velocity

3. The purpose of Michelson Morley experiment is to CO2K2
   a. find the velocity of light
   b. confirm the existence of an inertial frame of reference
   c. find Doppler shift
   d. confirm spectral broadening

4. A rod of length 2m moves with a velocity of 10^8 m/sec relative to an observer at rest on earth. What is the apparent length of the rod appearing to the observer CO2K3
   a. 1.885 m b. 8.115 m c. 5.118 m d. 11.58 m

5. The number of degrees of freedom of two points at a constant distance from each other is CO3K3
   a. 2 b. 3 c. 4 d. 5

6. The constraints that are independent of time are called CO3K2
   a. holonomic b. rheonomic c. scleronomic d. non- holonomic

7. Which of the following is not a direct method to find the frequency of vibration of sound ? CO4K1
   a. Graphic method b. Stroboscopic method
   c. Lissajous figures d. Phonic wheel method

8. Beats can be produced by the combination of tuning fork and a CO4K2
   a. siren b. strobosconn c. falling plate d. chronograph

9. The majority carriers in P-type semiconductors are CO5K3
   a. neutrons b. protons c. electrons d. holes

10. A zenerdiode is always operated in CO5K3
   a. forward bios b. reverse bios c. constant current d. knee region

Part B **5 x 6 = 30**

Answer ALL questions
Each answer should not exceed 400 words or two pages

11.a. Discuss in detail about angular acceleration. CO1K2

(or)

11.b. Discuss about the rectilinear motion under constant forces. CO1K2

12.a. State and discuss the basic postulates of Einstein's special theory of relativity. CO2K2

(or)

12.b. Discuss briefly about time dilation. A clock in a space ship emits signals at intervals of 1 second as observed by an Astronaut in the space ship. If the space ship travels with a speed of 3×10^7 ms^{-1}, what is the interval between successive signals as seen by an observer at the control centre on the ground? CO2K4

13.a. State and explain conservation theorem for energy. CO3K2

(or)

13.b. Discuss about degrees of freedom with examples. CO3K2

14.a. Discuss the average kinetic energy and potential energy of SHM CO4K2

(or)

14.b. Discuss briefly about the theory of beats. CO4K2

15.a. Draw and discuss how N-type semiconductors are formed? CO5K2

(or)

15.b. Discuss V-I characteristics of p-n junction diode with necessary circuit diagram. CO5K2

Part C **5 x 12 = 60**

Answer ALL questions
Each answer should not exceed 800 words or four pages

16.a. Define relative velocity? Explain the method of finding relative velocity with an illustrative example. CO1K3

(or)

16.b. Discuss about relative acceleration and relative angular velocity. CO1K2

17.a. Derive Lorentz transformation equation. CO2K3

(or)

17.b. Deduce relativistic variation of mass with velocity. Obtain Einstein's mass-energy relation. CO2K3

18.a .State and explain conservation theorem for linear momentum and angular momentum with examples. CO3K2

(or)

18.b. Explain different types of constraints with examples and discuss about forces of constraints. CO3K2

19.a. Define Lissajous figures. Show how they can be produced. Give its uses. CO4K3

(or)

19.b. Determine the composition of two simple harmonic motions of equal period when they act at right angles to one another. Discuss its important cases. CO4K3

20.a. What are semiconductors? With necessary diagram, explain how P-type semiconductors are formed? CO5K2

(or)

20.b. Explain the characteristics of zener diode with necessary circuit diagram. CO5K2

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