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SARDAR PATEL UNIVERSITY
M.Sc. Integrated Biotechnology Examination, II Semester
Day & Date : 09-April -2018, Monday
Time : 10:00 P.M. TO 01:00 P.M.
Subject : Physics - II
Subject Code : PS02CIGB01

Instructions :

[a] Figure to the right indicates full marks.

Total Marks : 70

[b] All questions are compulsory.

Q-1 Choose the correct answers**[08]**

- 1 The unit of relative permeability is _____.
- [a] henry [b] henry/mt [c] it is dimensionless [d] none of above
- 2 A magnetic field exists around _____.
- [a] Iron [b] moving charges [c] copper [d] aluminum
- 3 Tesla is a unit of _____.
- [a] flux density [b] field strength [c] flux [d] inductance
- 4 The number of atoms per unit cell in BCC crystal structure is _____.
- [a] 1 [b] 6 [c] 2 [d] 4
- 5 Heat is measured in _____.
- [a] joule/calorie [b] calorie [c] joule [d] none of above
- 6 With decrease in temperature heat will be _____.
- [a] decreases [b] increases [c] remains constant [d] none of above
- 7 In p type semiconductor materials, the majority charge carriers are _____.
- [a] holes [b] photons [c] neutrons [d] electrons
- 8 The forward voltage drop across a silicon diode is _____.
- [a] 0.7 v [b] 0.3 v [c] 1.1 v [d] 1.0 v

Q-2 Attempt Any Seven out of the followings**[14]**

1. State coulomb's law.
2. What is Hall effect?
3. Enlist the properties of diamagnetic substance.
4. Define : lattice
5. Draw the plane for given miller indices (101) and (110).
6. List out the properties of sound absorbing materials.
7. What is the difference between n type and p type material?
8. What do you mean by stress?
9. State Hooke's law.

Q-3 [a] Define ferromagnetic substance. Also state their properties.**[06]****[b] Derive the expression for Continuous charge distribution.****[06]****OR****[b] Derive the expressions for hall effect and also hall mobility.****[06]****Q-4 [a] Derive general expression for the velocity of sound in gaseous medium.****[06]**

C.P.T.O.)

[b] Explain in detail poisson's ratio. [06]

OR

[b] Explain in detail about ultrasonic waves and its applications. [06]

Q-5 [a] State and explain Stefan's law in detail. [06]

[b] What is entropy and how does it change explain it. [06]

OR

[b] Derive the expression for rectilinear flow of heat along a bar [06]

Q-6 [a] Discuss in detail about Extrinsic semiconductor material with lattice diagram. [06]

[b] Write a short note on Tunnel diode [06]

OR

[b] Calculate the atomic packing factor for FCC crystal structure. [06]

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