PWD Paper 4 –

(1) Two pipes are connected in parallel with fluid flowing through them if the loss of head in one branch is "h" the loss in other branch is –

(a) 2h

(b) h

(c) h/2

(d) √h

Ans: (b) h

(2) The main reinforcement in the toe of a T-shaped R.C. retaining wall is provided on –

(i) Top face, parallel to the wall

(ii) Top face, perpendicular to the wall

(iii) Bottom face, parallel to the wall

(iv) Bottom face, perpendicular to the wall

(a) A only (ii) is true

(b) (ii) and (iv) are true

(c) (i) and (iii) are true

(d) Only (iv) is true

Ans: (d) Only (iv) is true

(3) Due to presence of which one of the following minerals, black cotton soil exhibits swelling nature?

(a) Kaolinite

(b) Illite

(c) Mont morillonite

(d) None of the above

Ans: (c) Mont morillonite

(4) To determine which one of the following property of soil mass proctor test is connected?

(a) Grain size analysis

(b) Shear strength

(c) Bearing capacity

(d) Compaction

Ans: (d) Compaction

(5) There are four words in set. Select the odd one out.

(a) Favoritism

(b) Possessiveness

(c) Nepotism

(d) Bigotry

Ans: (b) Possessiveness

(6) The Benchmark (BM) fixed at the end of a day's work is called the

(a) Temporary BM

(b) Permanent BM

(c) Arbitrary BM

(d) None of these

Ans: (a) Temporary BM

(7) The sign of slope correction and sag correction applied to tape error are

(a) Positive and negative respectively

(b) Negative and positive respectively

(c) Both positive

(d) Both negative

Ans: (d) Both negative

(8) If time required for achieving 50% consolidation of clayey soil sample with single drainage is 't' then what time will be required for achieving same degree of consolidation for the same soil sample but with double drainage?

(a) 't'

(b) 4t

(c) t/4

(d) 16t

Ans: (c) t/4

(9) For conducting modified proctor compaction test what should be the height of free fall of hammer (in mm)?

(a) 304.8

(b) 457.2

(c) 310

(d) 450

Ans: (b) 457.2

(10) Which of the following device is used for measuring the velocity of flow at any point in a pipe?

(a) Venturimeter

(b) Orifice meter

(c) Pilot-tube

(d) Both Venturimeter and orifice meter

Ans: (c) Pilot-tube

(11) In which one of the following joints, dowel bars are provided in cement concrete pavement?

(a) Expansion joints

(b) Longitudinal joints

(c) Construction joins

(d) None of the above

Ans: (a) Expansion joints

(12) The house sewer should be disconnected from the public sewer by the provision of _____.

(a) Floor trap

(b) Nahni trap

(c) Gully trap

(d) Intercepting trap

Ans: (d) Intercepting trap

(13) For conducting heavy compaction test as per Indian standard, what should be the volume of mould (in cc)?

(a) 944

(b) 970

(c) 1000

(d) 1130

Ans: (c) 1000

(14) Which one of the following test is conducted for identification of silt from clay?

(a) Plate load test

(b) Standard penetrate test

(c) Vane sheer test

(d) Dilatancy test

Ans: (d) Dilatancy test

(15) For conducting standard proctor compaction test, what should be the weight of hammer (in kg)?

(a) 2.495

(b) 4.54

(c) 2.6

(d) 4.9

Ans: (a) 2.495

(16) If velocity potential (Φ) satisfies the laplace equation, if represents

(a) Possible steady and irrotational flow

(b) Rotational flow

(c) Steady flow only

(d) Non the above

Ans: (a) Possible steady and irrotational flow

(17) The simplest method for the determination of water content of a soil sample in the laboratory is

(a) Oven drying method

(b) Pycnomter method

(c) Sand bath method

(d) Rapid moisture meter method

Ans: (a) Oven drying method

(18) Polar moment of inertia is

(a) Moment about XX axis

(b) Moment about YY axis

(c) Moment about XX axis + moment about YY axis

(d) Moment about XX axis – Moment about YY axis

Ans: (c) Moment about XX axis + moment about YY axis

(19) The holy town of Badrinath is located in the state of _____.

(a) Uttar Pradesh

(b) Himachal Pradesh

(c) Jammu and Kashmir

(d) Uttrakhand

Ans: (d) Uttrakhand

(21) Which one of the following formula is used for the calculation of intermediate sight distance?

