

Id	1
Question	The Eigen values of the matrix $A = \begin{bmatrix} 5 & 1 & 2 \\ 0 & 2 & 3 \\ 0 & 0 & -2 \end{bmatrix}$ are
A	2,3,0
B	2,-2,0
C	-2,2,5
D	-5,2,-2
Answer	C

Id	2
Question	The system of equation $x + y + z = 6$, $2x + 3y + 6z = 20$ and $2x + 3y + az = b$ have many solution if
A	$a = 2, b = 20$
B	$a = 6, b = 20$
C	$a = -6, b = -20$
D	$a = 2, b = -20$
Answer	B

Id	3
Question	If $u = \frac{x^3 y^3}{x + y}$ in a homogeneous function then the order of the function is
A	3
B	2
C	-2
D	5
Answer	D

Id	4
Question	Expansion of cosine series in power of x is
A	$x - \frac{x^2}{2} + x^3/3 + \dots$
B	$1 - x + x^2/2 + x^3/3 + \dots$
C	$1 - x^2/2! + x^4/4! + \dots$
D	$x + x^2/2 + x^3/3 + \dots$
Answer	C

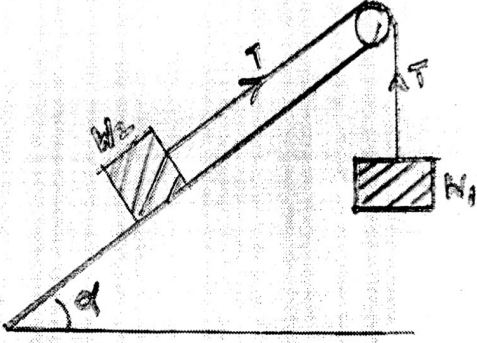
Id	5
Question	Two dimensional Laplace equation is
A	$\partial u / \partial t = c^2 \partial^2 u / \partial x^2$
B	$\partial^2 u / \partial x^2 + \partial^2 u / \partial y^2 = 0$
C	$\partial^2 u / \partial t^2 = c^2 \partial^2 u / \partial x^2$
D	$\partial^2 u / \partial x^2 - \partial^2 u / \partial y^2 = 0$
Answer	B

Id	6
Question	The real root of the equation $x^3 - 3x + 5 = 0$ lies in the interval
A	[0,2]
B	[2,3]
C	[1,2]
D	[-1,-2]
Answer	D

Id	7
Question	The auxiliary roots of the differential equation $\frac{d^3y}{dx^3} - a^3y = 0$ are
A	$a, a/2 \pm \frac{\sqrt{3}ai}{2}$
B	$-a, \frac{-a}{2} \pm \frac{\sqrt{3}ai}{2}$
C	$\frac{a}{2}, a/2 \pm \frac{\sqrt{3}ai}{2}$
D	$-a/2, \frac{-a}{2} \pm \frac{\sqrt{3}ai}{2}$
Answer	C

Id	8
Question	Two forces P and Q are acting at angle θ and their resultant (R) is given by
A	$R = \sqrt{P^2 + Q^2 + 2PQ \sin 2\theta}$
B	$R = \sqrt{P^2 + Q^2 + 2PQ \cos 2\theta}$
C	$R = \sqrt{P^2 + Q^2 - 2PQ \cos \theta}$
D	$R = \sqrt{P^2 + Q^2 + 2PQ \cos \theta}$
Answer	D

Id	9
Question	A beam supportive over three rollers lying in the same plane. The beam is stable for
A	Any general loading
B	Loading with no component in the direction of the beam
C	Loading with no component perpendicular to the direction of the beam
D	Only when on load except self weight acts
Answer	B

Id	10
Question	Two weight W_1 and W_2 are connected by a light in extensible string. Weight W_2 is placed on a smooth inclined plane of inclination “ α ” and W_1 hangs freely as shown in fig. 1. if W_1 moves downwards then acceleration is equal to
	 <p style="text-align: center;">fig. 1.</p>
A	$\frac{W_1 - W_2 \sin \alpha}{(W_1 + W_2)}$
B	$\frac{(W_1 - W_2 \sin \alpha)g}{W_1 + W_2}$
C	$\frac{W_1 + W_2}{W_1 - W_2 \sin \alpha}$
D	$\frac{(W_1 - W_2)g}{W_1 - W_2 \sin \alpha}$
Answer	B

Id	11
Question	The inference line diagram for S.F. And B.M. At a section is
A	The value of S.F. Or B.M. At that section when the unit load is placed over that section only
B	The value of S.F. And B.M. At that Section when the unit load in at the the center of the span
C	The variation in the value of S.F. And B.M. At that section on the unit load transverses the span from left to right
D	The S.F. And B.M. diagram
Answer	C

