Pushplata Scholarship Scheme
Policy(Year 2020-21)

Date:- 02-02-2020

On the Basis of Admission test conducted for the students taking admissions in B.Tech 1st Year of all the Courses, College Management has decided to provide Scholarship to these Students in the form of Fee Concession in their 1st Year Fees.

The Criteria for scholarship is as follows:-

Students Scoring
1. 80%- 90% Marks will get Concession of Rs 5,000.
2. 90% and above will get Concession Rs 15,000.

Director
R.D. Engineering College
Duhai, Ghaziabad
Dr. Sanjeev Sharma

(Director)

Cc To

1. All HODs

2. Chief Finance Officer

3. Accounts Department

4. IQAC

R.D. ENGINEERING COLLEGE, GHAZIABAD

PUSHPLATA SCHOLARSHIP SCHEME(DETAILS)

Session: 2020-21

S.NO	ROLL NO	NAME	FATHER'S NAME	BRANCH	YEAR	TOTAL FEE (Rs)	CONCESSION PROVIDED (Rs)
1	2002310100010	Aditya Kumar	Ram Avatar	CS	1ST	60000	5000
2	2002310100014	Akash Tyagi	Ram Kumar Tyagi	CS	1ST	60000	5000
3	2002311530024	Sankit Dagar	Nirdosh kumar Dagar	CS	1st	60000	5000
4	2002310100115	Vinay Tyagi	Pramod Tyagi	CS	1st	60000	5000
5	2002310100116	Vishal	Manoj Kumar	CS	1st	60000	5000
6	2002310100080	Nitish	Hukam Singh	CS	1st	60000	5000
7	2002311530011	Karan Sharma	Mahesh Sharma	CS	1st	60000	5000
8	2002311530018	Pratham Kaushik	Sanjeev Kaushik	CS	1st	50000	15000
						Total concession Provided :	₹50,000

Pushplata Scholarship Scheme

Qualifying Examination   Time: - 2 Hrs

Admission Year – (2020-21)

Name of Applicant: - ....Aditya Kumar

Father's Name: - ....Ram Avatar

Branch (to be opted):- ....CS

$\frac{28}{30}$

Note:- Attempt all Questions. Each question is of 1 mark.

1 Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the quadratic equation.

(a) $x^2 + 18x + 16 = 0$ (b) $x^2 - 18x - 16 = 0$ (c) $x^2 + 18x - 16 = 0$ (d) $x^2 - 18x + 16 = 0$

2 What is the value of factorial Zero (0!)
(a) 10   (b) 0   (c) 1   (d) -1

3. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$ then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$

(a) 3   (b) 2   (c) 1   (d) 0

4. If $x = r\sin\theta\cos\phi$, $y = r\sin\theta\sin\phi$, $z = r\cos\theta$ then $x^2 + y^2 + z^2$ is independent of

(a) θ , ϕ (b) r , θ (c) r , ϕ (d) r

5. If $\dfrac{\sin(x+y)}{\sin(x-y)} = \dfrac{a+b}{a-b}$ then $\dfrac{\tan x}{\tan y} =$

(a) $\dfrac{b}{a}$ (b) a-b   (c) $\dfrac{a}{b}$ (d) a+b

6. The equation of the straight line passing through the point (4, 3) and making intercepts on the co-ordinate axes whose sum is –1 is

(a) x/2 + y/3 = -1 and x/-2 + y/1 = -1   (b) x/2 - y/3 = -1 and x/-2 + y/1 = -1
(c) x/2 + y/3 = 1 and x/2 + y/1 = 1   (d) x/2 - y/3 = 1 and x/-2 + y/1 = 1

7. Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is

(a) 3/2   (b) 5/2   (c) 7/2   (d) 9/2

8. A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semi−major axis is

(a) 4/3   (b) 8/3   (c) 7/3   (d) 5/3

9. A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at

(a) (0, 2)   (b) (0, 1)   (c) (1, 0)   (d) (2, 0)

10. A plane passes through $(1, -2, 1)$ and is perpendicular to two planes $2x - 2y + z = 0$ and $x - y + 2z = 4$. The distance of the plane from the point $(1, 2, 2)$ is

(a) 0   (b) 2   (c) Square Root of 3   (d) 2 Square Root of 2

11. If μs, μk and μr are coefficients of static friction, kinetic friction and rolling friction, then

(a) $\mu s < \mu k < \mu r$ (b) $\mu k < \mu r < \mu s$ (c) $\mu r < \mu k < \mu s$ (d) $\mu r = \mu k = \mu s$

12. Impulse equals

(a) rate of change of momentum   (b) change in momentum

(c) momentum multiplied by time   (d) rate of change of force

13. 'Net force acting on an object is found to be zero.' It can be inferred that the object

(a) May be at rest   (b) May be in uniform motion

(c) May be in uniformly accelerated motion   (d) Both a & b

14. The coefficient of static friction between two surfaces depends upon

(a) the normal reaction   (b) the shape of the surface in contact

(c) the area of contact   (d) None of the these

15. Which of the following statements about friction is true?

(a) Friction can be reduced to zero   (b) Frictional force cannot accelerate a body

(c) Frictional force is proportional to the area of contact between the two surfaces

(d) Kinetic friction is always greater than rolling friction

16. No work is done if   (a) displacement is zero   (b) force is zero

(c) force and displacement are mutually perpendicular   (d) All of the above

17. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?

(a) Inelastic Collision   (b) Elastic Collision   (c) Destructive collision   (d) None of the options

18. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.