SSD: stopping sight distance

OSD: overtaking sight distance

2×SSD

2×OSD

SSD+DSD

2(SSD+OSD)

Ans: 2×SSD

(22) In highway engineering which one of the following is the range of design value of longitudinal friction coefficient?

(a) $0.2 - 0.3$

(b) $0.35 - 0.4$

(c) $0.5 - 0.6$

(d) $0.6 - 0.7$

Ans: (b) $0.35 - 0.4$

(23) Choose the part which has an error.

(a) My friend Jane

(b) is Flying

(c) to Madrid

(d) at Saturday

Ans: (d) at Saturday

(24) Cipoletti weir is an example of

(a) Rectangular weir

(b) Traingular weir

(c) Trapezoidal weir

(d) Circular weir

Ans: (c) Trapezoidal weir

(25) A flower basket contains 3 white, 4 red and 5 yellow roses.

What is the minimum number of roses that must be drawn from the basket so that you definitely draw 2 red roses?

(a) 7

(b) 8

(c) 10

(d) 12

Ans: (c) 10

(26) Which one of the following property of soil mass is evaluated by conducting plate load test?

(a) Bearing capacity

(b) Load carrying capacity

(c) Permeability of soil mass

(d) Swelling characteristics

Ans: (a) Bearing capacity

(27) Which one of the following represents the unit of dynamic viscosity of fluid?

(a) $(N - sec)/m^2$

(b) (N-m)/sec

(c) $(N-m^2)/sec$

(d) $m^2/N -sec$

Ans: (a) $(N - sec)/m^2$

(28) Which one of the following test can be done with disturbed sampling?

(a) Shear strength of sand

(b) Determination of compaction parameters

(c) Atterberg limits

(d) All of the above

Ans: (d) All of the above

(29) Mach number is

(a) Ratio of inertia force & gravity force

(B) Ratio of fluid velocity & velocity of sound

(C) Ratio of inertial force & viscous force

(D) Ratio of inertial force & surface tension

Ans: (B) Ratio of fluid velocity & velocity of sound

(30) In which one of the following axial flow reaction turbine, vanes are not fixed to the hub and are adjustable?

(a) Francis turbine

(b) Propeller turbine

(c) Kaplan turbine

(d) None of the above

Ans: (c) Kaplan turbine

(31) Which one of the following is the correct group symbol of clayey sand?

(a) SM

(b) OH

(c) SC

(d) GC

Ans: (c) SC

(32) In laminar flow.

(a) All the stream lines are straight and parallel

(b) Some of the stream lines are straight and parallel

(c) All the stream lines are straight but not parallel

(d) All the stream lines are parallel but not straight

Ans: (a) All the stream lines are straight and parallel

(33) For a circular shaft of diameter d subjected to toque T, The maximum value of shear stress is

(a) $64T/\pi d^3$

(b) $32T/\pi d^3$

(c) $16T/\pi d^3$

(d) $8T/\pi d^3$

Ans: (c) $16T/\pi d^3$

(34) Which one of the following apparatus is used for the determination or grin size distribution of fine grained soil?

(a) Casegrande apparatus

(b) Hydrometer

(c) Oedometer

(d) Pyonometer

Ans: (b) Hydrometer

(35) Lacustrine soils are transported & deposited by which one of the following agent?

(a) Wind

(b) Rivers

(c) Lakes

(d) Sea

Ans: (c) Lakes

(36) Steady flow is defined as that type of flow in which fluid characteristics like velocity, pressure, density at a point does not change with _____.

(a) Space only

(b) Time only

(c) Time and co-ordinate

(d) Pressure

Ans: (b) Time only

(37) For a broad crested weir, H = height of water above the crest h = head of water at the middle of weir, the discharge to be maximum.

(a) h = 0.50H

(b) h = 0.67H

(c) h = 0.75H

(d) h = 0.85H

Ans: (b) h = 0.67H

(38) The measure of deformation caused due to external loading is called

(a) Stress

(b) Strain

(c) Strain rosettes gauge

(d) Slip gauge length

Ans: (b) Strain

(39) Which of the following fractions is the least?

(a) 20/25

(b) 15/21

(c) 15/25

(d) 18/20

Ans: (c) 15/25

(40) _____ filter nitrogenous waste of the body from the blood and throw it out as urine.

