**JEST EXAMS**

**[[(MEMORY BASED QUESTIONS)**

**Q 1.** If a person has a meter scale and he has to measure a length of 50 m. Each time he

measures the measurement lies from 99.8 to 100.2 cm. Estimate the net error, when takes

measurement 50 times?

(a) 0.2 cm (b) 0.4 cm (c) 0.82 cm (d) 10 cm.

**Q 2.** If coherent source of light through A,B has wavelength λ such *AB* = 4λ . If the detector

is moving along the loop of radius R such that R>> AB then if the radius is increased

gradually what effect will it have on the no. of maxima detected by detector D?

(a) increase (b) decrease (c) first increase than decrease (d) none

**Q 3.** Slit separation = d

Slit width = w

A plane wavefront incident, when will the 3rd maxima will be missing

(a) 3d = 2w (b) 2d = 3w (c) d = 2w

**Q 4.** Find

0

lim

*z*→

( 2 ) ( 2 )

2

Real *z* Img *z*

*z*

+

(a) i (b) 1 (c)-1 (d) limit do not exist

**Q 5.** If 2*P* −1 = Prime no.

(a) P is a odd no. (b) P can composite no. (c) P is necessarily composite no.

(d) P is Prime no.

**Q 6.** Find the velocity of box

(a) *v* cosθ (b) *v* sinθ (c) *v* tanθ

**Q 7.** What is the volume of a sphere in 4-dimensional space of unit radius?

(a)

2

16

π

(b) 4

3

π

(c) 4π *i*

**Q 8.** A heard ball dropped from a 1 m height and rebounces to 95 cm. Calculate the total

distance travelled by ball?

(a) 1880 cm (b) 2160 cm

**Q 9.** Evaluate 3

1

2 2 3

*z*

π *i z z i*

⎫⎬

+ − ⎭ 􀁶∫

(a) 0, (b) 2π *i*

**Q 10.** If EM wave*E* 􀁇

is filed component along y in with magnitude Eo, travelling along x-axis

with frequency w. represent this

Ans. cos ( ) *o E* = *E Kx* − *wt y*λ

**Q 11.** If an astronaut knows the maximum and min distance between the moon of a planet and

the planet maximum orbital velocity of moon is know which quantity of the following

can’t be calculated.

A

**B**

A, B are known

(a) mass of planet (b) mass of moon (c) Time of the orbit (d) semi major axis.

**Q 12.** If P and q are two distinct prime numbers then how many divisors p2q3 have?

**Q 13.** represent carnot cycle in T – S diagram

**Q 14.** If proton and α − particle accelerated by same potential v, find the ratio of debroglie

wavelength ?

(a) 2 2:1 (b) 2:1 (c) 1 : 2 (d) none of these

**Q 15.** The difference in arithmetic and geometric mean of two positive integer m and n is equal

to 1. Then

2

*m* and

2

*n* are

(a) perfect square

(b)

**Q 16.** Net capacitance

(a) *C*1 +*C*2 +*C*3 (b)

1 2 3

1 1 1

*C C C*

+ + (c) 2 3

1

2 3

*C C C*

*C C*

+

+

**Q 17.** Two events are taking place at a distance 5 km with a time interval 5μ s. In an inertial

frame. An observer observes two events as simultaneous. Determine the speed of

observer.

**Q 18.** Find the time taken for blue light λ = 400*nm*, to cover a distance of 80 km in optical

fiber having refractive .Index = 1.6

Ans. 427 μ sec.

**Q 19.** Find ( ) 5

1 1

1 2 ...

*k*

*k l*

*l*

= =

ΣΣ + +

**Q 20.** ( )

3

, 1 cos *o*

*a r E r*

*r*

φ θ θ

⎡ ⎛ ⎞ ⎤ = − ⎢ −⎜ ⎟ ⎥

⎢⎣ ⎝ ⎠ ⎥⎦

(Potential distribution of sphere of change q)

Find the change distribution

(a) 2 *o E* ∈*cos*θ (b) cos *o* ∈*E* θ

**Q 21.** A small mass m moving with velocity collides with turnable table get attached after

collision and moves with angular velocity w? find w?

**Q 22.** Find the solution of given differential equation.

*x dy* 3*y x*2

*dx*

− =

(a) *y* = *x*2 + *cx*2 (b) (c) (d)

**Q 23.** If x and y both are non-zero then the value of *x*2 + *xy* + *y*2

(a) always +ve (b) always –ve (c) 0 (d) sometimes +ve and sometime –ve

**Q 24.** ( )

2 3

*x* 2 3

*V* = *kx* + *Lx* (a potential fn for a particle in a box)

(a) V is oscillatory (b) v is never osicllater (c)

**Q 25.** Find eigen value and eigen vector

2 2

2 1

⎡ ⎤

⎢ ⎥

⎢⎣ ⎥⎦

**Q 26.** Then

(a) *B Cl F E* = *E* = *E* (b) *B Cl F E* = *E* ≤ *E* (c) *F B Cl E* > *E* > *E* (d) *F B Cl E* > *E* = *E*

**Q 27.** A curve moves from origin to a point P(1, 1) then ( 2 2 )

0

*P* ∫ *y*′ + *yy*′ + *y dx* will be stationary

for

(a) y = x (b) y = x2

**Q 28.** A proton accelerated by a potential difference of 1000 V and enter into magnetic field B

= 1000 T along a circular path of r = 20 cm. Determine the velocity of proton during

circular motion.

(a) 1 m/s (b) 105m/s (c) 100 m/s (d) none

**Q 29.** A mass m is attached to a spring with one end to a rigid support and to other end a spring

is connected which is attached to a mass m. having same spring constant calculate the

node frequency.

**Q 30.** A particle moving with velocity v hits the uniform circular disc at rest with impact

parameter (b < R) afterwards both particles and disc rotates with same angular velocity

ω . then ω in terms of v is,

**Q 31.** If donors are added to n-type semiconductor then

(i) Electrons increases holes remain constant

(ii) Electrons increases holes decreases

(iii) Electrons increases holes increases

(iv) No effect will takes place.

**Q 32.** A particle X of mass M at rest decays into a particle A of mass mA and another particle of

zero mass. Determine the energy of A.

**Q 33.** If B/A decreases with increases atomic number, then what does it indicate about nuclear

number, than what does it indicate about nuclear forces?

(a) charge dependent

(b) Charge independent

**Q 34.** The spin and parity of 12*C* and 17*O*?

(a) 0 , 5

2

+

+ (b) 0 , 5

2

−

+ (c) 1 , 7

2 2

+ +

(d) 0 , 3

2

+

−

**Q 35.** A charge q drops from rest from height d to infinite grounded conducting plates.

Calculate the time to reach the charge to plates.