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# APPSC Exam

Previous Paper

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### INSTRUCTIONS

1. Please check the Test Booklet and ensure that it contains all the questions. If you find any defect in the Test Booklet or Answer Sheet, please get it replaced immediately.
2. The Test Booklet contains 150 questions. Each question carries **one** mark.
3. Each question is followed by 4 answer choices. Of these, you have to select one correct answer and mark it on the Answer Sheet by darkening the appropriate circle for the question. If more than one circle is darkened, the answer will not be valued at all. Use HB pencil to make heavy black marks to fill the circle completely. Make **no** other stray marks.

e.g. : If the answer for Question No. 1 is Answer choice (2), it should be marked as follows :

1    

①	●	③	④
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4. Mark Paper Code and Roll No. as given in the Hall Ticket with HB pencil by darkening appropriate circles in Part A of side 2 of the Answer Sheet. Incorrect/not encoding will lead to *invalidation* of your Answer Sheet.

**Example :** If the Paper Code is 027, and Roll No. is 95640376 fill as shown below :

**Paper Code**

0	2	7
●	○	○
①	①	①
②	●	②
③	③	③
④	④	④
⑤	⑤	⑤
⑥	⑥	⑥
⑦	⑦	●
⑧	⑧	⑧
⑨	⑨	⑨

**Roll No.**

9	5	6	4	0	3	7	6
○	○	○	○	●	○	○	○
①	①	①	①	①	①	①	①
②	②	②	②	②	②	②	②
③	③	③	③	③	●	③	③
④	④	④	●	④	④	④	④
⑤	●	⑤	⑤	⑤	⑤	⑤	⑤
⑥	⑥	●	⑥	⑥	⑥	⑥	●
⑦	⑦	⑦	⑦	⑦	⑦	●	⑦
⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧
●	⑨	⑨	⑨	⑨	⑨	⑨	⑨

5. Please get the signature of the Invigilator affixed in the space provided in the Answer Sheet. An Answer Sheet without the signature of the Invigilator is liable for *invalidation*.
6. To change an answer, erase completely the already darkened circle and use HB pencil to make fresh mark.
7. The candidate should **not** do rough work or write any irrelevant matter in the Answer Sheet. Doing so will lead to *invalidation*.
8. Do **not** mark answer choices on the Test Booklet. Violation of this will be viewed seriously.
9. Before leaving the examination hall, return the Answer Sheet to the Invigilator, failing which, disciplinary action will be taken.

1. 97 percent of water on the earth is contained in
  - (1) Oceans
  - (2) Rivers
  - (3) Lakes
  - (4) None of the above
  
2. Which of the following is not a west flowing river in India?
  - (1) Tapi
  - (2) Narmada
  - (3) River basins of Kerala
  - (4) Mahanadi
  
3. Which of the following basins comes under the larger Ganga basin?
  - (1) Narmada Basin
  - (2) Gomti Basin
  - (3) Pennar Basin
  - (4) Krishna Basin
  
4. The rate of fall in temperature of  $6^{\circ}\text{C}$  for every 1,000 m increase in altitude is valid within the
  - (1) Ionosphere
  - (2) Troposphere
  - (3) Stratosphere
  - (4) None of the above
  
5. Which of the following is not a form of precipitation?
  - (1) Rain
  - (2) Snow
  - (3) Hail
  - (4) None of the above
  
6. The percentage ratio of the actual to the saturation vapor pressure is called
  - (1) Absolute humidity
  - (2) Specific humidity
  - (3) Relative humidity
  - (4) Dew point
  
7. In a barometer 1 mm of mercury is equal to
  - (1) 1.33 mb
  - (2) 13.3 mb
  - (3) 133 mb
  - (4) 1330 mb
  
8. Standard atmospheric pressure at Mean sea level with a temperature of  $15^{\circ}\text{C}$  is
  - (1) 1013 mb
  - (2) 1023 mb
  - (3) 2013 mb
  - (4) 2023 mb