(a) Kidney

(b) Liver

(c) Large intestine

(d) Small intestine

Ans: (a) Kidney

(41) A hollow rectangular section with outside breadth "B" and depth "D" and inside dimension B and d will have sectional modules as

(a) $(BD^2 - bd^2)/6$

(b) $(BD^3 - bd^3)/6D$

(c) $(BD^3 - bd^3)/6d$

(d) $(BD^3 - bd^3)/6b$

Ans: (b) $(BD^3 - bd^3)/6D$

(42) If the flange of certain steel rolled I section comes under the plastic class and web comes under the compact class, then as per IS 800 : 2007, the I section will come under the category of

(a) Plastic

(b) Compact

(c) Semi-compact

(d) Slender

Ans: (b) Compact

(43) The depreciation cost of rapid sand filter than slow sand filter is

(a) Relatively high

(b) Relatively very high

(c) Relatively low

(d) Relatively very low

Ans: (a) Relatively high

(44) Macaulay's method is used to determine

(a) Section modules of beam

(b) Tensile stress

(c) Shear stress

(d) Deflection of beam

Ans: (d) Deflection of beam

(45) What is 10% of 5% of 400?

(a) 10% of 25% of 800

(b) 20% of 10% of 100

(c) 25% of 25% of 200

(d) 10% of 40% of 200

Ans: (b) 20% of 10% of 100

(46) How many countries together constitute the commonwealth nations?

(a) 104

(b) 51

(c) 53

(d) 63

Ans: (c) 53

(47) As per ISC recommendation, what should be the width of carriage way for two lane roads with raised kerbs?

(a) 3.75m

(b) 5.5m

(c) 7.0m

(d) 7.5m

Ans: (d) 7.5m

(48) Consider the following statements regarding Soil stabilization:

X: The principles of soil stabilization are used for controlling the grading of soils and aggregates in the construction of bases and sub-bases of the highways and airfields.

Y: Lime stabilization is done by adding lime to a soil.

Which of the above statement/s is/are CORRECT?

(a) X only

(b) Y only

(c) Both X & Y

(d) Neither X nor Y

Ans: (c) Both X & Y

(49) For which of the following practice size distribution does the sieve analysis performed in soil?

(a) Coarse grained soil

(b) Fine grained soil

(c) Both coarse grained soil and fine grained soil

(d) None of the above

Ans: (a) Coarse grained soil

(50) Water is flowing through a 200 mm diameter circular pipe having coefficient of friction, f = 0.04. The Reynolds number of the flow considering viscous flow is

(a) 600

(b) 800

(c) 400

(d) Date insufficient

Ans: (c) 400

(51) The property of loss of strength due to cyclic loading is known as:

(a) Boiling

(b) Liquefaction

(c) Thixotropy

(d) Sensitivity

Ans: (b) Liquefaction

(52) The reference location of _____ are assumed on the basis of some fixed points.

(a) Permanent Bench mark

(b) Temporary bench mark

(c) Arbitrary bench mark

(d) None of the above

Ans: (c) Arbitrary bench mark

(53) Find the word that has been incorrectly spelt.

(a) Buoyant

(b) Symmetry

(c) Believe

(d) Shimmer

Ans: (b) Symmetry

(54) In reinforced concrete, pedestal is defined as a compression member whose effective length does not exceed its least lateral dimension by

(a) 12 times

(b) 16 times

(c) 7 times

(d) 3 times

Ans: (d) 3 times

(55) In liquid droplet (spherical) if the diameter of droplet is decreased, then the pressure intensity inside the droplet will (keep other parameters unchanged)

(a) Decrease

(b) Increase

(c) Remain same

(d) None of the above

Ans: (b) Increase

(56) Which of the following options is the smallest?

(a) 10% of 25 + 15% of 150 – 30% of 300

(b) 30% of 25 – 25% of 150 + 15% of 300

(c) 15% of 200 + 15% of 100 – 30% of 250

(d) 20% of 100 – 25% of 100 + 5% of 250

Ans: (a) 10% of 25 + 15% of 150 – 30% of 300

(57) Which one of the following substance is blended with bitumen for production rapid curing cutback bitumen?

(a) Petrol

(b) Diesel

(c) High boiling point gases

(d) None of the above

Ans: (a) Petrol

(58) In which one of the following case, toe failure of finite slope is most likely to occurs?

(a) Soil above & below the toe of slope have soame strength

(b) Soil above the toe of slope is comparatively weaker

(c) Soil above the toe of slope is comparatively stronger

(d) None of the above

Ans: (a) Soil above & below the toe of slope have same strength

(59) A main word is followed by a sentence highlighting its usage. From among the four options choose the one that is most nearly opposite in meaning to the main word. Uncouth: His uncouth behaviour antagonized many.