Id	12
Question	The constituent responsible for setting of hydraulic lime under water is
A	Silica
B	clay
C	Calcium oxide
D	Carbon dioxide
Answer	A

Id	13
Question	The steel beam theory of doubly reinforced beams assumes that
A	Tension is resisted by tension steel only
B	Compression is resisted by compression only
C	Stress in tension steel equals the stress in compression steel
D	All of the above
Answer	D

Id	14
Question	Bearing stiffeners are provided in plate girders to
A	Eliminate Web buckling
B	Transfer Concentrated loads
C	Prevent excessive buckling
D	Eliminate local buckling
Answer	D

Id	15
Question	Relationship between natural void ratio, e and porosity ' n ' is
A	$n = e(1 + e)$
B	$e = n(1 + n)$
C	$e = n(1 + e)$
D	$n = e(1 + n)$
Answer	C

Id	16
Question	A sample of saturated soil has a water content of 40%. The specific gravity of solids is 2.7. its voids ratio is
A	1.08
B	2.31
C	1.34
D	0.67
Answer	A

Id	17
Question	For foundation at shallow depth, Terzaghi assumed that at failure
A	Failure surface extends upto Ground level
B	Failure surface terminates at base level of foundation
C	Bottom of footing is smooth
D	Elastic condition exist
Answer	B

Id	18
Question	Rising of water table in shallow foundation, near foundation level
A	Reduces bearing capacity
B	Increase bearing capacity
C	Does not bearing capacity
D	Increases and then decreases bearing capacity
Answer	D

Id	19
Question	In unconfined compression test, around stress is
A	Equal to major principal stress
B	Half the major principal stress
C	Equal to zero
D	Equal to intermediate Principal stress
Answer	C

Id	20
Question	Which of the following requires greatest deformation
A	Local shear failure
B	General shear failure
C	Composite shear failure
D	Rigid failure
Answer	A

Id	21
Question	Factor of safety of slopes is defined as
A	$F.S. = \frac{\text{total stress}}{\text{effective stress}}$
B	$F.S. = \frac{\text{resisting moment}}{\text{over turning moment}}$
C	$F.S. = \frac{\text{over turning moment}}{\text{resisting moment}}$
D	$F.S. = \frac{\text{Shear stress}}{\text{normal stress}}$
Answer	B

Id	22
Question	A Newtonian fluid is defined as the fluid which
A	Is incompressible and non viscous
B	Obeys Newton's law of viscosity
C	Is highly viscous
D	Is compressible and non – viscous
Answer	B

Id	23
Question	Bernoulli's equation is derived making assumption that
A	The flow is uniform steady and incompressible
B	The flow is non – viscous, uniform and steady
C	The flow is steady, non – viscous, incompressible and irrotational
D	None of the above
Answer	C

Id	24
Question	The most accurate method of finding the average depth of rainfall over an area is
A	Thiessen polygon method
B	Isohyetal method
C	Arithmetic mean method
D	Any of the above
Answer	B

Id	25
Question	Darcy's law for ground water motion states that the velocity
A	Is proportional to hydraulic gradient
B	Is proportional to the square of hydraulic gradient
C	Is inversely proportional to hydraulic gradient
D	Is proportional to the logarithm of hydraulic gradient
Answer	A

Id	26
Question	When the Canal sum below the drain,cross drainage work provided is called
A	Aqueduct
B	Super passage
C	Level crossing
D	Syphon aqueduct
Answer	B

Id	27
Question	Syphon aqueduct is selected on the cross drainage work when the canal bed level
A	Is below the max. flood level in the drain
B	Is above the max. floor level in the drain
C	Is below the bed level of the drain
D	None of the above
Answer	A

Id	28
Question	Surge tanks in hydroelectric plants are provided
A	To protect the pen stock pipe from water hammer pressure
B	To maintain the uniform discharge in penstock pipes
C	To reduce the frictional loss in pen stock pipes
D	None of the above
Answer	A

Id	29
Question	Water for domestic consumption should be
A	Colour less, Odorless and tasteless
B	Free from dissolved salts
C	Hygienically safe
D	Attractive for looks
Answer	C

Id	30
Question	A water borne virus infection is
A	Cholera
B	Swimmers itch
C	Jaundice
D	Cancer
Answer	C

Id	31
Question	The gases given out of a septic tank are
A	$CO_2 + SO_2 + N$
B	$CO_2 + PH_3 + NH_3$
C	$CO_2 + CH_4 + H_2S$
D	$CH_4 + O_2 + H_2$
Answer	C

Id	32
Question	Activated sludge process is a biological process involving.
A	Aerobic + anaerobic bacteria
B	Aerobic bacteria + protozoa + algae
C	Anaerobic bacteria + fungi
D	Facultative bacteria + algae
Answer	B

