Unit 9 - Week 8

Assignment 8

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-25, 23:59 IST.

Note : More than one answer may be right. Partial marks awarded if only some of the correct answers are selected. No marks awarded if even one of the wrong answers is selected:

1) Fermi surface in 3D k-space is *1 point*

- [ ] Spherical
- [ ] Cylindrical
- [ ] 2-dimensional surface
- [ ] 3-dimensional surface

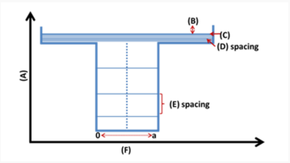
No, the answer is incorrect.
Score: 0
Accepted Answers:
Spherical
3-dimensional surface

2) Relation between Fermi energy and Fermi temperature is *1 point*

- [ ] Exponential
- [ ] Linear
- [ ] Logarithmic
- [ ] None

No, the answer is incorrect.
Score: 0
Accepted Answers:
Linear

3) Mark the following points in the below given figure: *1 point*



- [ ] Position, φ , Fermi energy, very close, Potential energy, ~1-100 eV
- [ ] Fermi energy, 1 eV, potetial energy, 100 eV, position, φ
- [ ] Potential energy, φ , Fermi energy, very close, ~1-100 eV, position
- [ ] Position, φ , Fermi energy, very close, ~1-100 eV, Potential energy

No, the answer is incorrect.
Score: 0
Accepted Answers:
Potential energy, φ , Fermi energy, very close, ~1-100 eV, position

4) Match the following: *1 point*

(A)	Density of allowed states, D(E)	(i)	$E^{3/2}$
(B)	Total number of occupied states, $N_T(E)$	(ii)	$E^{1/2}$
(C)	Wave vector k^2	(iii)	$n_x^2+n_y^2+n_z^2$
(D)	Equation of a sphere	(iv)	E

- [ ] A(iii), B(i), C(iv), D(ii)
- [ ] A(ii), B(i), C(iv), D(iii)
- [ ] A(i), B(ii), C(iv), D(iii)
- [ ] A(iv), B(i), C(ii), D(iii)

No, the answer is incorrect.
Score: 0
Accepted Answers:
A(i), B(i), C(iv), D(iii)

5) Drude model over predicts the electronic contribution to specific heat by the order of ____ *1 point*

- [ ] 10^{-2}
- [ ] 10^{2}
- [ ] 10^{-3}
- [ ] 10^{3}

No, the answer is incorrect.
Score: 0
Accepted Answers:
10^{-2}

6) Relation between D (E) and E and total number of occupied states N(E) and E are *1 point*

- [ ] Exponential
- [ ] Linear
- [ ] Parabolic
- [ ] Logarithmic

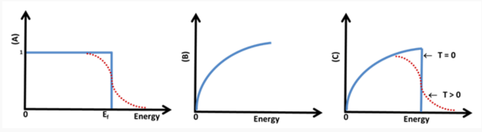
No, the answer is incorrect.
Score: 0
Accepted Answers:
Parabolic

7) As the material temperature increased, only electrons _____ to the Fermi energy are able to participate in specific heat process. *1 point*

- [ ] Closer
- [ ] Above
- [ ] Below
- [ ] Far

No, the answer is incorrect.
Score: 0
Accepted Answers:
Closer

8) Match the Following: *1 point*



- [ ] f(E), N(E), D(E)
- [ ] f(E), D(E), N(E)
- [ ] N(E), f(E), D(E)
- [ ] D(E), N(E), f(E)

No, the answer is incorrect.
Score: 0
Accepted Answers:
f(E), D(E), N(E)

9) When two semiconducting materials are brought together to form a junction at STP , junction experiences small changes in _____. *1 point*

- [ ] Chemical potential
- [ ] Temperature
- [ ] Pressure
- [ ] Fermi energy

No, the answer is incorrect.
Score: 0
Accepted Answers:
Chemical potential
Fermi energy

10) Relation between Fermi temperature and Fermi energy is given by *1 point*

- [ ] $K_BT_f = E_f^{1/2}$
- [ ] $K_BT_f = E_f$
- [ ] $K_BT_f = E_f^{3/2}$
- [ ] $K_BT_f = E_f^{2}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$K_BT_f = E_f$