



Zagazig University
Faculty of Science
Department of Physics

Heat and Sound
Second Semester

First year students
Code No: Phys 104
Time: 2 hours



Choose the correct answer:

Part 1: Sound

- 1-The velocity of sound in solids is.....that in liquids.
a) as the same as b) lower than c) higher than
- 2-The velocity of sound in solids depends on and the density.
a) Young modulus b) Bulk modulus c) Shear modulus
- 3-..... is defined as the sound energy per unit area per unit time
a) Sound level b) Sound intensity c) Decibel
- 4-The loudness which corresponds to $10^{-10} \text{ Watt/m}^2$ is dB
a) 220 b) 20 c) 0
- 5-The intensity that corresponds to 140 dB is Watt/m²
a) 10 b) 1 c) 100
- 6-In standing waves, the amplitude is maximum at
a) nodes b) antinodes c) $\frac{1}{2} \lambda$
- 7-The velocity of sound in Helium gas is that in air.
a) as the same as b) lower than c) higher than
- 8-The velocity of sound in ideal gas depends on universal gas constant, molar mass and
a) temperature b) volume c) pressure
- 9-The intensity of sound is directly proportional to
a) Square of distance b) $\frac{1}{\text{square of distance}}$ c) $\frac{1}{\text{distance}}$

Part 2: Heat

- 10-The international unit of Heat is
a) British thermal unit b) Calorie c) Joule

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- 11-..... is a measure of the kinetic energy of molecules in the matter
a) Heat flow b) Temperature c) Heat
- 12-..... is a device that can be used for measuring the temperature of systems
a) Anemeter b) Thermometer c) Voltammeter
- 13-Chrome and Aluminum are the materials of thermometer
a) liquid b) gas c) thermocouple
- 14-The volume thermal expansion coefficient is the linear thermal expansion coefficient
a) three times b) equal to c) twice
- 15- The unit of linear thermal expansion coefficient is
a) Celsius b) Celsius⁻¹ c) Metre⁻¹
- 16-Zero Celsius corresponds to Kelvin
a) Zero b) 273 c) -273
- 17- Zero Celsius corresponds to Fahrenheit
a) Zero b) -32 c) 32
- 18-..... is the temperature at which the kinetic energy of molecules vanishes (تقلص)
a) -273 C b) 273 C c) -273 K
- 19-..... is the transfer of heat energy from hot to cold system without exerting work done
a) Thermal isolation b) Thermal equilibrium c) Thermal contact
- 20-..... is the amount of heat energy required to rise the temperature of a substance by 1C°
a) Heat b) Specific Heat c) Heat Capacity
- 21-..... is a characteristic property for the matter
a) Heat b) Specific Heat c) Heat Capacity
- 22- As the temperature decreases from 25 C to 4 C, there will be of water molecules
a) vaporization b) expansion c) contraction
- 23- The number of moles for 64 gram of Oxygen molecule ¹⁶(O₂) is moles
a) 6 b) 2 c) 4
- 24- The mass of 800 liters of (H₂) gas at atmospheric pressure and 0 C is gm. R=0.082 (L atm)/(mole. K)
a) 100 b) 90 c) 35.7366

25- The unit of heat capacity is

- a) Joule /kg. Celsius ☒ b) Joule/Celsius c) Joule

26- is the amount of heat required to rise the temperature of 1 gram of water by 1 C

- a) BTU ☒ b) Joule c) Calorie

27- Joule experiment depended on converting

- a) Mechanical energy to heat ☒ b) Heat to mechanical energy c) Heat to potential energy

28- includes the energies associated with the atoms or molecules in the matter

- ☒ a) Vibrational K.E b) Heat energy c) Internal energy

29- The number of times needed for a student who had 1000 food calories to rise an object of 100 kg through a distance 1 m is Take $g=10 \text{ m/sec}^2$, calorie = 4.2 joule

- a) 8000 b) 2100 ☒ c) 4200

30- The international unit of temperature is

- a) Celsius ☒ b) Kelvin c) Fahrenheit

31- A specific portion of matter which is under study is called

- ☒ a) System b) Universe c) Surrounding

32- The temperature on Fahrenheit scale corresponding to (المنظرة ل) 50 Celsius is

- ☒ a) 122 F b) 42 F c) Zero

33- The temperature on Fahrenheit scale corresponding to (المنظرة ل) $\frac{5}{9}$ Celsius is

- a) 0 F ☒ b) 33 F c) 32 F

34- Pyrometer is the material of

- a) thermocouple thermometer ☒ b) radiation thermometer c) resistance thermometer

35- The fractional change in volume per unit degree of temperature change is coefficient

- ☒ a) linear expansion expansion b) volume expansion c) surface expansion

36- The linear expansion α for a wire heated from 0 C to 50 C. of $L_0 = 30 \text{ cm}$ and its increase in length 0.03 cm is

- a) $0.5 \times 10^{-5} \text{ C}^{-1}$ ☒ b) $1 \times 10^{-5} \text{ C}^{-1}$ c) $2 \times 10^{-5} \text{ C}^{-1}$

37- As the temperature of water decreases from 4 to 0 C, the density will

- a) remain as it is b) increase ☒ c) decrease

38- The volume occupied by 1 mole of a gas at atmospheric pressure and 0 C is... (Take $R=0.082 \text{ liter. atm/mole. K}$)

- a) 44.772 liters ☒ b) 22.386 liter c) 11.193 liters

39- For metals, as the temperature increases, the conductivity

- a) does not change ☒ b) increases c) decreases

40- The change of temperature on Fahrenheit scale is The change of temperature on Celsius

- ☒ a) 9/5 b) 5/9 c) equal to

If an object is heated from 100 C to 180 C, then

41- The change in temperature on Kelvin scale is

- a) 80 ☒ b) 100 c) 180

42- The change in temperature on Fahrenheit scale is

- ☒ a) 44 ☒ b) 80 c) 44.44

43- The kinetic energy of molecules in cold water is than that of in hot water

- a) as the same as ☒ b) lower c) higher

44- When iron is heated, the temperature of white color is that of yellow color.

- a) as the same as ☒ b) higher than c) lower than

45- when iron is heated, the frequency of white color is that of the orange color

- a) as the same as b) higher than ☒ c) lower than

46- The working principle of thermometer depends on the change of physical property with

- a) temperature ☒ b) pressure c) volume

47- If material A is in a thermal equilibrium with C and material B is in a thermal equilibrium with C, then C is a

- ☒ a) thermometer b) Ammeter ☒ c) voltmeter

48- The temperature is pressure at constant volume

- ☒ a) Constant with b) inversely proportional to c) directly proportional to

49- is everything except for the system

- ☒ a) Surrounding ☒ b) Universe c) Heat

50- The expansion of length (ΔL) depends on the original length (L_0) and

- a) initial temperature ☒ b) temperature difference c) final length