Q 1) Based on the following rocks and minerals, select the correct statement. Quartz, shale, basalt, granite, marble, gypsum, mica.
a) Basalt and marble are the only metamorphic rocks
b) There is no sedimentary rock
c) Granite is the only igneous rock
d) Quartz and mica are minerals


Q 2) Granite is not suitable for ordinary building purpose because.
a) It cannot be polished
b) It is not a fire proof material
c) It is costly
d) It has less crushing strength


Q 3) In which of the following pairs of tress, both tress yield soft wood.
a) Deodar and shishum
b) Chir and sal
c) Sal and teal
d) Chir and deodar


Q 4) Plywood is made by bonding together thin layers of wood in such a way that the angle between grains of any layer to gains of adjacent layer is.
a) 0
b) 30
c) 45
d) 90


Q 5) Assertion A:Paints with white lead base are not recommended for painting of iron works.
Reason R:Paints with white lead base do not check rusting of iron.
Which of the following is correct?
a) Both $A$ and $R$ are true but $R$ is not the correct explanation of $A$
b) Both $A$ and $R$ are true $R$ is not the correct explanation of $A$
c) $A$ is true but $R$ is false
d) $\mathbf{A}$ is false but $\mathbf{R}$ is true

Q 6) Match list I with List II and choose the correct answer from the option given by below.

| List I | List II |
| :--- | :--- |
| A. Pigment | a. Turpentine |
| B. Drier | b. Iron oxide |
| C. Thinner | c. Zinc sulphate |
| D. Extender | d. Aluminum silicate |

a) A-c,B-b,C-a,D-d
b) A-c,B-b,C-d,D-a
c) A-b,B-c,C-a,D-d
d) A-b,B-c,C-d,D-a

Q 7) Hydrophobic cement relates with IS code of.
a) Is: 8041-1990
b) IS: 6452-1989
c) IS: 8043-1991
d) IS: 6909-1990
$\square$

Q 8) The stone that exhibits highest compressive strength is.
a) Slate
b) Gneisses
c) Granite
d) Limestone
$\square$


Q 9) The base material for distemper is.
a) Lime
b) Chalk
c) Snowcem
d) Cement


Q 10) Broken bricks or stone chips are also called.
a) Brokomite
b) Scrap
c) Spall
d) Wastage
$\square$


Q 11) What does the tem "frog" mean.
a) An apparatus to lift the stone
b) A depression on a face of brick
c) Vertical joint in a brick work
d) Soaking brick in water


Q 12) What does the "Slump test" for concrete determine.
a) Strength
b) Durability
c) Workability
d) Water content


Q 13) Which is the most commonly used base for timber painting.
a) Red lad
b) Zinc white
c) White lead
d) Titanium white


Q 14) Which of the following are the most fire resistant paints.
a) Enamel paints
b) Aluminum paints
c) Asbestos paints
d) Cement paints


Q 15) For a good building stone, its specific gravity should be greater than.
a) 1.5
b) 1.7
c) 2.2
d) 27
$\square$

Q 16) The main principle of surveying is to work.
a) From part to the whole
b) From whole to the part
c) From higher level to the lower level
d) From lower level to the higher level


Q 17) The conventional sign shown in the figure represents $\mathbf{a}$. img
a) Bridge carrying railway below road
b) Bridge carrying road below railway
c) Bridge carrying road and railway at the same level
d) A level crossing


Q 18) The real image of an object formed by the objective must lie.
a) In the plane of cross hairs
b) At the center of the telescope
c) At the optical center of the eye-piece
d) Anywhere inside the telescope


Q 19) Which method is used for the preparation of a contour plan for a route survey.
a) Method of squares
b) Method of trace contour
c) Method of cross profile
d) Indirect method of contouring


Q 20) If a tachometer is fitted with an anallatic lens, then.
a) The additive constant is $\mathbf{1 0 0}$, the multiplying constant is zero
b) The multiplying constant is 100 , the additive constant is zero
c) Both multiplying and additive constants are 100
d) Both multiplying and additive constants are 50