Id	33
Question	“Mass action” during sedimentation is the property of
A	Increase in mass sludge
B	Decrease in mass sludge
C	Settling of a particle along with the neighboring particle
D	Quick spreading of floc
Answer	C

Id	34
Question	Sludge digestion in
A	Disposal of sludge
B	Dilution of sludge
C	Stabilization of sludge
D	Removal of waste products from sludge
Answer	C

Id	35
Question	Agent responsible for ecological imbalance
A	Carnivores
B	Herbivores
C	Man
D	Omnivores
Answer	C

Id	36
Question	A pavement is classified as flexible pavement or rigid pavement base on its
A	Wearing course
B	Base course
C	Sub base
D	Sub grade
Answer	A & B both

Id	37
Question	One of the natural factors influencing camber is
A	Type of material used for wearing camber
B	Topography of the area
C	Nature of subcost met with
D	Amount of rainfall
Answer	D

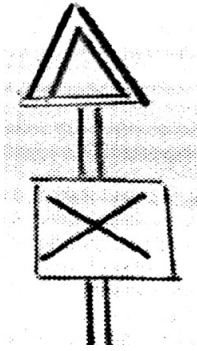
Id	38
Question	When the distance between the axles in 'l' and ration of the curve is 'R' then mechanical widening width is
A	l^2/R
B	$l^2/2R$
C	$2l^2/R$
D	$l/2R$
Answer	B

Id	39
Question	An instrument used to study “spot speeds” in traffic engineering is
A	Speedometer
B	Enoscope
C	Speed recorder
D	Enometer
Answer	B

Id	40
Question	Seal coat is a layer of
A	Cement concrete
B	Coarse sand + Bitumen
C	Water repellent agent
D	Adhesive to improve bond between aggregates
Answer	B

Id	41
Question	To fill potholes of a bituminom surface
A	Heated stone chips or coarse sand and bitumen are applied
B	Primer is applied and filled with gravel and rammed
C	A thin layer of bitumen in spread and then premixed material is placed
D	60 mm thick layers of premixed bituminous concrete is placed in position and rammed
Answer	D

Id	42
Question	Purpose of seal coat is to provide
A	An even surface
B	Required grade
C	Camber
D	An impervious layout
Answer	D

Id	43
Question	<p>The traffic sign in the fig. 2 given below is a</p> <div style="text-align: center;">  <p>fig. 2</p> </div>
A	Warning sign
B	Informing sign
C	Regulatory sign
D	Route marking sign
Answer	A

Id	44												
Question	<p>In a closed traverse ABC the following readings were taken</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Line</th> <th>Fore bearing</th> <th>Back bearing</th> </tr> </thead> <tbody> <tr> <td>AB</td> <td style="text-align: center;">19°</td> <td style="text-align: center;">200°</td> </tr> <tr> <td>BC</td> <td style="text-align: center;">100°</td> <td style="text-align: center;">277°</td> </tr> <tr> <td>CA</td> <td style="text-align: center;">227°</td> <td style="text-align: center;">49°</td> </tr> </tbody> </table> <p>If station A is free from local attraction, correct bearing of CB is</p>	Line	Fore bearing	Back bearing	AB	19°	200°	BC	100°	277°	CA	227°	49°
Line	Fore bearing	Back bearing											
AB	19°	200°											
BC	100°	277°											
CA	227°	49°											
A	275°												
B	276°												
C	277°												
D	279°												
Answer	D												

Id	45
Question	Local attraction at a place may be due to
A	Key bunches
B	Steel button
C	Current carrying bare wire
D	Electric storm
Answer	C

Id	46
Question	Line of collimation
A	In the same an line of fight
B	The live Joining point of intersection of cross hairs and optical centre of object glass
C	The geometrical axis of the telescope
D	The line parallel to the bubble tube axis
Answer	B

Id	47
Question	When the staff is held on a B.M. Of RL 100.00V, the staff reading was 2.000. when the staff in held on station P, the reading was 3.000. hence height of the instrument is
A	100.000
B	102.000
C	103.000
D	99.000
Answer	B

Id	48
Question	Annallactic lens is provided to
A	Nullify both the constants of tachometer
B	Render additive constant zero
C	Make multiplying constant on 100 and additive constant as zero
D	Improve visibility
Answer	B

Id	49
Question	Pick up the most accurate statement from the following
A	Survey lines in an area should be as many as possible
B	no. of base lines in an area is limited to one
C	Main chain lines should form well conditioned triangles
D	Oblique offsets one interior to perpendicular offsets
Answer	C

Id	50
Question	Radiation plane table survey is best suited when
A	Distances are long but accessible
B	Distances are short and accessible
C	Distances are long and in accessible
D	Distance are short but in accessible
Answer	B