(a) 121 J   (b) 147 J   (c) 227 J   (d) 182 J

19. An electric heater of rating 1000 W is used for 5 hrs per day for 20 days. What is the electrical energy utilized?

(a) 100 kWh   (b) 200 kWh   (c) 120 kWh   (d) 500 kWh

20. The rate of doing work is called_____.   (a) Force   (b) Acceleration   (c) Power   (d) Displacemen

21. As an electroplated protective covering, what metal is used?
a) Plutonium
b) Chromium
c) Nickel
d) Iron

22. Which of the following statements concerning transuranium elements is incorrect?
a) Atomic number > 92
b) Example is Thorium
c) Decay radioactively as they are unstable
d) Elements after Uranium

23. Which of the following is not a lanthanide property?
a) They are soft metals with a white silvery colour
b) They tarnish rapidly by air
c) The hardness of the metals increases with increase in the atomic number
d) The melting point of the metal ranges from 500-1000K

24. AgCl fails to pass which of the following tests?
a) Alkaline test
b) Acidic test
c) Chromyl chloride test
d) Baeyer's reagent test

25. Plotting a graph between temperature and reaction rates can reveal the temperature dependence of reaction rates.

a) Concentration of reactants and temperature
b) Concentration of products and temperature
c) Rate constant and temperature
d) Rate of catalysis and temperature

26. What effect does temperature have on the half-life of a first-order reaction?
a) It increases   b) It decreases   c) It remains the same   d) Both increases as well as decrease

28. In 30 minutes, a first-order reaction is 50% complete. Calculate the amount of time it took to complete 87.5 perc of the reaction.
a) 30 minutes   b) 60 minutes   c) 90 minutes   d) 120 minutes

27. When the molecules of a substance are kept at the surface of a solid or a liquid, what is the name of the process?
a) Absorption   b) Adsorption   c) Sorption   d) Desorption

28. Which of the following assertions about the extent of physisorption is correct?
a) Increases with increase in temperature   b) Decreases with increase in surface area

c) Decreases with increase in the strength of Van der Waals forces   d) Decreases with increase in temperature

29. Which of the following is not a lyophobic colloidal example?
a) Gold solution   b) Sulphur solution   c) NaCl solution   d) Blood

30. How are different colours used to make gold colloidal solutions?
a) Different diameters of colloidal gold particles   b) Variable valency of gold
c) Different concentrations of gold particles   d) Impurities produced by different methods
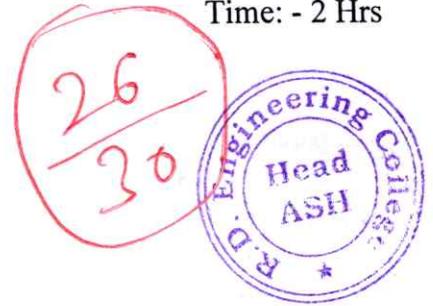
Pushplata Scholarship Scheme

Qualifying Examination

Admission Year – (2020-21)

Time: - 2 Hrs

Name of Applicant: - *Sankit dagar*

Father's Name: - *Nirdesh kumar dagar*

Branch (to be opted):- *CS*

$\frac{26}{30}$

Note:- Attempt all Questions. Each question is of 1 mark.

1 Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the quadratic equation.

(a) $x^2 + 18x + 16 = 0$ (b) $x^2 - 18x - 16 = 0$ (c) $x^2 + 18x - 16 = 0$ (d) $x^2 - 18x + 16 = 0$

2 What is the value of factorial Zero (0!)
(a) 10   (b) 0   (c) 1   (d) -1

3. If $\sin \theta_1 + \sin \theta_2 + \sin \theta_3 = 3$ then $\cos \theta_1 + \cos \theta_2 + \cos \theta_3 =$

(a) 3   (b) 2   (c) 1   (d) 0

4. If $x = r \sin\theta \cos\phi$, $y = r \sin\theta \sin\phi$, $z = r \cos\theta$ then $x^2 + y^2 + z^2$ is independent of

(a) θ , ϕ (b) r , θ (c) r , ϕ (d) r

5. If $\dfrac{\sin(x+y)}{\sin(x-y)} = \dfrac{a+b}{a-b}$ then $\dfrac{\tan x}{\tan y} =$

(a) $\dfrac{b}{a}$ (b) a-b   (c) $\dfrac{a}{b}$ (d) a+b

6. The equation of the straight line passing through the point (4, 3) and making intercepts on the co-ordinate axes whose sum is -1 is

(a) x/2 + y/3 = -1 and x/-2 + y/1 = -1   (b) x/2 - y/3 = -1 and x/-2 + y/1 = -1
(c) x/2 + y/3 = 1 and x/2 + y/1 = 1   (d) x/2 - y/3 = 1 and x/-2 + y/1 = 1

Registrar
R.D. Engineering College
Ghaziabad

Dean Academics
R.D. Engineering College
Duhai, Ghaziabad

Director
R.D. Engineering College
Duhai, Ghaziabad

7. Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is

(a) 3/2   (b) 5/2   (c) 7/2   (d) 9/2

8. A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semi–major axis is

(a) 4/3   (b) 8/3   (c) 7/3   (d) 5/3

9. A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at

(a) (0, 2)   (b) (0, 1)   (c) (1, 0)   (d) (2, 0)

10. A plane passes through $(1, -2, 1)$ and is perpendicular to two planes $2x - 2y + z = 0$ and

$x - y + 2z = 4$. The distance of the plane from the point $(1, 2, 2)$ is

(a) 0   (b) 2   (c) Square Root of 3   (d) 2 Square Root of 2

11. If μs, μk and μr are coefficients of static friction, kinetic friction and rolling friction, then

(a) $\mu s < \mu k < \mu r$ (b) $\mu k < \mu r < \mu s$ (c) $\mu r < \mu k < \mu s$ (d) $\mu r = \mu k = \mu s$

12. Impulse equals

(a) rate of change of momentum   (b) change in momentum

(c) momentum multiplied by time   (d) rate of change of force

13. 'Net force acting on an object is found to be zero.' It can be inferred that the object

(a) May be at rest   (b) May be in uniform motion

(c) May be in uniformly accelerated motion   (d) Both a & b

14. The coefficient of static friction between two surfaces depends upon

(a) the normal reaction   (b) the shape of the surface in contact

(c) the area of contact   (d) None of the these

15. Which of the following statements about friction is true?

(a) Friction can be reduced to zero   (b) Frictional force cannot accelerate a body

(c) Frictional force is proportional to the area of contact between the two surfaces

(d) Kinetic friction is always greater than rolling friction

16. No work is done if   (a) displacement is zero   (b) force is zero

(c) force and displacement are mutually perpendicular   (d) All of the above

17. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?

(a) Inelastic Collision   (b) Elastic Collision   (c) Destructive collision   (d) None of the options

18. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.