Q 21) In which method of surveying, do both the field observation and plotting Proceed simultaneously.
a) Chain surveying
b) Compass surveying
c) Plane table surveying
d) Tacheometric surveying


Q 22) The least count of prismatic compass is.
a) $\mathbf{1}^{0}$
b) $30^{\prime}$
c) $15{ }^{\prime}$
d) 20 "
$\square$


Q 23) The sensitivity of a bubble tube can be increased by.
a) Increasing the diameter of the tube
b) Decreasing the length of the bubble
c) Increasing the viscosity of liquid
d) Decreasing the radius of curvature of the tube


Q 24) In the cross-section method of indirect contouring, the spacing of cross-section depends upon.
A. Contour interval
B. Scale of plan
C. Characteristics of ground
a) Only A
b) A and B
c) B and C
d) A, B and C


Q 25) Which of the Following method of theodolite traversing is suitable for locating the details which are far away from transit stations.
a) Measuring angle and distance from one transit station
b) Measuring angle to the point from at least two station
c) Measuring angle at one station and distance from other
d) Measuring distance from two points on Travers line



Q 26) A sewer is laid from manhole A to manhole $B$, $\mathbf{2 5 0} \mathbf{~ m}$ apart along a downward gradient of 1 in 125.If the reduced level of the invert at $\mathbf{A}$ is $\mathbf{2 0 5 . 7 5} \mathbf{~ m}$ and the height of the boning rod is 3 m , then the reduced level of the sight rail at B is.
a) $\mathbf{2 0 2 . 7 5 ~ m}$
b) $\mathbf{2 0 6 . 7 5 ~ m}$
c) 208.75 m
d) 211.75 m


Q 27) A rectangular plot of $16 \mathrm{~km}^{2}$ in area is shown on a map by a similar rectangular area of $1 \mathrm{~cm}^{2}$.R.F. of the scale to measure a distance of 40 km will be.
a) $\frac{1}{1600}$
b) $\frac{1}{400000}$
c) $\frac{1}{400}$
d) $\frac{1}{16000}$


Q 28) The magnetic bearing of a line $A B$ is $S 30^{\circ} \mathrm{E}$. if the declination is $6^{\circ}$ west, then what is the true bearing. img
a) $\mathrm{S} \mathbf{3 6}^{\mathbf{o}} \mathrm{E}$
b) $\mathbf{N} \mathbf{3 6}{ }^{\circ} \mathrm{W}$
c) $S 24^{0} \mathrm{E}$
d) $\mathrm{N} 24^{\circ} \mathrm{W}$


Q 29) Consider the following statements about theodolites.
A. Transit theodolite is a theodolite in which the telescope can be transited.
B. EDMI is a theodolite fitted with a micrometer for measurements.
C. A double reading theodolite is one in which diametrically opposite segments of the graduated circle are brought into view and reading are correct. Which of these statements are correct?

## a) All three

b) Only A and C
c) Only A and
d) Only B and C

Q 30) A closed contour line with two or more higher contours inside it will represent a.
a) Depression
b) Hill
c) Cave
d) Well
$\square$


Q 31) In a wet soil mass, air occupies one-sixth of its volume and water occupies one-third of its volume. the void ratio of the soil is.
a) 0.25
b) 0.5
c) 1
d) 1.5


Q 32) In comparison to atterberg limit of normal soils, the expansion soils have which of the following.
A. More liquid limit
B. Less plastic limit
C. Less shrinkage limit
D. More volumetric shrinkage
a) A, B, C and D
b) Only A, C and D
c) Only B and C
d) Only A, B and D


Q 33) For a given sandy soil whose grains are spherical in shape and uniform size, the theoretical void ratio is.
a) 0.61
b) 0.71
c) 0.91
d) 0.81
$\square$