9. As per the size of the droplets of precipitation, which of the following order is correct
- (1) Sleet < Rain < Drizzle
  - (2) Sleet < Rain > Drizzle
  - (3) Sleet > Rain > Drizzle
  - (4) Sleet > Rain < Drizzle
10. Passing below the surface of the earth which zone follows first, in general
- (1) Soil water zone
  - (2) Intermediate zone
  - (3) Capillary zone
  - (4) Bed rock
11. The maximum amount of water the soil can hold against the force of gravity is termed as
- (1) Infiltration capacity
  - (2) Field capacity
  - (3) Percolation
  - (4) Specific yield
12. The point at which the lowest amount of moisture is held by the soil which is not available for transpiration by vegetation is
- (1) Soil water
  - (2) Intermediate point
  - (3) No water point
  - (4) Wilting point
13. Soil moisture can be determined by
- (1) Gravimetric method
  - (2) Neutron scattering method
  - (3) Both (1) and (2)
  - (4) Pan evaporimeter
14. Run-off can be estimated in
- (1) Kilometers
  - (2) Sq. meters
  - (3) Cumecs
  - (4) Metrs/sec.
15. An additional portion of runoff, contributed by direct precipitation on the stream itself is called as
- (1) depression storage
  - (2) channel precipitation
  - (3) depression storage
  - (4) detention storage
16. Groundwater emerging at lower elevations as effluent seepage and springs, which contributes to run-off is called
- (1) surface runoff
  - (2) evaporation
  - (3) infiltration
  - (4) base flow

17. The water table along an influent stream
- (1) lies upper than water surface of the stream
  - (2) lies lower than water surface of the stream
  - (3) both (1) and (2)
  - (4) none
18. Down the hole hammer (DTH) method of drilling is suitable for
- (1) Soft sedimentary rocks and alluvia
  - (2) Clayey formations
  - (3) Hard rock formations
  - (4) Deep boreholes
19. Which of the following is correct in the context of percent of porosity values?
- (1) Silt < Clay > Sand stone
  - (2) Silt > Clay > Sand stone
  - (3) Silt > Clay < Sand stone
  - (4) Silt < Clay < Sand stone
20. Which of the following is correct in the context of percent of specific retention values?
- (1) Clay < Silt < Sand
  - (2) Clay > Silt < Sand
  - (3) Clay > Silt > Sand
  - (4) Clay < Silt > Sand
21. The density of soil particles can be determined by making use of
- (1) Burette
  - (2) Air pycnometers
  - (3) Atmo meters
  - (4) None of the above
22. Which of the following parameters does not affect the porosity?
- (1) Changing of particles from cubic to triangular arrangement
  - (2) Poor sorting of spherical grains
  - (3) Poor sorting of grains
  - (4) Chemical nature of the grains
23. The Secondary porosity in sand stones, bearing primary porosity may be developed due to
- (1) Joints
  - (2) Temperature
  - (3) Pressure
  - (4) None of the above

24. The degree of sorting and size of grains of a sediment are determined using
- (1) Infiltrimeters
  - (2) Pyconometers
  - (3) Mechanical analysis
  - (4) Soil augers
25. The general diameter distribution of silt and clay particles are less than
- (1) 0.0625 mm
  - (2) 0.0625 cm
  - (3) 0.625 mm
  - (4) None of the above
26. The capacity of a saturated rock to retain water after drainage is denoted by
- (1) Specific yield
  - (2) Specific capacity
  - (3) Specific retention
  - (4) Permeability
27. The capacity of a saturated rock to drain water under the force of gravity is termed as
- (1) Specific yield
  - (2) Specific capacity
  - (3) Specific retention
  - (4) Permeability
28. Which of the following cannot be used for measurement of specific yield?
- (1) Field saturation and drainage method
  - (2) Sampling after lowering of water table
  - (3) Pumping method
  - (4) Sieving
29. Which of the following does not come within the zone of aeration?
- (1) Saturation of water
  - (2) Belt of soil water
  - (3) Intermediate belt
  - (4) Capillary fringe
30. Perched groundwater exists in zone of aeration due to the existence of
- (1) recharge boundary
  - (2) barrier boundary
  - (3) high yield
  - (4) none of the above