(a) 121 J   (b) 147 J   (c) 227 J   (d) 182 J

19. An electric heater of rating 1000 W is used for 5 hrs per day for 20 days. What is the electrical energy utilized?

(a) 100 kWh   (b) 200 kWh   (c) 120 kWh   (d) 500 kWh

20. The rate of doing work is called_____.   (a) Force   (b) Acceleration   (c) Power   (d) Displacemen

21. As an electroplated protective covering, what metal is used?
a) Plutonium   b) Chromium
c) Nickel   d) Iron

22. Which of the following statements concerning transuranium elements is incorrect?
a) Atomic number > 92   b) Example is Thorium
c) Decay radioactively as they are unstable   d) Elements after Uranium

23. Which of the following is not a lanthanide property?
a) They are soft metals with a white silvery colour
b) They tarnish rapidly by air
c) The hardness of the metals increases with increase in the atomic number
d) The melting point of the metal ranges from 500-1000K

24. AgCl fails to pass which of the following tests?
a) Alkaline test   b) Acidic test
c) Chromyl chloride test   d) Baeyer's reagent test

25. Plotting a graph between temperature and reaction rates can reveal the temperature dependence of reaction rates.

a) Concentration of reactants and temperature
b) Concentration of products and temperature
c) Rate constant and temperature
d) Rate of catalysis and temperature

26. What effect does temperature have on the half-life of a first-order reaction?
a) It increases   b) It decreases   c) It remains the same   d) Both increases as well as decrease

28. In 30 minutes, a first-order reaction is 50% complete. Calculate the amount of time it took to complete 87.5 perc of the reaction.
a) 30 minutes   b) 60 minutes   c) 90 minutes   d) 120 minutes

27. When the molecules of a substance are kept at the surface of a solid or a liquid, what is the name of the process?
a) Absorption   b) Adsorption   c) Sorption   d) Desorption

28. Which of the following assertions about the extent of physisorption is correct?
a) Increases with increase in temperature   b) Decreases with increase in surface area

c) Decreases with increase in the strength of Van der Waals forces   d) Decreases with increase in temperature

29. Which of the following is not a lyophobic colloidal example?

a) Gold solution   b) Sulphur solution   c) NaCl solution   d) Blood

30. How are different colours used to make gold colloidal solutions?

a) Different diameters of colloidal gold particles   b) Variable valency of gold

c) Different concentrations of gold particles   d) Impurities produced by different methods

Pushplata Scholarship Scheme
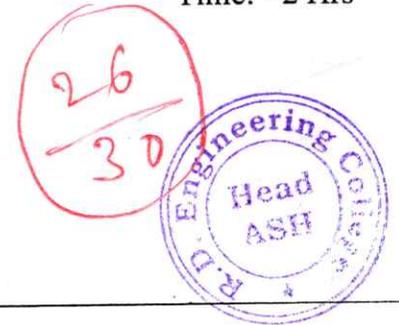
Name of Applicant: - Akash Tyagi

Father's Name: - Ram kumar Tyagi

Branch (to be opted):- C.S.

$\dfrac{26}{30}$

Note:- Attempt all Questions. Each question is of 1 mark.

1 Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the quadratic equation.

(a) $x^2 + 18x + 16 = 0$ (b) $x^2 - 18x - 16 = 0$ (c) $x^2 + 18x - 16 = 0$ (d) $x^2 - 18x + 16 = 0$

2 What is the value of factorial Zero (0!)

(a) 10   (b) 0   (c) 1   (d) -1

3. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$ then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$

(a) 3   (b) 2   (c) 1   (d) 0

4. If $x = r\sin\theta\cos\phi$; $y = r\sin\theta\sin\phi$, $z = r\cos\theta$ then $x^2 + y^2 + z^2$ is independent of

(a) θ, ϕ (b) r, θ (c) r, ϕ (d) r

5. If $\dfrac{\sin(x+y)}{\sin(x-y)} = \dfrac{a+b}{a-b}$ then $\dfrac{\tan x}{\tan y} =$

(a) $\dfrac{b}{a}$ (b) a-b   (c) $\dfrac{a}{b}$ (d) a+b

6. The equation of the straight line passing through the point (4, 3) and making intercepts on the co-ordinate axes whose sum is −1 is

(a) x/2 + y/3 = -1 and x/-2 + y/1 = -1   (b) x/2 - y/3 = -1 and x/-2 + y/1 = -1
(c) x/2 + y/3 = 1 and x/2 + y/1 = 1   (d) x/2 - y/3 = 1 and x/-2 + y/1 = 1

7. Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is

(a) 3/2   (b) 5/2   (c) 7/2   (d) 9/2

8. A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semi–major axis is

(a) 4/3   (b) 8/3   (c) 7/3   (d) 5/3

9. A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at

(a) (0, 2)   (b) (0, 1)   (c) (1, 0)   (d) (2, 0)

10. A plane passes through $(1, -2, 1)$ and is perpendicular to two planes $2x - 2y + z = 0$ and

$x - y + 2z = 4$. The distance of the plane from the point $(1, 2, 2)$ is

(a) 0   (b) 2   (c) Square Root of 3   (d) 2 Square Root of 2

11. If μs, μk and μr are coefficients of static friction, kinetic friction and rolling friction, then

(a) μs < μk < μr   (b) μk < μr < μs   (c) μr < μk < μs   (d) μr = μk = μs

12. Impulse equals

(a) rate of change of momentum   (b) change in momentum

(c) momentum multiplied by time   (d) rate of change of force

13. 'Net force acting on an object is found to be zero.' It can be inferred that the object

(a) May be at rest   (b) May be in uniform motion

(c) May be in uniformly accelerated motion   (d) Both a & b

14. The coefficient of static friction between two surfaces depends upon

(a) the normal reaction   (b) the shape of the surface in contact

(c) the area of contact   (d) None of the these

15. Which of the following statements about friction is true?

(a) Friction can be reduced to zero   (b) Frictional force cannot accelerate a body

(c) Frictional force is proportional to the area of contact between the two surfaces

(d) Kinetic friction is always greater than rolling friction

16. No work is done if   (a) displacement is zero   (b) force is zero

(c) force and displacement are mutually perpendicular   (d) All of the above

17. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?

(a) Inelastic Collision   (b) Elastic Collision   (c) Destructive collision   (d) None of the options

18. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.