Q 34) Assertion A:Permeability continue to decrease with the increase in dry density of a compacted soil. Reason R:Soil particles in water surroundings may be mutually attracted or repulsed. Which of the following is correct?
a) Both $A$ and $R$ are true and are $R$ is the correct explanation of $A$
b) Both $A$ and $R$ are true but $R$ is not the correct explanation of $A$
c) $A$ is true but $R$ is false
d) $A$ is false but $R$ is true

Q 35) Consider the following.
A. Initial consolidation
B. Primary consolidation
C. Secondary consolidation
D. Final consolidation

The three stages that would be relevant to consolidation of a soil deposit are.
a) A, B and C
b) B, C and D
c) A, C and D
d) A, B and D


Q 36) In a shear test on cohesionless soils, if the initial void is Less than the critical void ratio, the sample will.
a) Increase in volume
b) Initially increase in volume and then remain constant
c) Decrease in volume
d) Initially decrease and then increase in volume


Q 37) If the permeability of a soil $0.8 \mathrm{~mm} / \mathrm{sec}$, the type of soil is.
a) Gravel
b) Sand
c) Silt
d) Clay
$\square$

Q 38) Coefficent of consolidation for clays normally.
a) Decreases with increase in liquid limit
b) Increases with increase in liquid limit
c) First increases and then decreases with increase in liquid limit
d) Remains constant at all liquid limits


Q 39) In the triaxial compression test, the application of additional axial stress on the specimen produces shear stress on.
a) Horizontal plane only
b) Vertical plane only
c) Both horizontal and vertical planes
d) All planes except horizontal and vertical planes.


Q 40) Which of the following lists soils in increasing order of surface areas
a) Silt, Sand, Colloids, Clay
b) Sand, Silt, Colloids, Clay
c) Sand, Silt, Clay, Colloids
d) Clay, Silt, Sand, Colloids


Q 41) For a sandy soil, the angle of internal friction is $30^{\circ}$. if the major principal stress is $50 \mathrm{KN} / \mathrm{m}^{2}$ at failure, then the corresponding minor principal stress will be
a) $\mathbf{1 2 . 2}$
b) $\mathbf{1 6 . 6 6}$
c) 20.8
d) 27.2


Q 42) The Standard plasticity chart to classify fine grained soils is shown in the figure below.
img
What does the area marked ' $X$ ' represent?
a) Silt of low plasticity
b) Clay of high plasticity
c) Organic soil of medium plasticity
d) Clay of intermediate plasticity


Q 43) Approximately, what is the specific gravity of sands.
a) 2
b) 2.2
c) 2.4
d) 2.6
$\square$

Q 44) You are given a sample of soil containing coarse grains to determine its water content. what will you use for the purpose.
a) Pycnometer
b) Oven-drying method
c) Calcium carbide method
d) Alcohol method


Q 45) Match List I with List II and choose the correct answer from the options given below.

| List I | List II |
| :--- | :--- |
| A. Clay | a. 2.00 to 4.75 mm |
| B. Coarse sand | b. $\mathbf{0 . 0 0 2}$ to 0.075 mm |
| C. Fine sand | c. $\mathbf{0 . 0 0 7}$ to 0.425 mm |
| D. Silt | d. $\mathbf{4 . 0}$ to 0.002 mm |

a) A-a,B-c,C-d,D-b
b) A-b,B-a,C-c,D-d
c) A-d,B-a,C-c,D-b
d) A-c,B-a,C-b,D-d

Q 46) In a centrifugal pump casing, the flow of water leaving the impeller, is.
a) Rectilinear flow
b) Radial flow
c) Free vortex motion
d) Forced vortex


Q 47) Manning's formula is used for.
a) Flow in open channels
b) Head loss due to friction in open channels
c) Head loss due to friction in pipes flowing full
d) Flow in pipes


Q 48) The velocity distribution of viscous fluid through a pipe is.
a) Hyperbolic
b) Circular
c) Parabolic
d) Elliptical
$\square$


Q 49) The side slope of cipolletti weir is generally kept.
a) 1 to $\mathbf{4}$
b) 1 to 3
c) 1 to 2
d) 1 to 5
$\square$