31. The minimum number of water levels, required to draw a water level contour
- (1) 1
  - (2) 2
  - (3) 3
  - (4) 4
32. A semi permeable rock layer of yielding water slowly in comparison to the adjoining aquifer is called
- (1) Aquiclude
  - (2) Aquitard
  - (3) Aquifuge
  - (4) Permeable layer
33. If the static water level in the well is above the water table then the groundwater is said to be under
- (1) Artesian conditions
  - (2) Normal conditions
  - (3) Subnormal conditions
  - (4) Pressure head
34. The co-efficient of storage is also called as
- (1) Permeability
  - (2) Storage rate
  - (3) Storativity
  - (4) Storage level
35. The general range of co-efficient of storage for a confined aquifer is
- (1) 0.01 to 0.1
  - (2) 0.001 to 0.01
  - (3) 0.0001 to 0.001
  - (4) 0.00001 to 0.0001
36. The general range of storage for unconfined aquifers is
- (1) 0.00001 to 0.0003
  - (2) 0.0001 to 0.003
  - (3) 0.001 to 0.03
  - (4) 0.01 to 0.3
37. The density of sea water is
- (1) 10.25 g/cc
  - (2) 102.5 g/cc
  - (3) 1.025 g/cc
  - (4) 1025 g/cc



38. The compressibility is the reciprocal of
- (1) Bulk modulus of elasticity
  - (2) Elongation ration
  - (3) Shear stress
  - (4) Pressure
39. Which of the following is not a boundary condition of an aquifer system?
- (1) Stream
  - (2) Constant head
  - (3) Groundwater well
  - (4) Impermeable wall
40. Infiltration capacity of the soil is defined as
- (1) The depth of water absorbed by the soil during the storm
  - (2) The intensity of rainfall above which the rainfall volume equals the observed runoff volume
  - (3) The maximum rate at which the soil absorbs the water
  - (4) The permeability of the soil in vertical direction
41.  $\phi$  -index is defined as
- (1) The difference between maximum and minimum infiltration capacities
  - (2) The difference between the total rainfall and the total runoff divided by the duration of the storm
  - (3) The rainfall intensity above which the rainfall volume equals the observed runoff volume
  - (4) The minimum infiltration rate during the storm
42. W - index will always be
- (1) Equal to  $\phi$  -index
  - (2) More than  $\phi$  -index
  - (3) Less than  $\phi$  -index
  - (4) A constant fraction of  $\phi$  -index
43. Under identical conditions if the infiltration capacity measured by the double ring infiltrometer is  $f_d$  and that measured by a rainfall simulator is  $f_s$ , which of the following is true?
- (1)  $f_s < f_d$
  - (2)  $f_s > f_d$
  - (3)  $f_s = f_d$
  - (4) Difficult to tell
44. Infiltration galleries are built for collection of water in
- (1) Alluvial or Sedimentary areas
  - (2) Granitic area
  - (3) Basaltic terrains
  - (4) Near big buildings

45. Which of the following has the highest infiltration capacity?
- (1) Forest land
  - (2) Grazed pasture
  - (3) Air port
  - (4) Rock outcrop
46. An aquifer is a geological formation which
- (1) does not contain water
  - (2) contains water but does not transmit
  - (3) contains and also transmit water
  - (4) is a rock out crop
47. Which of the following formations does not contain any groundwater?
- (1) aquifer
  - (2) aquifuge
  - (3) aquitard
  - (4) aquiclude
48. A geological formation which may contain water but is essentially impermeable to the flow of water through it is known as
- (1) Aquifer
  - (2) Aquifuge
  - (3) Aquitard
  - (4) Aquiclude
49. Water existing in capillary zone and is a part of
- (1) Phreatic water
  - (2) Ground water
  - (3) Gravity water
  - (4) Vadose zone
50. The surface obtained by joining the water levels in several observation wells penetrating a confined aquifer represents
- (1) Piezometric surface
  - (2) Water table surface
  - (3) Capillary fringe
  - (4) Cone of depressions
51. In the case of a flowing well, the piezometric surface is
- (1) below the ground level
  - (2) above the ground level
  - (3) between the ground level and the water surface in the well
  - (4) below the water surface in the well
52. The ratio of the volume of water retained by the formation to the volume of the formation when it is freely drained is known as
- (1) Specific retention
  - (2) Specific yield
  - (3) Non retention
  - (4) Excessive retention