(a) 121 J   (b) 147 J   (c) 227 J   (d) 182 J

19. An electric heater of rating 1000 W is used for 5 hrs per day for 20 days. What is the electrical energy utilized?

(a) 100 kWh   (b) 200 kWh   (c) 120 kWh   (d) 500 kWh

20. The rate of doing work is called_____.   (a) Force   (b) Acceleration   (c) Power   (d) Displacemen

21. As an electroplated protective covering, what metal is used?
a) Plutonium   b) Chromium
c) Nickel   d) Iron

22. Which of the following statements concerning transuranium elements is incorrect?
a) Atomic number > 92   b) Example is Thorium
c) Decay radioactively as they are unstable   d) Elements after Uranium

23. Which of the following is not a lanthanide property?
a) They are soft metals with a white silvery colour
b) They tarnish rapidly by air
c) The hardness of the metals increases with increase in the atomic number
d) The melting point of the metal ranges from 500-1000K

24. AgCl fails to pass which of the following tests?
a) Alkaline test   b) Acidic test
c) Chromyl chloride test   d) Baeyer's reagent test

25. Plotting a graph between temperature and reaction rates can reveal the temperature dependence of reaction rates.

a) Concentration of reactants and temperature
b) Concentration of products and temperature
c) Rate constant and temperature
d) Rate of catalysis and temperature

26. What effect does temperature have on the half-life of a first-order reaction?
a) It increases   b) It decreases   c) It remains the same   d) Both increases as well as decrease

28. In 30 minutes, a first-order reaction is 50% complete. Calculate the amount of time it took to complete 87.5 perc of the reaction.
a) 30 minutes   b) 60 minutes   c) 90 minutes   d) 120 minutes

27. When the molecules of a substance are kept at the surface of a solid or a liquid, what is the name of the process'
a) Absorption   b) Adsorption   c) Sorption   d) Desorption

28. Which of the following assertions about the extent of physisorption is correct?
a) Increases with increase in temperature   b) Decreases with increase in surface area

c) Decreases with increase in the strength of Van der Waals forces   d) Decreases with increase in temperature

29. Which of the following is not a lyophobic colloidal example?

a) Gold solution   b) Sulphur solution   c) NaCl solution   d) Blood

30. How are different colours used to make gold colloidal solutions?

a) Different diameters of colloidal gold particles   b) Variable valency of gold

c) Different concentrations of gold particles   d) Impurities produced by different methods

Pushplata Scholarship Scheme

Name of Applicant: - ......Pratham Kaushik

Father's Name: - ......Sanjeev Kaushik

Branch (to be opted):- ......Cs .

29/30

Note:- **Attempt all Questions. Each question is of 1 mark.**

1 Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the quadratic equation.

(a) $x^2 + 18x + 16 = 0$ (b) $x^2 - 18x - 16 = 0$ (c) $x^2 + 18x - 16 = 0$ (d) $x^2 - 18x + 16 = 0$

2 What is the value of factorial Zero (0!)

(a) 10   (b) 0   (c) 1   (d) -1

3. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$ then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$

(a) 3   (b) 2   (c) 1   (d) 0

4. If $x = r\sin\theta\cos\phi$, $y = r\sin\theta\sin\phi$, $z = r\cos\theta$ then $x^2 + y^2 + z^2$ is independent of

(a) θ , ϕ (b) r , θ (c) r , ϕ (d) r

5. If $\dfrac{\sin(x+y)}{\sin(x-y)} = \dfrac{a+b}{a-b}$ then $\dfrac{\tan x}{\tan y} =$

(a) $\dfrac{b}{a}$ (b) a-b   (c) $\dfrac{a}{b}$ (d) a+b

6. The equation of the straight line passing through the point (4,-3) and making intercepts on the co-ordinate axes whose sum is −1 is

(a) x/2 + y/3 = -1 and x/-2 + y/1 = -1   (b) x/2 - y/3 = -1 and x/-2 + y/1 = -1
(c) x/2 + y/3 = 1 and x/2 + y/1 = 1   (d) x/2 - y/3 = 1 and x/-2 + y/1 = 1

7. Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is

(a) 3/2   (b) 5/2   (c) 7/2   (d) 9/2

8. A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semi–major axis is

(a) 4/3   (b) 8/3   (c) 7/3   (d) 5/3

9. A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at

(a) (0, 2)   (b) (0, 1)   (c) (1, 0)   (d) (2, 0)

10. A plane passes through $(1, -2, 1)$ and is perpendicular to two planes $2x - 2y + z = 0$ and

$x - y + 2z = 4$. The distance of the plane from the point $(1, 2, 2)$ is

(a) 0   (b) 2   (c) Square Root of 3   (d) 2 Square Root of 2

11. If μs, μk and μr are coefficients of static friction, kinetic friction and rolling friction, then

(a) μs < μk < μr   (b) μk < μr < μs   (c) μr < μk < μs   (d) μr = μk = μs

12. Impulse equals

(a) rate of change of momentum   (b) change in momentum

(c) momentum multiplied by time   (d) rate of change of force

13. 'Net force acting on an object is found to be zero.' It can be inferred that the object

(a) May be at rest   (b) May be in uniform motion

(c) May be in uniformly accelerated motion   (d) Both a & b

14. The coefficient of static friction between two surfaces depends upon

(a) the normal reaction   (b) the shape of the surface in contact

(c) the area of contact   (d) None of the these

15. Which of the following statements about friction is true?

(a) Friction can be reduced to zero   (b) Frictional force cannot accelerate a body

(c) Frictional force is proportional to the area of contact between the two surfaces

(d) Kinetic friction is always greater than rolling friction

16. No work is done if   (a) displacement is zero   (b) force is zero

(c) force and displacement are mutually perpendicular   (d) All of the above

17. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?

(a) Inelastic Collision   (b) Elastic Collision   (c) Destructive collision   (d) None of the options

18. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.

(a) 121 J   (b) 147 J   (c) 227 J   (d) 182 J

19. An electric heater of rating 1000 W is used for 5 hrs per day for 20 days. What is the electrical energy utilized?

(a) 100 kWh   (b) 200 kWh   (c) 120 kWh   (d) 500 kWh

20. The rate of doing work is called_____.   (a) Force   (b) Acceleration   (c) Power   (d) Displacemen

21. As an electroplated protective covering, what metal is used?
a) Plutonium   b) Chromium
c) Nickel   d) Iron

22. Which of the following statements concerning transuranium elements is incorrect?
a) Atomic number > 92   b) Example is Thorium
c) Decay radioactively as they are unstable   d) Elements after Uranium

23. Which of the following is not a lanthanide property?
a) They are soft metals with a white silvery colour
b) They tarnish rapidly by air
c) The hardness of the metals increases with increase in the atomic number
d) The melting point of the metal ranges from 500-1000K

24. AgCl fails to pass which of the following tests?
a) Alkaline test   b) Acidic test
c) Chromyl chloride test   d) Baeyer's reagent test

25. Plotting a graph between temperature and reaction rates can reveal the temperature dependence of reaction rates.

a) Concentration of reactants and temperature
b) Concentration of products and temperature
c) Rate constant and temperature
d) Rate of catalysis and temperature