Q 50) Match List I with List II and choice the correct answer from the option given below .

| List I <br> (Physical quantity) | List II <br> (Dimension) |
| :--- | :--- |
| A. Angular velocity | a. $\mathrm{L}^{\mathbf{2} T(-1)}$ |
| B. Angular acceleration | b. $\mathbf{T}(-1)$ |
| C. Discharge | c. T(-2) |
| D. Kinematic viscosity | d. $\mathrm{L}^{\mathbf{3} t(-1)}$ |

a) A-a,B-b,C-c,D-d
b) A-b,B-c,C-d,D-a
c) A-c,B-d,a-d,D-b
d) A-b,B-d,C-a,D-c


Q 51) Which of the following fluids can be classified as non-newtonian.
a) Kerosene oil and diesel oil
b) Human blood and toothpaste
c) Diesel oil and water
d) Kerosene oil and water


Q 52) Given that atmospheric pressure head $=9 \mathrm{~m}$, vapour pressure head (max.) $=1 \mathrm{~m}$, failure head $=40 \mathrm{~m}$ and cavitation coefficient $\sigma=0.15$, the height at which the turbine can be set above the tail race level is.
a) 6 m
b) $\mathbf{4 m}$
c) $\mathbf{3} \mathbf{m}$
d) $\mathbf{2} \mathbf{~ m}$


Q 53) A high efficiency pump is required for low discharge, high head and low maintenance cost. delivery of water need not be continuous. the pump need not run at high speed. which one of the following is the correct choice.

## a) Centrifugal pump

b) Reciprocating pump
c) Air lift pump
d) Hydraulic ram


Q 54) Assertion A:The efficiency of a reciprocating pump is $\mathbf{1 0 - 2 0}$ percent higher than that of a centrifugal pump for comparable discharge-head condition. Reason R:The discharge from a reciprocating pump is dependent upon speed. Which of the following is correct?
a) Both $A$ and $R$ are true and $R$ is the correct explanation of $A$
b) Both $A$ and $R$ are true but $R$ in not the correct explanation of $A$
c) $A$ is true but $R$ is false
d) $A$ is false but $R$ is true

Q 55) A rectangular open channel carries a discharge of $15 \mathrm{~m}^{3} / \mathrm{s}$ when the depth of flow is 1.5 m and the bed slope is $1: 1440$ what will be the discharge through the channel at the same depth if the slope would have been 1:1000.
a) $\mathbf{2 1 . 6}$
b) $18 \mathrm{~m}^{3} / \mathrm{s}$
c) $14.4 \mathrm{~m}^{3} / \mathrm{s}$
d) $12.5 \mathrm{~m}^{3} / \mathrm{s}$

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Q 56) The horse power transmitted through a pipe is maximum when the ratio of loss of head due to friction to the total head supplied is.
a) $\frac{1}{3}$
b) $\frac{1}{4}$
c) $\frac{1}{2}$
d) $\frac{2}{3}$


Q 57) the critical state of flow through a channel section may be defined as the state of flow at which the
a) Specific energy is maximum for a given discharge
b) Specific force is maximum for a given discharge
c) Discharge is maximum for a given specific force
d) Discharge is minimum for a given specific energy


Q 58) A turbine works at 20 m head and 500 rpm speed its 1:2 scale model to be tested at a head of 20 m should have a rotational speed of nearly.
a) $\mathbf{1 0 0 0} \mathbf{~ r p m}$
b) 700 rpm
c) $\mathbf{5 0 0} \mathbf{~ r p m}$
d) $\mathbf{2 5 0} \mathrm{rpm}$


Q 59) Consider the following statements. A. Pumps in series operation allow the head to increase
B. Pumps in series operation increase the flow rate
C.Pumps in parallel operation increase the flow rate
D. Pumps in parallel operation allow the head to increase
Which of these statements are correct?
a) A and C
b) A and D
c) B and D
d) $C$ and $D W B C H M N E L$