53. Specific yield of an aquifer is defined as the ratio of the
- (1) Volume of pore space to the volume of soil
  - (2) Volume of water freely drained from a saturated soil to the volume of soil
  - (3) Volume of water retained, when a saturated soil is freely drained to the volume of soil
  - (4) None of these
54. An aquifer which has an impermeable layer at the bottom and not at the top is known as
- (1) confined aquifer
  - (2) unconfined aquifer
  - (3) semi confined aquifer
  - (4) perched aquifer
55. An unconfined aquifer is also known as
- (1) an artesian aquifer
  - (2) a leaky aquifer
  - (3) a perched aquifer
  - (4) a water table aquifer
56. The permeability of an aquifer
- (1) increases with increase in temperature
  - (2) increases with decrease in temperature
  - (3) is independent of temperature
  - (4) decreases with decrease in temperature
57. Darcy's law for groundwater movement states that the velocity is proportional to
- (1) The hydraulic gradient
  - (2) The square of the hydraulic gradient
  - (3) The logarithm of the hydraulic gradient
  - (4) The reciprocal of the hydraulic gradient
58. A laboratory test on sample from an aquifer revealed a porosity of 35%. The specific yield of the aquifer will be
- (1) equal to 0.35
  - (2) less than 0.35
  - (3) more than 0.35
  - (4) difficult to predict
59. The terms Resistance, Resistivity and apparent resistivity of a formation
- (1) Mean the same thing
  - (2) Resistance and apparent resistivity are measured under lab conditions while resistivity is a field parameter
  - (3) Are all related in a complex manner depending on conditions of measurement
  - (4) Resistivity and apparent resistivity are vectors while resistance is a scalar
60. The base flow is the difference between
- (1) The total runoff and the delayed subsurface runoff
  - (2) The total runoff and the direct runoff
  - (3) The prompt subsurface runoff and the delayed subsurface runoff
  - (4) The total runoff and the prompt subsurface runoff

61. The upper limit of Reynold's number for the Darcy's law to be valid for groundwater flow is
- (1) 0.01
  - (2) 0.1
  - (3) 1
  - (4) 10
62. Radius of influence is the horizontal distance between the centre of the pumped well and
- (1) A point on the cone of depression of maximum draw down
  - (2) A point on the cone of depression of zero draw down
  - (3) The first observation well
  - (4) The second observation well
63. Which electrical method of geophysical prospecting can help in distinguishing between clays and sands, both impregnated with salt water?
- (1) S.P. Method
  - (2) Induced Polarisation Method
  - (3) Resistivity profiling
  - (4) Charged body (mise-a (a-masse)) method
64. Conjunctive use of ground and surface water helps
- (1) Prevent water logging
  - (2) More area to be irrigated
  - (3) Supplemental irrigation
  - (4) All the above
65. The safe depression head for open wells is generally taken to be of \_\_\_\_\_ the critical depression head.
- (1)  $1/3$
  - (2)  $1/2$
  - (3)  $2/3$
  - (4)  $3/2$
66. Which of the following places in India records highest annual rainfall?
- (1) Trivandrum
  - (2) Mumbai
  - (3) Chennai
  - (4) Chirapunji
67. Vegetation tends to
- (1) Increase the runoff from the catchment
  - (2) Decrease the runoff from the catchment
  - (3) Does not affect the runoff
  - (4) None of these