26. What effect does temperature have on the half life of a first-order reaction?
a) It increases   b) It decreases   c) It remains the same   d) Both increases as well as decrease

28. In 30 minutes, a first-order reaction is 50% complete. Calculate the amount of time it took to complete 87.5 perc of the reaction.
a) 30 minutes   b) 60 minutes   c) 90 minutes   d) 120 minutes

27. When the molecules of a substance are kept at the surface of a solid or a liquid, what is the name of the process?
a) Absorption   b) Adsorption   c) Sorption   d) Desorption

28. Which of the following assertions about the extent of physisorption is correct?
a) Increases with increase in temperature   b) Decreases with increase in surface area

c) Decreases with increase in the strength of Van der Waals forces   d) Decreases with increase in temperature

29. Which of the following is not a lyophobic colloidal example?
a) Gold solution   b) Sulphur solution   c) NaCl solution   d) Blood
30. How are different colours used to make gold colloidal solutions?
a) Different diameters of colloidal gold particles   b) Variable valency of gold
c) Different concentrations of gold particles   d) Impurities produced by different methods

Pushplata Scholarship Scheme

Qualifying Examination

Admission Year – (2020-21)

Time: - 2 Hrs

Name of Applicant: - Nitish

Father's Name: - Hukam Singh

Branch (to be opted):- CS

Note:- Attempt all Questions. Each question is of 1 mark.

1 Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the quadratic equation.

(a) $x^2 + 18x + 16 = 0$ (b) $x^2 - 18x - 16 = 0$ (c) $x^2 + 18x - 16 = 0$ (d) $x^2 - 18x + 16 = 0$

2 What is the value of factorial Zero (0!)
(a) 10   (b) 0   (c) 1   (d) -1

3. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$ then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$

(a) 3   (b) 2   (c) 1   (d) 0

4. If $x = r\sin\theta\cos\phi$, $y = r\sin\theta\sin\phi$, $z = r\cos\theta$ then $x^2 + y^2 + z^2$ is independent of

(a) θ , ϕ (b) r , θ (c) r , ϕ (d) r

5. If $\dfrac{\sin(x+y)}{\sin(x-y)} = \dfrac{a+b}{a-b}$ then $\dfrac{\tan x}{\tan y} =$

(a) $\dfrac{b}{a}$ (b) a-b   (c) $\dfrac{a}{b}$ (d) a+b

6. The equation of the straight line passing through the point (4, 3) and making intercepts on the co-ordinate axes whose sum   is –1 is

(a) x/2 + y/3 = -1 and x/-2 + y/1 = -1   (b) x/2 - y/3 = -1 and x/-2 + y/1 = -1
(c) x/2 + y/3 = 1 and x/2 + y/1 = 1   (d) x/2 - y/3 = 1 and x/-2 + y/1 = 1

7. Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is

(a) 3/2   (b) 5/2   (c) 7/2   (d) 9/2

8. A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semi−major axis is

(a) 4/3   (b) 8/3   (c) 7/3   (d) 5/3

9. A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at

(a) (0, 2)   (b) (0, 1)   (c) (1, 0)   (d) (2, 0)

10. A plane passes through $(1, -2, 1)$ and is perpendicular to two planes $2x - 2y + z = 0$ and

$x - y + 2z = 4$. The distance of the plane from the point $(1, 2, 2)$ is

(a) 0   (b) 2   (c) Square Root of 3   (d) 2 Square Root of 2

11. If μs, μk and μr are coefficients of static friction, kinetic friction and rolling friction, then

(a) $\mu s < \mu k < \mu r$ (b) $\mu k < \mu r < \mu s$ (c) $\mu r < \mu k < \mu s$ (d) $\mu r = \mu k = \mu s$

12. Impulse equals

(a) rate of change of momentum   (b) change in momentum

(c) momentum multiplied by time   (d) rate of change of force

13. 'Net force acting on an object is found to be zero.' It can be inferred that the object

(a) May be at rest   (b) May be in uniform motion

(c) May be in uniformly accelerated motion   (d) Both a & b

14. The coefficient of static friction between two surfaces depends upon

(a) the normal reaction   (b) the shape of the surface in contact

(c) the area of contact   (d) None of the these

15. Which of the following statements about friction is true?

(a) Friction can be reduced to zero   (b) Frictional force cannot accelerate a body

(c) Frictional force is proportional to the area of contact between the two surfaces

(d) Kinetic friction is always greater than rolling friction

16. No work is done if (a) displacement is zero (b) force is zero

(c) force and displacement are mutually perpendicular (d) All of the above

17. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?

(a) Inelastic Collision (b) Elastic Collision (c) Destructive collision (d) None of the options

18. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.

(a) 121 J (b) 147 J (c) 227 J (d) 182 J

19. An electric heater of rating 1000 W is used for 5 hrs per day for 20 days. What is the electrical energy utilized?

(a) 100 kWh (b) 200 kWh (c) 120 kWh (d) 500 kWh

20. The rate of doing work is called_____. (a) Force (b) Acceleration (c) Power (d) Displacemen

21. As an electroplated protective covering, what metal is used?
a) Plutonium   b) Chromium
c) Nickel   d) Iron

22. Which of the following statements concerning transuranium elements is incorrect?
a) Atomic number > 92   b) Example is Thorium
c) Decay radioactively as they are unstable   d) Elements after Uranium

23. Which of the following is not a lanthanide property?
a) They are soft metals with a white silvery colour
b) They tarnish rapidly by air
c) The hardness of the metals increases with increase in the atomic number
d) The melting point of the metal ranges from 500-1000K

24. AgCl fails to pass which of the following tests?
a) Alkaline test   b) Acidic test
c) Chromyl chloride test   d) Baeyer's reagent test

25. Plotting a graph between temperature and reaction rates can reveal the temperature dependence of reaction rates.

a) Concentration of reactants and temperature
b) Concentration of products and temperature
c) Rate constant and temperature
d) Rate of catalysis and temperature

26. What effect does temperature have on the half-life of a first-order reaction?
a) It increases   b) It decreases   c) It remains the same   d) Both increases as well as decrease

28. In 30 minutes, a first-order reaction is 50% complete. Calculate the amount of time it took to complete 87.5 perc of the reaction.
a) 30 minutes   b) 60 minutes   c) 90 minutes   d) 120 minutes

27. When the molecules of a substance are kept at the surface of a solid or a liquid, what is the name of the process?
a) Absorption   b) Adsorption   c) Sorption   d) Desorption

28. Which of the following assertions about the extent of physisorption is correct?
a) Increases with increase in temperature
                                                    b) Decreases with increase in surface area

c) Decreases with increase in the strength of Van der Waals forces   d) Decreases with increase in temperature

29. Which of the following is not a lyophobic colloidal example?

a) Gold solution   b) Sulphur solution   c) NaCl solution   d) Blood

30. How are different colours used to make gold colloidal solutions?

a) Different diameters of colloidal gold particles   b) Variable valency of gold

c) Different concentrations of gold particles   d) Impurities produced by different methods

Pushplata Scholarship Scheme

Qualifying Examination

Time: - 2 Hrs

Admission Year – (2020-21)

Name of Applicant: - Vishal

Father's Name: - Manoj Kumar

Branch (to be opted):- ...CS.....