(a) Utopian

(b) Incomprihensible

(c) Tawdry

(d) Urbane

Ans: (d) Urbane

(60) If x > 10 and x < 20, then which of the following fractions is the least?

(a) 3x/100

(b) 2x/230

(c) x/225

(d) 0.5x/150

Ans: (d) 0.5x/150

(61) 5 Re. 1 coins, five 50 paise coins, five 25 paise coins, and one 10 paise coin, are distributed amongst four friends A, B, C, and D such that each of them get

equal number of coins. If each of them have three types of coins and A has Rs. 1. 10, then

(I) One person has Rs.2.25

(II) One person has Rs.2.75

(III) two persons have Rs.2.25

(IV) two persons have Rs.2.75

(a) I and III

(b) I and IV

(c) II and III

(d) None

Ans: (b) I and IV

(62) Which of the following cities is a capital of a country?

(a) Karachi

(b) Shanghai

(c) New York

(d) Canberra

Ans: (d) Canberra

(63) If the value of internal friction for sandy soil 30 degree, then what will be value of passive earth pressure coefficient (kp)?

(a) 1/3

(b) 3

(c) 1/9

(d) 9

Ans: (b) 3

(64) A, B and C go to an ice – cream parloureveryday. Each orders either a bar or a cone. Whenever A orders a bar, then B will order the same as C orders. Whenever C orders a cone, then A will order the same as B does.

Who, always orders the same dish?

(a) a

(b) b

(c) c

(d) None of these

Ans: (d) None of these

(65) One stoke is equal to

(a) $10^{-4}m^2/s$

(b) $10^{-2}m^2/s$

(c) $10^{-3}m^2/s$

(d) $10^{-6}m^2/s$

Ans: (a) $10^{-4}m^2/s$

(66) Which of the following options is the smallest?

(a) 5 - 15 + 10 – 15 – 10 – 5 + 2 – 4 – 8 – 10

(b) 35 – 12 + 10 + 15 – 5 – 5 + 2 – 4 + 18 – 10

(c) 5 + 5 – 10 – 12 + 10 + 5 – 2 + 14 + 8 – 10

(d) 15 – 25 + 10 – 15 – 10 – 5 – 2 – 4 + 8 – 5

Ans: (a) 5 - 15 + 10 − 15 − 10 − 5 + 2 − 4 − 8 − 10

(67) If principal stress in plane stress problem is σ_1 = 100 Mpa, then magnitude of maximum shear stress (Mpa)

(a) 50

(b) 60

(c) 30

(d) 20

Ans: (c) 30

(68) Which one of the following light reflecting devices are used to guide the driver along proper alignment?

(a) Delineator

(b) Rumble Strips

(c) Litter bin

(d) None of the above

Ans: (a) Delineator

(69) Maximum shear strain energy theory s also known as

(a) Rankine theory

(b) Tresca theory

(c) Von MisesHenky Theory

(d) Saint Venant Theory

Ans: (c) Von MisesHenky Theory

(70) If no organic matter present in water, BOD of water will be

(a) Positive

(b) Negative

(c) Zero

(d) May be positive or negative

Ans: (c) Zero

(71) The dimension of surface tension and capillarity are

(a) MLT^{-2}, LT respectively

(b) MT^{-2}, L respectively

(c) MLT^{-1}, LT^2 respectively

(d) MLT^{-2}, LT^2 respectively

Ans: (b) MT^{-2}, L respectively

(72) Which one of the following traffic volume is considered in design of road geometrics in India?

(a) 30th highest hourly traffic volume

(b) 40th highest hourly traffic volume

(c) 50th highest hourly traffic volume

(d) 60th highest hourly traffic volume

Ans: (a) 30th highest hourly traffic volume

(73) There are four persons A, B, C and D. One of them is a lecturer and plays carom and cricket. A and B are doctors. A plays polo. Both the doctors play football. D is a lawyer. One doctor also plays chess. The lawyer plays carom and plays football. All four people play two games each and follow one profession?

(a) a

(b) b

(c) c

(d) d

Ans: (a) a

(74) The ratio of lateral strain to longitudinal strain is

(a) Strain ratio

(b) Poisson's ratio

(c) Bulk modulus

(d) Young's modulus

Ans: (b) Poisson's ratio

(75) Which is the regulatory body that controls and governs selling of insurance policies in India?