68. The water level in the well responds to
- (1) Atmospheric pressure changes
  - (2) High and low tides
  - (3) Pumping rates
  - (4) All the above
69. Isohyet is a line joining all places having
- (1) The same atmospheric pressure
  - (2) The same amount of rainfall
  - (3) The same temperature
  - (4) The same depth to the groundwater table
70. In the Wenner profiling method of resistivity techniques, the electrode spacing of current (A, B) and measuring or potential (MN) electrodes is
- (1)  $AB = 3 MN$
  - (2) MN is kept at  $\frac{1}{5}^{\text{th}}$  of AB
  - (3) MN is kept perpendicular to AB
  - (4) AB and MN are equal
71. State which of the following statement is wrong?
- (1) Crystalline rocks have low porosity but if fractured can yield water because fractures and fissures increase permeability
  - (2) Wells sunk in a synclinal valley are always successful and may be naturally flowing
  - (3) An open well becomes dry if a bore well is drilled very close to it and pumped continuously
  - (4) Wells are spaced apart in hard rocks than in alluvial areas
72. Which of the following is the favorable situation for well sinking?
- (1) Valley region
  - (2) Bald hillocks with xerophytes
  - (3) Thick vegetation
  - (4) Joints and faults in rocks
73. Which of the following statement is correct?
- (1) Moisture content of a soil can exceed porosity
  - (2) The wider the range in grain size, the lower the porosity
  - (3) In general the higher the porosity, the higher the permeability
  - (4) Clay cannot hold as much water as sand can
74. The annual groundwater storage in an area is equal to
- (1) Land area  $\times$  drop in groundwater table
  - (2) Land area  $\times$  rise in groundwater table  $\times$  porosity formation
  - (3) Involved area of aquifer  $\times$  maximum seasonal fluctuation in groundwater table  $\times$  specific yield of aquifer
  - (4) None of the above
75. The seepage (groundwater flow) is calculated as
- (1) Cross sectional area of aquifer  $\times$  slope of groundwater table  $\times$  permeability of the aquifer
  - (2) Cross sectional area of aquifer  $\times$  slope of groundwater table  $\times$  transmissibility of the aquifer
  - (3) Width of the aquifer  $\times$  slope of the piezometric surface  $\times$  transmissibility of artesian aquifer
  - (4) Both (2) and (3)

76. Seismic methods of prospecting can be employed for ground water prospecting when?
- (1) The ground relief is highly irregular
  - (2) The aquifer formation is located below a crystalline formation
  - (3) In Clayey areas
  - (4) The water bearing formation has a higher acoustic wave velocity than the layers covering it
77. A steady state groundwater flow condition exists when
- (1) The groundwater level in the well cease to decline with pumping
  - (2) The water levels respond to changes in atmospheric pressure or tides
  - (3) The pumping rate can be changed with time
  - (4) None of the above
78. A seismic timer is a prospecting device usually employed for seismic field work by
- (1) Fan shorting
  - (2) Shallow refraction surveys
  - (3) Deep reflection studies
  - (4) Common depth point (CDP) surveys
79. Which is not correct among the following regarding purpose of pumping tests?
- (1) Identify the aquifer boundaries and their nature
  - (2) Determine the aquifer constants S and T.
  - (3) To delineate the pollutant Migrations
  - (4) To determine the specific capacity
80. Jacob's modifications of the Theis non-equilibrium equation are valid for
- (1) Small values of u
  - (2) High values of u
  - (3) Early pump test data
  - (4) Long time duration
81. The assumptions of Theis equation are
- (1) Large distance between pumping well and observation well
  - (2) Well is penetrated partially
  - (3) No need of observation well
  - (4) Well must penetrate throughout the thickness of the aquifer
82. Curve matching technique is required for the following pumping method
- (1) Jacob's method
  - (2) Chow's method of pumping
  - (3) Theis method of pumping
  - (4) Both (1) and (2)
83. Steady state Radial flow equation was used by
- (1) Dupuit
  - (2) Theim
  - (3) Theis
  - (4) Jacob