26/30

Head ASH

Note:- Attempt all Questions. Each question is of 1 mark.

1 Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the quadratic equation.

(a) $x^2 + 18x + 16 = 0$ (b) $x^2 - 18x - 16 = 0$ (c) $x^2 + 18x - 16 = 0$ (d) $x^2 - 18x + 16 = 0$

2 What is the value of factorial Zero (0!)
(a) 10   (b) 0   (c) 1   (d) -1

3. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$ then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$

(a) 3   (b) 2   (c) 1   (d) 0

4. If $x = r\sin\theta\cos\phi$, $y = r\sin\theta\sin\phi$, $z = r\cos\theta$ then $x^2 + y^2 + z^2$ is independent of

(a) θ , ϕ (b) r , θ (c) r , ϕ (d) r

5. If $\dfrac{\sin(x+y)}{\sin(x-y)} = \dfrac{a+b}{a-b}$ then $\dfrac{\tan x}{\tan y} =$

(a) $\dfrac{b}{a}$ (b) a-b   (c) $\dfrac{a}{b}$ (d) a+b

6. The equation of the straight line passing through the point (4, 3) and making intercepts on the co-ordinate axes whose sum   is −1 is

(a) x/2 + y/3 = -1 and x/-2 + y/1 = -1   (b) x/2 - y/3 = -1 and x/-2 + y/1 = -1
(c) x/2 + y/3 = 1 and x/2 + y/1 = 1   (d) x/2 - y/3 = 1 and x/-2 + y/1 = 1

Registrar
R.D. Engineering College
Ghaziabad

Dean Academics
R.D. Engineering College
Duhai, Ghaziabad

Director
R.D. Engineering College
Duhai, Ghaziabad

7.Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is

(a) 3/2   (b) 5/2   (c) 7/2   (d) 9/2

8.A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semi−major axis is

(a) 4/3   (b) 8/3   (c) 7/3   (d) 5/3

9.A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at

(a) (0, 2)   (b) (0, 1)   (c) (1, 0)   (d) (2, 0)

10. A plane passes through $(1, -2, 1)$ and is perpendicular to two planes $2x - 2y + z = 0$ and

$x - y + 2z = 4$. The distance of the plane from the point $(1, 2, 2)$ is

(a) 0   (b) 2   (c) Square Root of 3   (d) 2 Square Root of 2

11.If μs, μk and μr are coefficients of static friction, kinetic friction and rolling friction, then

(a) μs < μk < μr   (b) μk < μr < μs   (c) μr < μk < μs   (d) μr = μk = μs

12.Impulse equals

(a) rate of change of momentum   (b) change in momentum

(c) momentum multiplied by time   (d) rate of change of force

13.'Net force acting on an object is found to be zero.' It can be inferred that the object

(a) May be at rest   (b) May be in uniform motion

(c) May be in uniformly accelerated motion   (d) Both a & b

14.The coefficient of static friction between two surfaces depends upon

(a) the normal reaction   (b) the shape of the surface in contact

(c) the area of contact   (d) None of the these

15.Which of the following statements about friction is true?

(a) Friction can be reduced to zero   (b) Frictional force cannot accelerate a body

(c) Frictional force is proportional to the area of contact between the two surfaces

(d) Kinetic friction is always greater than rolling friction

16. No work is done if   (a) displacement is zero   (b) force is zero

(c) force and displacement are mutually perpendicular   (d) All of the above

17. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?

(a) Inelastic Collision   (b) Elastic Collision   (c) Destructive collision   (d) None of the options

18. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.

(a) 121 J   (b) 147 J   (c) 227 J   (d) 182 J

19. An electric heater of rating 1000 W is used for 5 hrs per day for 20 days. What is the electrical energy utilized?

(a) 100 kWh   (b) 200 kWh   (c) 120 kWh   (d) 500 kWh

20. The rate of doing work is called_____.   (a) Force   (b) Acceleration   (c) Power   (d) Displacemen

21. As an electroplated protective covering, what metal is used?
a) Plutonium   b) Chromium
c) Nickel   d) Iron

22. Which of the following statements concerning transuranium elements is incorrect?
a) Atomic number > 92   b) Example is Thorium
c) Decay radioactively as they are unstable   d) Elements after Uranium

23. Which of the following is not a lanthanide property?
a) They are soft metals with a white silvery colour
b) They tarnish rapidly by air
c) The hardness of the metals increases with increase in the atomic number
d) The melting point of the metal ranges from 500-1000K

24. AgCl fails to pass which of the following tests?
a) Alkaline test   b) Acidic test
c) Chromyl chloride test   d) Baeyer's reagent test

25. Plotting a graph between temperature and reaction rates can reveal the temperature dependence of reaction rates.

a) Concentration of reactants and temperature
b) Concentration of products and temperature
c) Rate constant and temperature
d) Rate of catalysis and temperature

26. What effect does temperature have on the half-life of a first-order reaction?
a) It increases   b) It decreases   c) It remains the same   d) Both increases as well as decrease

27. In 30 minutes, a first-order reaction is 50% complete. Calculate the amount of time it took to complete 87.5 perc of the reaction.
a) 30 minutes   b) 60 minutes   c) 90 minutes   d) 120 minutes

28. When the molecules of a substance are kept at the surface of a solid or a liquid, what is the name of the process?
a) Absorption   b) Adsorption   c) Sorption   d) Desorption

29. Which of the following assertions about the extent of physisorption is correct?
a) Increases with increase in temperature   b) Decreases with increase in surface area

c) Decreases with increase in the strength of Van der Waals forces   d) Decreases with increase in temperature