Q 60) Assertion A:The inlet velocity triangle for a pelton turbine is a straight line. Reason R:For a pelton turbine, the vane angle at inlet is $\mathbf{1 8 0}^{\circ}$.
Which of the following is correct?
a) Both $A$ and $R$ are true and $R$ is the correct explanation of $A$
b) Both $A$ and $R$ are true but $R$ in not the correct explanation of $A$
c) $A$ is true but $R$ is false
d) $A$ is false but $R$ is true

Q 61) The maximum permissible limit for fluoride in shrinkage water is.
a) $0.1 \mathrm{mg} /$ liter
b) $1.5 \mathrm{mg} /$ liter
c) $\mathbf{5} \mathbf{m g} /$ liter
d) $\mathbf{1 0} \mathbf{~ m g} / l i t e r$
$\square$


Q 62) Disinfection of water result in.
a) Removal of turbidity
b) Removal of hardness
c) Killing of disease bacteria
d) Complete sterilization


Q 63) Which is the commonly used sewer under culverts.
a) Circular brick iron sewer
b) Circular cast iron sewer
c) Semi-elliptical sewer
d) Horse-shoe type sewer
$\square$


Q 64) Dechlorination of water is achieved by adding.
a) Sodium thiosulphate
b) Sodium sulphate
c) Sodium hexametaphosphate
d) Sodium bisulphate


Q 65) From the list of treatments given below, which treatments reduce salinity of water.
A. Flash mixing and sedimentation
B. Electro dialysis
C. Reverse osmosis
D. Freezing
E. Filtration.

Choose the correct answer.
a) A, B, C, D and E
b) B, C and D
c) A, C and E
d) A, B and D B BMANMEL


Q 66) Which of the following processes takes place in trickling filters?
a) Filtration
b) Oxidation
c) Disinfection
d) Biological action


Q 67) Traps are used in household drainage systems to:
a) Prevent entry of fond gases in the houses
b) Restrict the flow of water
c) Provide partial vacuum
d) Trap the solid wastes


Q 68) The following sketch shows a water supply main from a storage reservoir provided with a sluice valve.

The type of valve most suitable for this pipeline is:
a) Air valve
b) Scour valve
c) Pressure relief 'valve
d) Check valve


Q 69) Consider the following valves in a water distribution system.
A. Check valve
B. Pressure-reducing valve
C. Air relief valve
D. Scour valve
E. Sluice valve

Which of these work automatically?
a) A, C and D
b) B, D and E
c) C, D and E
d) $\mathbf{A}, \mathrm{B}$ and C B BMANEL

Q 70) Which of the following filters will produce water of higher bacteriological quality?
a) Slow sand filter
b) Rapid sand filter
c) Pressure filter
d) Dual media filter


Q 71) For a colony of $\mathbf{1 0 , 0 0 0}$ persons having sewage flow rate of $200 \mathrm{~L} /$ capita/day, BOD of applied sewage of $300 \mathrm{mg} / \mathrm{L}$ and organic of $300 \mathrm{~kg} /$ day/hectare, the area of an oxidation pond required for treating the sewage of the colony is:
a) 0.2 hectares
b) 1 hectare
c) 2 hectares
d) 6 hectares


Q 72) When waste water is disposed off into a running stream, four zones are formed. In which of the following zones will the minimum level of dissolved oxygen be found?
a) Zone of degradation
b) Zone of active decomposition
c) Zone of recovery
d) Zone of clear water


Q 73) In sewers designed with self cleaning velocity,
a) The bottom is silted
b) The bottom is scoured
c) Both silting and scouring occur at the bottom
d) Neither silting nor scouring occurs at the bottom


Q 74) The pH valve of fresh sewage is usually:
a) Equal to 7
b) More than 7
c) Less than 7
d) Equal to zero
$\square$


Q 75) The laying of sewers is done with
a) Magnetic compass
b) Theodolite
c) Level
d) Plane table


