| | |
|---|---|
| Name of Post: | Junior Manager (Electrical/Mechanical/Civil/IT) under Assam Electricity Grid Corporation Limited (AEGCL) |
| Advt. No. | 14/2023 dated 28.04.2023 |
| Date of Exam. | 26.11.2023 |

**JM/AEGCL/CE/23**

**DO** | **RE ASKED TO DO SO**

**Test Booklet No. :** 01141

**Series** A

# TEST BOOKLET
## Paper—II
## ( CIVIL ENGINEERING )

**Time Allowed : 2 Hours** | **Full Marks : 100**

***Read the following instructions carefully before you begin to answer the questions :***

1. The name of the Subject, Roll Number as mentioned in the Admission Certificate, Test Booklet No. and Series are to be written legibly and correctly in the space provided on the Answer-Sheet with Black/Blue ballpoint pen.
2. **Answer-Sheet without marking Series as mentioned above in the space provided for in the Answer-Sheet shall not be evaluated.**
3. All questions carry equal marks.
   **The Answer-Sheet should be submitted to the Invigilator.**
   *Directions for giving the answers* : Directions for answering questions have already been issued to the respective candidates in the 'Instructions for marking in the OMR Answer-Sheet' along with the Admit Card and Specimen Copy of the OMR Answer-Sheet.
   *Example* :
   Suppose the following question is asked :
   The capital of Bangladesh is
   (A) Chennai
   (B) London
   (C) Dhaka
   (D) Dhubri
   You will have four alternatives in the Answer-Sheet for your response corresponding to each question of the Test Booklet as below :

   Ⓐ Ⓑ Ⓒ Ⓓ

   In the above illustration, if your chosen response is alternative (C), i.e., Dhaka, then the same should be marked on the Answer-Sheet by blackening the relevant circle with a Black/Blue ballpoint pen only as below :

   Ⓐ Ⓑ ● Ⓓ

   **The example shown above is the only correct method of answering.**
4. Use of eraser, blade, chemical whitener fluid to rectify any response is prohibited.
5. Please ensure that the Test Booklet has the required number of pages (20) and 100 questions immediately after opening the Booklet. In case of any discrepancy, please report the same to the Invigilator.
6. No candidate shall be admitted to the Examination Hall/Room 20 minutes after the commencement of the examination.
7. No candidate shall leave the Examination Hall/Room without prior permission of the Supervisor/Invigilator. No candidate shall be permitted to hand over his/her Answer-Sheet and leave the Examination Hall/Room before expiry of the full time allotted for each paper.
8. No Mobile Phone, Electronic Communication Device, etc., are allowed to be carried inside the Examination Hall/Room by the candidates. Any Mobile Phone, Electronic Communication Device, etc., found in possession of the candidate inside the Examination Hall/Room, even if on off mode, shall be liable for confiscation.
9. No candidate shall have in his/her possession inside the Examination Hall/Room any book, notebook or loose paper, except his/her Admission Certificate and other connected papers permitted by the Commission.
10. Complete silence must be observed in the Examination Hall/Room. No candidate shall copy from the paper of any other candidate, or permit his/her own paper to be copied, or give, or attempt to give, or obtain, or attempt to obtain irregular assistance of any kind.
11. This Test Booklet can be carried with you after answering the questions in the prescribed Answer-Sheet.
12. Noncompliance with any of the above instructions will render a candidate liable to penalty as may be deemed fit.
13. No rough work is to be done on the OMR Answer-Sheet. You can do the rough work on the space provided in the Test Booklet.

**N.B. : There will be negative marking @ 0·25 per 1 (one) mark against each wrong answer.**

SEAL



**[ No. of Questions : 100 ]**

1. Pick up the correct relation between Shear modulus ($G$), Elastic modulus ($E$) and Poisson's ratio ($n$) of a material.