29. Which of the following is not a lyophobic colloidal example?
a) Gold solution   b) Sulphur solution   c) NaCl solution   d) Blood

30. How are different colours used to make gold colloidal solutions?
a) Different diameters of colloidal gold particles   b) Variable valency of gold
c) Different concentrations of gold particles   d) Impurities produced by different methods
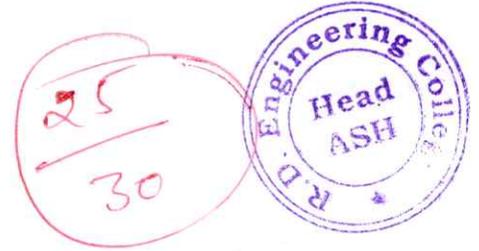
Pushplata Scholarship Scheme

Qualifying Examination

Time: - 2 Hrs

Admission Year – (2020-21)

Name of Applicant: - Vinay tyagi

Father's Name: - Pramod tyagi

Branch (to be opted):- CS

$\frac{25}{30}$

Note:- Attempt all Questions. Each question is of 1 mark.

1 Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the quadratic equation.

(a) $x^2 + 18x + 16 = 0$ (b) $x^2 - 18x - 16 = 0$ (c) $x^2 + 18x - 16 = 0$ (d) $x^2 - 18x + 16 = 0$

2 What is the value of factorial Zero (0!)

(a) 10　　　(b) 0　　　(c) 1　　　(d) -1

3. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$ then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$

(a) 3　　　(b) 2　　　(c) 1　　　(d) 0

4. If $x = r\sin\theta\cos\phi$, $y = r\sin\theta\sin\phi$, $z = r\cos\theta$ then $x^2 + y^2 + z^2$ is independent of

(a) θ, ϕ　　　(b) r, θ　　　(c) r, ϕ　　　(d) r

5. If $\dfrac{\sin(x+y)}{\sin(x-y)} = \dfrac{a+b}{a-b}$ then $\dfrac{\tan x}{\tan y} =$

(a) $\dfrac{b}{a}$　　　(b) a-b　　　(c) $\dfrac{a}{b}$　　　(d) a+b

6. The equation of the straight line passing through the point (4, 3) and making intercepts on the co-ordinate axes whose sum is −1 is

(a) x/2 + y/3 = -1 and x/-2 + y/1 = -1 　　(b) x/2 - y/3 = -1 and x/-2 + y/1 = -1
(c) x/2 + y/3 = 1 and x/2 + y/1 = 1 　　(d) x/2 - y/3 = 1 and x/-2 + y/1 = 1

7. Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is

(a) 3/2   (b) 5/2   (c) 7/2   (d) 9/2

8. A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semi−major axis is

(a) 4/3   (b) 8/3   (c) 7/3   (d) 5/3

9. A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at

(a) (0, 2)   (b) (0, 1)   (c) (1, 0)   (d) (2, 0)

10. A plane passes through $(1, -2, 1)$ and is perpendicular to two planes $2x - 2y + z = 0$ and

$x - y + 2z = 4$. The distance of the plane from the point $(1, 2, 2)$ is

(a) 0   (b) 2   (c) Square Root of 3   (d) 2 Square Root of 2

11. If μs, μk and μr are coefficients of static friction, kinetic friction and rolling friction, then

(a) $\mu s < \mu k < \mu r$ (b) $\mu k < \mu r < \mu s$ (c) $\mu r < \mu k < \mu s$ (d) $\mu r = \mu k = \mu s$

12. Impulse equals

(a) rate of change of momentum   (b) change in momentum

(c) momentum multiplied by time   (d) rate of change of force

13. 'Net force acting on an object is found to be zero.' It can be inferred that the object

(a) May be at rest   (b) May be in uniform motion

(c) May be in uniformly accelerated motion   (d) Both a & b

14. The coefficient of static friction between two surfaces depends upon

(a) the normal reaction   (b) the shape of the surface in contact

(c) the area of contact   (d) None of the these

15. Which of the following statements about friction is true?

(a) Friction can be reduced to zero   (b) Frictional force cannot accelerate a body

(c) Frictional force is proportional to the area of contact between the two surfaces

(d) Kinetic friction is always greater than rolling friction

16. No work is done if   (a) displacement is zero   (b) force is zero

(c) force and displacement are mutually perpendicular   (d) All of the above

17. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?

(a) Inelastic Collision   (b) Elastic Collision   (c) Destructive collision   (d) None of the options

18. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.

(a) 121 J   (b) 147 J   (c) 227 J   (d) 182 J

19. An electric heater of rating 1000 W is used for 5 hrs per day for 20 days. What is the electrical energy utilized?

(a) 100 kWh   (b) 200 kWh   (c) 120 kWh   (d) 500 kWh

20. The rate of doing work is called_____.   (a) Force   (b) Acceleration   (c) Power   (d) Displacemen

21. As an electroplated protective covering, what metal is used?
a) Plutonium   b) Chromium
c) Nickel   d) Iron

22. Which of the following statements concerning transuranium elements is incorrect?
a) Atomic number > 92   b) Example is Thorium
c) Decay radioactively as they are unstable   d) Elements after Uranium

23. Which of the following is not a lanthanide property?
a) They are soft metals with a white silvery colour
b) They tarnish rapidly by air
c) The hardness of the metals increases with increase in the atomic number
d) The melting point of the metal ranges from 500-1000K

24. AgCl fails to pass which of the following tests?
a) Alkaline test   b) Acidic test
c) Chromyl chloride test   d) Baeyer's reagent test

25. Plotting a graph between temperature and reaction rates can reveal the temperature dependence of reaction rates.

a) Concentration of reactants and temperature
b) Concentration of products and temperature
c) Rate constant and temperature
d) Rate of catalysis and temperature

26. What effect does temperature have on the half-life of a first-order reaction?
a) It increases   b) It decreases   c) It remains the same   d) Both increases as well as decrease

28. In 30 minutes, a first-order reaction is 50% complete. Calculate the amount of time it took to complete 87.5 perc of the reaction.
a) 30 minutes   b) 60 minutes   c) 90 minutes   d) 120 minutes

27. When the molecules of a substance are kept at the surface of a solid or a liquid, what is the name of the process?
a) Absorption   b) Adsorption   c) Sorption   d) Desorption

28. Which of the following assertions about the extent of physisorption is correct?
a) Increases with increase in temperature   b) Decreases with increase in surface area

c) Decreases with increase in the strength of Van der Waals forces   d) Decreases with increase in temperature

29. Which of the following is not a lyophobic colloidal example?

a) Gold solution   b) Sulphur solution   c) NaCl solution   d) Blood

30. How are different colours used to make gold colloidal solutions?

a) Different diameters of colloidal gold particles   b) Variable valency of gold

c) Different concentrations of gold particles   d) Impurities produced by different methods

Pushplata Scholarship Scheme

Qualifying Examination

Time: - 2 Hrs

Admission Year – (2020-21)

Name of Applicant: - *Karan Sharma*

Father's Name: - *Mahesh Sharma*

Branch (to be opted):- ...*CS*...