84. Which of the following is an application of Resistivity method?
- (1) Plotting lithological cross-sections
  - (2) Mapping bed rock depths
  - (3) Water quality of shallow aquifers
  - (4) All the above
85. From the equation  $u = r^2 S / 4t T$ ,  $r$  is called as
- (1) Distance between pumping and observation well
  - (2) Radius of the pumping well
  - (3) Radius of the observation well
  - (4) Radius of casing
86. Diurnal corrections for field measurements are required in Geophysical methods where
- (1) Manual techniques are employed
  - (2) The ground surface is uneven
  - (3) When differences in height of observation are large
  - (4) When the parameters measured are dependent upon natural sources
87. Which of the assumptions are correct for conducting pumping tests
- (1) No seepage
  - (2) Constant S
  - (3) Complete Penetration of the well
  - (4) All the above
88. The subsurface runoff is also known as
- (1) flood seepage
  - (2) flood flow
  - (3) excess rainfall
  - (4) groundwater seepage
89. The recent remote sensing satellites launched by ISRO like Cartosat etc. are
- (1) Geostationary in nature
  - (2) Orbit the earth in the periods of about 100 mins
  - (3) Useful for collecting cloud cover data
  - (4) Purely active in nature
90. Improvement in the quality of remote sensing images is often achieved by
- (1) Linear contrast stretching
  - (2) Principal component analysis
  - (3) Filtering
  - (4) All the above

91. The instrument which measures the velocity of wind is known as
- (1) Current meter
  - (2) Atmometer
  - (3) Aerometer
  - (4) Anemometer
92. A perched water table
- (1) May lie above the groundwater table
  - (2) May lie below the groundwater table
  - (3) Give a fair amount of sustained yield
  - (4) Never exists anywhere
93. In the Theis recovery method the residual draw down is measured
- (1) Prior to pumping
  - (2) A long time after pumping
  - (3) After pumping is over
  - (4) Two days before pumping
94. The pressure of water bodies in remotely sensed images is often represented by
- (1) Graininess
  - (2) Straight edges
  - (3) Changes in colour and reflectivity
  - (4) Multiple reflections
95. Generally aquifers existing are
- (1) Leaky
  - (2) Non-leaky
  - (3) All unconfined
  - (4) All confined
96. The instrument which measures the variation of the atmospheric humidity with time is known as
- (1) Barograph
  - (2) Thermograph
  - (3) Hygrograph
  - (4) All the above
97. The tube wells are recommended especially under
- (1) Confined conditions
  - (2) Un confined conditions
  - (3) No groundwater existing
  - (4) All the above
98. Flow lines and equipotential lines are always
- (1) orthogonal
  - (2) parallel
  - (3) make 45 degree with each other
  - (4) none of the above



99. Generally groundwater flow is

- (1) Turbulent
- (2) Laminar
- (3) Both laminar and turbulent
- (4) None of the above

100. Porosity and permeability

- (1) are inversely related
- (2) are independent
- (3) have no relation
- (4) none of the above

101. Isobar is a line which joins the points of equal

- (1) rainfall
- (2) temperature
- (3) humidity
- (4) atmospheric pressure

102. Which of the following is the determining factor for well losses?

- (1) Recovery after pumping
- (2) Distance draw-down curve
- (3) Step draw down curve
- (4) All the above

103. Which of the following is an open well

- (1) Dug cum bore well
- (2) Infiltration well
- (3) Artesian well
- (4) None of the above

104. The discharge per unit drawdown in the well is called as

- (1) specific drawdown
- (2) specific capacity
- (3) specific yield
- (4) either (1) or (2)

105. Geophysical logging of boreholes is conducted in order to

- (1) Help in determining the maximum extent or depth of base hole
- (2) The find out well size and diameter at depths
- (3) Know the type of formation to help in well design
- (4) Test new equipment

106. In fresh water drilled boreholes, the formations with saline water are indicated in an electrical log by

- (1) High resistivity and negative S.P.
- (2) Low resistivity and negative S.P.
- (3) High resistivity and positive S.P.
- (4) Low resistivity and positive S.P.

