Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER- Ist /IInd (SPFU)• REMEDIAL EXAMINATION – SUMMER-2015

Subject Code: BSP001 **Date:10/06/2015**

Subject Name: Physics

Time: 10.30AM-01.00PM **Total Marks: 70**

Instructions:

1 Part-I Objective section: Que.no. 1 to 25 carry 1 mark & 26 to 30 carry 2 marks

2 Part-II Subjective section: Each question carries 7 marks. Attempt any 5 questions from the 7 questions.

PART-I

Q.1 Moment of force is called
- A. couple
- B. torque
- C. angular momentum
- D. impulse

Q.2 Dielectric materials are used in
- A. Capacitor
- B. Transformer
- C. both a & b
- D. None

Q.3 Magnetisation per unit magnetic field i.e. M/H is called
- A. suceptibility
- B. field intensity
- C. Permeability
- D. Induction

Q.4 The unit of angular momentum
- A. N m
- B. kg m^{-1} s^{-1}
- C. kg m^2 s^{-1}
- D. kg^2 m^2 s^{-1}

Q.5 CO is an example of _____ dielectic.
- A. Polar
- B. Non-Polar
- C. both a & b
- D. can't say

Q.6 Angular momentum of a body is defined as a product of
- A. mass & angular velocity
- B. centripetal force & radius
- C. linear velocity & angular velocity
- D. moment of inertia & angular velocity

Q.7 Superconductors are _____ in nature.
- A. Diamagnetic
- B. Paramagnetic
- C. Ferromagnetic
- D. Non-Magnetic

Q.8 YBCO is an example of
- A. High temperature superconductor
- B. Advanced superconductor
- C. Liquid semiconductor
- D. Oxide magnetic materials

Q.9 The waveform of Simple Harmonic Motion is
- A. Standing wave
- B. Sine wave
- C. Square wave
- D. None

Q.10 Hysteresis is observed in
- A. Diamagnetic
- B. Paramagnetic
- C. Ferrimagnetic
- D. Ferromagnetic

Q.11 Critical temperature of 'Hg' is
- A. 2.13 k
- B. 4.214 k
- C. 5.253 k
- D. 6.325 k

Q.12 Who is associated to introduce concept of nanomaterials?
- A. Einestain
- B. Newton
- C. Feynman
- D. Stephen Hawkins

Q.13 The effectt when magnetic feld lines are repelled from superconductor is known as
- A. Curie effect
- B. Johnson effect
- C. Meissner effect
- D. Temperature effect

Q.14 Type-II superconductors are perfect diamagnetic material.
- A. True
- B. False
- C. information irrelevent
- D. none of these

Q.15 The frequency which is not audible to the human ear is
- A. 60 Hz
- B. 600 Hz
- C. 6000 Hz
- D. 60,000 Hz

Q.16 Zero dimension quantum state structures are known as
- A. Quantum well
- B. Quantum zero
- C. Quantum dot
- D. Quantum wire

Q.17 Nano range is of the order of

A. 10^{-9} m B. 10^{9} m

C. 10^{-9} cm D. 10^{9} cm

Q.18 Light propagates through an optical fibre due to

A. Reflection B. Interference

C. Refraction D. Total Internal reflection

Q.19 Laser are used in

A. Metal cutting B. Welding

C. surface treatment D. All

Q.20 Laser are used in

A. Telephone B. Kundt's tube

C. Youtube D. none of these

Q.21 Piezoelectric effect is observed in the following

A. Nickel B. Quartz

C. Tourmaline D. Both b & c

Q.22 In Ultracapacitor _____ is used as a storage medium

A. Carbon nano tube B. nano cobalt powder

C. nano plates of copper D. micro SQUID

Q.23 Which is the example of soft superconductor

A. YBCO B. Nb_3Sn

C. Hg D. Nb_3Ge

Q.24 Which of these is based on the principle of the torque on a magnetic dipole?

A. SQUID B. MRI

C. Cyclotron D. Nuclear Fission reactor

Q.25 the unit of magnetic Flux is

A. Wb B. $T\text{-}m^2$

C. N m/A D. All of above

Q.26 Change in intensity level by 1 dB alters the intensity by

A. 1% B. 26%

C. 90% D. 10%

Q.27 If a photon of energy "hf" is incident on an atom in the lower state E1, the atom absorbs the incident photon and gets excited to the higher energy state E2. This process is known as .

A. Stimulated emission B. Spontaneous emission

C. Induced absorption D. none of these

Q.28 Calculate critical field for a wire of lead having critical temprature is 7.18 K and Hc(0) is 6.5 x 104 A m^{-1}.

A. 38.65 x 10^3 unit B. 42.758 x 10^3 unit

C. 58.234 x 10^3 unit D. 52.234 x 10^3 unit

Q.29 A hall of volume 1000 m3 has a sound absorbing surface area of 835 m2. If the average absorption co-efficient of the hall is 0.2. What is its reverberation time.

A. 8.35 s B. 0.835 s

C. 1 s D. 2.018 s

Q.30 What is the time period of a simple pendulum of length 10 m?(g = 10 m/s2)

A. $2\pi\, s$ B. $\pi\, s$

C. $\pi/2\, s$ D. 0 s

PART-II

Que.1 Classify and explain types of dielectric materiasl and their uses

Que.2 Explain any two applications of (i) LASER (ii) High Temperature Superconductor (iii) Optical Fibre (iv) Carbon nano tube

Que.3 Define the following terms:

(i) Bohr magneron (ii) Dielectric polarisation (iii) Gyroscopic motion (iv) Simple Harmonic Motion (v) refrective index (vi) Non destructive testing (vii) surface to volume ratio

Que.4 Explain Sol-Gel method and Ball Milling method, justify advantages and disadvantages of these methods.

Que.5 List out and explain properties of Superconductors.

Que.6 How to determine velocity of ultrasonic waves using acoustic grating pattern.

Que.7 Explain types of fibre based on Material, Propagation and refractive index.

Best of Luck