$\frac{27}{30}$

Note:- Attempt all Questions. Each question is of 1 mark.

1 Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the quadratic equation.

(a) $x^2 + 18x + 16 = 0$ (b) $x^2 - 18x - 16 = 0$ (c) $x^2 + 18x - 16 = 0$ (d) $x^2 - 18x + 16 = 0$

2 What is the value of factorial Zero (0!)

(a) 10   (b) 0   (c) 1   (d) -1

3. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$ then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$

(a) 3   (b) 2   (c) 1   (d) 0

4. If $x = r\sin\theta\cos\phi$, $y = r\sin\theta\sin\phi$, $z = r\cos\theta$ then $x^2 + y^2 + z^2$ is independent of

(a) θ, ϕ (b) r, θ (c) r, ϕ (d) r

5. If $\dfrac{\sin(x+y)}{\sin(x-y)} = \dfrac{a+b}{a-b}$ then $\dfrac{\tan x}{\tan y} =$

(a) $\dfrac{b}{a}$ (b) a-b   (c) $\dfrac{a}{b}$ (d) a+b

6. The equation of the straight line passing through the point (4, 3) and making intercepts on the co-ordinate axes whose sum   is –1 is

(a) x/2 + y/3 = -1 and x/-2 + y/1 = -1   (b) x/2 - y/3 = -1 and x/-2 + y/1 = -1
(c) x/2 + y/3 = 1 and x/2 + y/1 = 1   (d) x/2 - y/3 = 1 and x/-2 + y/1 = 1

7. Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is

(a) 3/2   (b) 5/2   (c) 7/2   (d) 9/2

8. A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semi-major axis is

(a) 4/3   (b) 8/3   (c) 7/3   (d) 5/3

9. A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at

(a) (0, 2)   (b) (0, 1)   (c) (1, 0)   (d) (2, 0)

10. A plane passes through $(1, -2, 1)$ and is perpendicular to two planes $2x - 2y + z = 0$ and

$x - y + 2z = 4$. The distance of the plane from the point $(1, 2, 2)$ is

(a) 0   (b) 2   (c) Square Root of 3   (d) 2 Square Root of 2

11. If μs, μk and μr are coefficients of static friction, kinetic friction and rolling friction, then

(a) $\mu s < \mu k < \mu r$ (b) $\mu k < \mu r < \mu s$ (c) $\mu r < \mu k < \mu s$ (d) $\mu r = \mu k = \mu s$

12. Impulse equals

(a) rate of change of momentum   (b) change in momentum

(c) momentum multiplied by time   (d) rate of change of force

13. 'Net force acting on an object is found to be zero.' It can be inferred that the object

(a) May be at rest   (b) May be in uniform motion

(c) May be in uniformly accelerated motion   (d) Both a & b

14. The coefficient of static friction between two surfaces depends upon

(a) the normal reaction   (b) the shape of the surface in contact

(c) the area of contact   (d) None of the these

15. Which of the following statements about friction is true?

(a) Friction can be reduced to zero   (b) Frictional force cannot accelerate a body

(c) Frictional force is proportional to the area of contact between the two surfaces

(d) Kinetic friction is always greater than rolling friction

16. No work is done if   (a) displacement is zero   (b) force is zero

(c) force and displacement are mutually perpendicular   (d) All of the above

17. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?

(a) Inelastic Collision   (b) Elastic Collision   (c) Destructive collision   (d) None of the options

18. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.

(a) 121 J   (b) 147 J   (c) 227 J   (d) 182 J

19. An electric heater of rating 1000 W is used for 5 hrs per day for 20 days. What is the electrical energy utilized?

(a) 100 kWh   (b) 200 kWh   (c) 120 kWh   (d) 500 kWh

20. The rate of doing work is called_____.   (a) Force   (b) Acceleration   (c) Power   (d) Displacemen

21. As an electroplated protective covering, what metal is used?
a) Plutonium   b) Chromium
c) Nickel   d) Iron

22. Which of the following statements concerning transuranium elements is incorrect?
a) Atomic number > 92   b) Example is Thorium
c) Decay radioactively as they are unstable   d) Elements after Uranium

23. Which of the following is not a lanthanide property?
a) They are soft metals with a white silvery colour
b) They tarnish rapidly by air
c) The hardness of the metals increases with increase in the atomic number
d) The melting point of the metal ranges from 500-1000K

24. AgCi fails to pass which of the following tests?
a) Alkaline test   b) Acidic test
c) Chromyl chloride test   d) Baeyer's reagent test

25. Plotting a graph between temperature and reaction rates can reveal the temperature dependence of reaction rates.

a) Concentration of reactants and temperature
b) Concentration of products and temperature
c) Rate constant and temperature
d) Rate of catalysis and temperature

26. What effect does temperature have on the half-life of a first-order reaction?
a) It increases   b) It decreases   c) It remains the same   d) Both increases as well as decrease

28. In 30 minutes, a first-order reaction is 50% complete. Calculate the amount of time it took to complete 87.5 per of the reaction.
a) 30 minutes   b) 60 minutes   c) 90 minutes   d) 120 minutes

27. When the molecules of a substance are kept at the surface of a solid or a liquid, what is the name of the process
a) Absorption   b) Adsorption   c) Sorption   d) Desorption

28. Which of the following assertions about the extent of physisorption is correct?
a) Increases with increase in temperature   b) Decreases with increase in surface area

c) Decreases with increase in the strength of Van der Waals forces   d) Decreases with increase in temperature

29. Which of the following is not a lyophobic colloidal example?

a) Gold solution   b) Sulphur solution   c) NaCl solution   d) Blood.

30. How are different colours used to make gold colloidal solutions?

a) Different diameters of colloidal gold particles   b) Variable valency of gold

c) Different concentrations of gold particles   d) Impurities produced by different methods