107. Hydrometeorology is the science which deals with

- (1) Water in the atmosphere
- (2) Water below the surface of the earth
- (3) Water in the streams and lakes
- (4) None of the above

108. The design of well screen depends on the following factors

- (1) Geologic formation
- (2) Percentage of open area
- (3) Degree of weathering
- (4) All the above

109. The well diameter selection depends on

- (1) cost of well
- (2) expected yield
- (3) (1) or (2)
- (4) all the above

110. Drilling mud in the groundwater drilling process is used to

- (1) Take out groundwater
- (2) To extract waste material
- (3) To cement the loose formations in the well
- (4) None of the above

111. Caves and Cavities might develop in limestone when

- (1) Poor quality of water flows
- (2) Fresh water flows
- (3) Acidic water flows
- (4) Saline water flows

112. Magnesium is an important constituent of

- (1) Basic Igneous rocks
- (2) Acidic Igneous rocks
- (3) Sedimentary rocks
- (4) Metamorphic rocks

113. As the salinity of water increases Resistivity of the formation
- (1) Decreases
  - (2) Increases
  - (3) Remains the same
  - (4) None of the above
114. pH of Rain water is generally
- (1) Acidic in nature
  - (2) Basic in nature
  - (3) Neutral in nature
  - (4) None
115. Gravitation field \_\_\_\_\_ with altitude.
- (1) Increases
  - (2) Decreases
  - (3) No change
  - (4) None of the above
116. Gravitational field varies with increase in latitude in this way
- (1) same
  - (2) increases
  - (3) decreases
  - (4) none of the above
117. The enrichment of ferromagnesian or ore minerals in the rocks will increase the
- (1) Resistivity
  - (2) Conductivity
  - (3) Porosity
  - (4) None of the above
118. VES technique is used for finding
- (1) Groundwater
  - (2) Vertical in-homogeneity
  - (3) Lateral in-homogeneity
  - (4) None of the above
119. Radiometric and nuclear logs are used in geophysical logging because they
- (1) Can differentiate between rock and clay
  - (2) Work without a source of energy
  - (3) Are cheap and safe
  - (4) Can be operated successfully in cased holes

120. Accurate leveling of the instrument is needed in gravitational surveys since

- (1) Diurnal effects have to be avoided
- (2) We normally measure the vertical magnetic field
- (3) The vertical component of the acceleration due to gravity is to be measured
- (4) The pendulum or compass needle needs to move freely

121. The velocity of propagation of longitudinal wave in clay is

- (1) 100 m/sec- 200 m/sec
- (2) 5400 m/sec
- (3) 1800-2400 m/sec
- (4) <1m/sec

122. Proton precision magnetometer measure

- (1) Gravity field of the earth
- (2) Vertical magnetic component
- (3) Horizontal magnetic component
- (4) Total field component of the magnetic field of the earth

123. Which of the methods is widely used in ground water prospecting?

- (1) Gravity methods
- (2) Seismic methods
- (3) Electrical methods
- (4) All the above

124. Maximum apparent resistivity anomalies are obtained by orienting the profiles \_\_\_\_\_ to the strike of the geologic structure.

- (1) parallel
- (2) perpendicular
- (3) at 45° angle
- (4) 60°

125. How do the Elastic wave velocities vary with increase in porosities in water saturated formations?

- (1) increasing manner
- (2) decreasing manner
- (3) no variation
- (4) can change either way

126. The shape of the earth is

- (1) circular
- (2) spheroid
- (3) elliptical
- (4) oblate spheroid

127. The variation of gravity from equator to pole is

- (1) -5.17 mgals
- (2) +5.17 gals
- (3) -5.17 gals
- (4) +5.17 mgals

128. What is the average velocity of seismic waves passing through clay?

- (1) 600-1800 m/s
- (2) 900-3000 m/s
- (3) 2000-4300 m/s
- (4) None of the above

129. In order to find out formation porosities one of the following logging techniques may be used

- (1) Electrical resistivity
- (2) Magnetic permeability
- (3) Temperature
- (4) Sonic