(A) $G = \frac{E}{2(1+\mu)}$

(B) $E = \frac{G}{2(1+\mu)}$

(C) $G = \frac{E}{2(1-\mu)}$

(D) $E = \frac{G}{2(1-\mu)}$

2. As per IS classification (IS : 1498-1970) the minimum and maximum size of sand (Range of sand particle size) is

(A) 0·002 mm to 4·75 mm

(B) 0·075 mm to 3·75 mm

(C) 0·075 mm to 4·75 mm

(D) 0·002 mm to 4·25 mm

3. The major and minor stresses at a point are +3 MPa and −3 MPa respectively. The maximum shear stress at that point is

(A) 0·0 MPa

(B) 3 MPa

(C) 6 MPa

(D) 9 MPa

4. On which factor the permeability of soil does not depend?

(A) Structural arrangement of the soil particle

(B) Entrapped air and foreign matter

(C) Absorbed water in clayey soil

(D) None of the above

5. The relationship between voids ratio ($e$) and porosity ($n$) is expressed as

(A) $e = \frac{n}{1-e}$

(B) $n = \frac{e}{1-e}$

(C) $n = \frac{e}{1+e}$

(D) $n = \frac{2e}{1-e}$

6. The equation of deformation for a simply supported beam of length $L$ is found to be $y = x^2 - xL$. The magnitude of curvature of the beam at a point $\frac{L}{4}$ from the hinged end is

(A) 4

(B) 3

(C) 2

(D) 1

7. Quick sand condition occurs when

(A) the voids ratio of the soil becomes 1·0

(B) the upward seepage pressure in the soil becomes zero

(C) the upward seepage pressure in the soil becomes equal to the standard unit weight of the soil

(D) the upward seepage pressure in soil becomes equal to the submerged unit weight of the soil

8. A spread footing which supports two or more columns is called

(A) a special type of footing

(B) multiple spread footing

(C) combined footing

(D) strap footing

9. As per IS : 2131-1981, the weight of drop hammer used in standard penetration test (SPT) for soil exploration is

(A) 55 kg

(B) 65 kg

(C) 75 kg

(D) 85 kg

10. Out of the following which one is ***not*** a temporary adjustment of a theodolite?

(A) Collimation adjustment

(B) Focussing of telescope

(C) Focussing of eyepiece

(D) Levelling

11. A column is of length 4·0 m whose both ends are fixed. The effective length of the column is

(A) 8·0 m

(B) 6·0 m

(C) 4·0 m

(D) 2·0 m

12. The unit of Young's modulus of elasticity is same as the unit of

(A) elasticity

(B) elongation

(C) strain

(D) stress

13. Poisson's ratio is defined as

(A) $\frac{\text{Longitudinal stress}}{\text{Lateral strain}}$

(B) $\frac{\text{Lateral strain}}{\text{Longitudinal strain}}$

(C) $\frac{\text{Lateral strain}}{\text{Longitudinal stress}}$

(D) $\frac{\text{Lateral stress}}{\text{Longitudinal stress}}$

14. A simply supported beam of length 4·0 m carries uniformly distributed load (udl) of 2 kN per metre over the entire length. The value of maximum bending moment is

(A) 8 kN-m

(B) 6 kN-m

(C) 4 kN-m

(D) 2 kN-m

15. At point of contraflexure which of the following is correct?

(A) Shear force changes sign

(B) Bending moment changes sign

(C) Shear force is minimum

(D) Bending moment is maximum

16. The value of section modulus of a circular section with diameter $d$ is

(A) $\frac{\pi d^3}{12}$

(B) $\frac{\pi d^3}{64}$

(C) $\frac{\pi d^3}{24}$

(D) $\frac{\pi d^3}{32}$

17. A rectangular beam having section 24 cm × 30 cm is used to carry load in a certain structure. The moment of inertia of the section about its neutral axis is

(A) 5400 $cm^4$

(B) 4500 $cm^4$

(C) 6500 $cm^4$

(D) 5600 $cm^4$

18. A simply supported beam of length $L$ carrying a concentrated load $W$ at the centre of the span. The value of maximum bending moment will be

(A) $W/2$

(B) $WL/4$

(C) $WL/8$

(D) $WL$

**19.** If the maximum bending moment for a simply supported beam with central point load is $M$, what will be the maximum bending moment for a fixed beam for same span and load?