(a) SEBI

(b) AMFI

(c) IRDAI

(d) PMO

Ans: (c) IRDAI

(76) Which of the following geological formation is neither porous nor permeable?

(a) Aquiclude

(b) Aquitard

(c) Aquifuge

(d) None of these

Ans: (c) Aquifuge

(77) If characteristic length of column is doubled the critical load becomes.

(a) 1/2 of the original value

(b) 1/4 of the original value

(c) 1/8 of the original value

(d) 1/16 of the original value

Ans: (b) 1/4 of the original value

(78) Which one of the following statement is justified by the assumption plane section before bending remain plane even after the bending?

(a) Strain profile varies linearly

(b) Stress profile varies linearly

(c) Both stress & strain profile varies linearly

(d) None of these

Ans: (a) Strain profile varies linearly

(79) Which one of the following test is conducted to evaluate the strength property of aggregate?

(a) Crushing test

(b) Abrasion test

(c) Soundness test

(d) Angularity test

Ans: (a) Crushing test

(80) Which one of the following test is conducted to evaluate the porosity property of aggregate?

(a) Water absorption test

(b) Impact test

(c) Soundness test

(d) Abrasion test

Ans: (a) Water absorption test

(81) Which one of the following piles are used for densifying loose soil?

(a) Point bearing piles

(b) Sheet piles

(c) Compaction piles

(d) Batter piles

Ans: (c) Compaction piles

(82) Which of the following relationship is CORRECT?

(a) Bulk modulus = 3 × Elastic modulus × (1 − 2 × Poisson's ratio)

(b) Elastic modulus = 3 × Bulk modulus × (1 − 2 × Poisson's ratio)

(c) Bulk modulus = 2 × Elastic modulus × (1 − 2 × Poisson's ratio)

(d) Elastic modulus = 3 × Bulk modulus × (1 + 2 × Poisson's ratio)

Ans: (b) Elastic modulus = 3 × Bulk modulus × (1 − 2 × Poisson's ratio)

(83) Sunil is twice the age of Swaraj and Naveen is two years younger than Swaraj. If Manoj is one year younger to Swaraj. Who is youngest of them all?

(a) Sunil

(b) Swaraj

(c) Naveen

(d) Manoj

Ans: (c) Naveen

(84) In a turbine system the shaft power obtained is 500 watt and overall efficiency is 0.85 what is water power

(a) 1000 watts

(b) 250 watts

(c) 321 watts

(d) 429 watts

Ans: (a) 1000 watts

(85) The dimension of surface tension is

(a) ML^{-1}

(b) L^2T^{-1}

(c) $ML^{-1}T^{-1}$

(d) MT^{-2}

Ans: (d) MT^{-2}

(86) Which one of the following statement is true for pumps operating in series?

(a) Discharge increase

(b) Discharge decrease

(c) Head increase

(d) Head decrease

Ans: (c) Head increase

(87) The most economical section of channels should have

(a) Maximum discharge, minimum wetted perimeter

(b) Maximum discharge, maximum wetted perimeter

(c) Minimum discharge, maximum wetted perimeter

(d) Minimum discharge, minimum wetted perimeter

Ans: (a) Maximum discharge, minimum wetted perimeter

(88) If the water flows along the tangent of the runner, the turbine is known as the

(a) impulse turbine

(b) reaction turbine

(c) tangential flow turbine

(d) radial flow turbine

Ans: (c) tangential flow turbine

(89) From the pairs of words given, choose the one that fills the blanks most appropriately. The food and Drug Administration has recently _____ severe restrictions on the use of antibiotics to _____ the health and growth of meat animals.

(a) added __ suppress

(b) placed ____ unieash

(c) proposed ___ promote

(d) thwarted _____ cultivate

Ans: (c) proposed ___ promote

(90) While conducting standard penetration test, which one of the following is weight of split spoon sampler (in kg) used in the test?

(a) 30

(b) 50

(c) 65

(d) 75

Ans: (c) 65

(91) Skimming tanks are used when sewage contains too much

(a) Foods from kitchen

(b) Grease or oil

(c) Suspended solids

(d) Settleable solids

Ans: (b) Grease or oil

(92) A line is considered as free from local attraction in Quadrantal Bearing system if the fore bearing and back bearing of the line are

(a) Numerical equal with same sign

(b) Numerical unequal with same sign

(c) Numerical equal with opposite sign

(d) Numerical unequal with opposite sign

Ans: (c) Numerical equal with opposite sign