130. Hydrofracturing is a method employed for increasing well efficiency in

- (1) Hard rocks like granites
- (2) Sedimentary rocks like sandstones
- (3) Compacted sedimentary rocks like gravels and conglomerates
- (4) Metamorphic rocks like slates, Phyllites

131. Mass transport model is to simulate

- (1) Water levels
- (2) Groundwater pollution
- (3) Land subsidence
- (4) None

132. Viscous fluid model is also called as

- (1) Heleshaw model
- (2) Bear model
- (3) Zamarin model
- (4) None

133. From Horizontal plate Heleshaw model, the interspace between horizontal plates is analogous to

- (1) Aquifer storage co-efficient
- (2) Aquifer transmissivity
- (3) Head in the aquifer
- (4) Barrier boundary

134. Which of the following methods is relatively good in tracing buried channels?

- (1) Electromagnetic
- (2) VLF
- (3) Gravity
- (4) Induced polarization

135. Digital simulation models involves the following steps

- (1) System identification
- (2) Model conceptualization
- (3) Model implementation
- (4) All the above

136. In Resistance-Capacitance network model the barrier boundary is simulated in the absence of

- (1) Resistor only
- (2) Capacitor only
- (3) Both (1) and (2)
- (4) None

137. The behaviour of an aquifer is described by the following basic principle

- (1) Law of continuity
- (2) Law of conservation of energy
- (3) Both (1) and (2)
- (4) None

138. Many modern pumping systems used in deep boreholes of the order of 100 m or more and large discharges employ

- (1) Submersible pumps
- (2) High power jet pumps
- (3) Centrifugal pumps
- (4) Hand pumps

139. Which of the following is a physical model?

- (1) Sand tank model
- (2) Conductive solid model
- (3) Resistance – Capacitance model
- (4) All the above

140. The sand tank model is used to study which of the following?

- (1) Groundwater movement
- (2) Seawater intrusion in coastal aquifers
- (3) Groundwater recharge studies
- (4) All the above

141. When  $\rho_1 < \rho_2 > \rho_3$ , the type of curve obtained is

- (1) H-type
- (2) Q-type
- (3) A-type
- (4) K-type

142. Screening of boreholes is a method used in sedimentary or alluvial areas in order to

- (1) Ensure purity of water
- (2) Support the borehole from collapse
- (3) Help in drilling deep and large diameter holes
- (4) To ensure long life of the well by reducing or eliminating inflow of fine grains and blocking of inlets.

143. Total hardness of groundwater denotes

- (1) Hardness of the rock
- (2) Hardness of rocks and water
- (3) Concentration of calcium and Magnesium
- (4) None of these

144. Which of the following features is not possible to trace out with the help of Remote sensing?
- (1) Vegetal cover
  - (2) Topographical features
  - (3) Drainage pattern
  - (4) Population density
145. The thermal field of earth is measured with the help of
- (1) Seismic method
  - (2) Resistivity method
  - (3) Geothermal method
  - (4) Magnetic method
146. Which of the following is possible with self potential method?
- (1) Oil reserves
  - (2) Mapping of deeper fault zones, fracture zones and outcrops
  - (3) Tectonic plate movements
  - (4) Location of sulphide ore deposits
147. Slingram method is sub method of
- (1) Electromagnetic method
  - (2) Magnetic method
  - (3) Well logging technique
  - (4) Seismic method
148. Porosity logging related to which of the logging technique
- (1) Neutron-gamma logging
  - (2) Neutron-logging
  - (3) Gamma ray logging
  - (4) None of the above
149. A geographical information system can be used for the following in groundwater studies
- (1) Interpret and correlate VES data
  - (2) Analyse pumping test data for aquifer parameters
  - (3) To store and retrieve location related data for further analysis
  - (4) For plotting taluk and village boundaries and land details
150. An iterative system or program for VES curve interpretation employing a computer
- (1) Needs a model geoelectrical section as a starting proposition
  - (2) Is fully automatic and does not need field data
  - (3) Can provide an accurate interpretation which cannot be changed
  - (4) Is not a useful tool compared to manual interpretation



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