(A) $M$

(B) $2M$

(C) $M/2$

(D) $M/4$

**20.** A column that fails due to direct stress is called

(A) short column

(B) long column

(C) medium column

(D) slender column

**21.** A particular column can carry maximum loads when

(A) it is hinged at both ends

(B) its one end is hinged, other end is fixed

(C) its both ends are fixed

(D) its one end is fixed, other end is free

**22.** A series of closed contour lines on the map with higher RLs inside represents a

(A) playground

(B) hill

(C) depression

(D) vertical cliff

**23.** In relation to the surveying and total station, the 'EDM' stands for

(A) Electronic Digital Machine

(B) Electronic Distance Machine

(C) Electronic Distance Measurement

(D) Electronic Digital Measurement

**24.** The axial load carrying capacity of a long column of a given material having cross-sectional area $A$ and length $L$ is governed by

(A) strength of the material only

(B) its flexural rigidity only

(C) its slenderness ratio only

(D) both flexural rigidity and slenderness ratio

25. The maximum value of Poisson's ratio for an elastic material is

(A) 0·25

(B) 0·5

(C) 0·75

(D) 1·0

26. In case of flitched or composite beam, the modular ratio is defined as the ratio of

(A) $\frac{\text{Depth of one material}}{\text{Depth of other material}}$

(B) $\frac{\text{Stress in one material}}{\text{Stress in other material}}$

(C) $\frac{\text{Modulus of elasticity of one material}}{\text{Modulus of elasticity of other material}}$

(D) $\frac{\text{Strength of one material}}{\text{Strength of other material}}$

27. Slenderness ratio of a compression member is expressed as

(A) $\frac{\text{Least radius of gyration}}{\text{Length of the column}}$

(B) $\frac{\text{Least radius of gyration}}{\text{Width of the column}}$

(C) $\frac{\text{Length of the column}}{\text{Least radius of gyration}}$

(D) $\frac{\text{Buckling load}}{\text{Factor of safety}}$

28. The Euler's formula for crippling load for mild steel column will not valid if

(A) slenderness ratio is less than 160

(B) slenderness ratio is less than 120

(C) slenderness ratio is less than 100

(D) slenderness ratio is less than 80

29. In case of a cantilever beam with uniformly distributed load over the full length, the maximum slope will occur at

(A) the fixed end

(B) the middle

(C) the free end

(D) anywhere

30. The maximum deflection of a simply supported beam with a central point load $W$ and length $L$ can be expressed as $\frac{WL^3}{48EI}$. The term $EI$ is known as

(A) moment of resistance of the beam

(B) flexural rigidity of the beam

(C) flexural modulus of the beam

(D) torsional rigidity of the beam

**31.** A sprinkler irrigation system is suitable when

(A) the land gradient is steep and easily erodible

(B) the soil is having low permeability

(C) the water table is low

(D) the soil with high infiltration rate

**32.** If the FSL of an irrigation canal is below the bed level of a natural stream, the type of cross-drainage structure provided is

(A) sluice gate

(B) aqueduct

(C) super passage

(D) level crossing

**33.** Duty of a crop to be irrigated is 864 hectares and its base period is 100 days. The delta ($\Delta$) in metres is

(A) 8·64

(B) 10

(C) 0·864

(D) 1

**34.** According to IRC : 73-1980, the width of pavement or carriageway for a double lane without kerb is equal to

(A) 5·0 m

(B) 6·5 m

(C) 7·0 m

(D) 7·5 m

**35.** According to IRC : 73-1980, the range of camber for light to heavy rain for high type bituminous and cement concrete pavement surface is

(A) 1 in 60 to 1 in 50

(B) 1 in 50 to 1 in 40

(C) 1 in 40 to 1 in 30

(D) 1 in 30 to 1 in 20

**36.** Gradual introduction of super-elevation is facilitated by the introduction of a

(A) circular curve

(B) compound curve

(C) summit curve

(D) transition curve

37. The distance travelled during total reaction time (PIEV) is known as

(A) braking distance

(B) reaction distance

(C) lag distance

(D) sight distance

38. Safe stopping sight distance (SSD) is the

(A) sum of lag distance + braking distance

(B) sum of reaction distance + braking distance

(C) sum of lag distance + sight distance

(D) sum of lag distance + reaction distance

39. Bernoulli's equation is an equation of

(A) conservation of mass

(B) conservation of linear momentum

(C) conservation of energy

(D) conservation of angular momentum

40. Sand drains are used to

(A) reduce the settlement

(B) accelerate the consolidation in soil

(C) increase permeability

(D) transfer the load

41. Compaction by vibratory roller is the best method of compaction in the case of

(A) moist silty sand

(B) well graded dry sand

(C) clay of medium compressibility

(D) silt of medium compressibility

42. The number of blows observed in a standard penetration test (SPT) for different penetration depths are given as follows :

| *Penetration of sample* | *Number of blows* |
|---|---|
| 0–150 mm | 6 |
| 150–300 mm | 8 |
| 300–450 mm | 10 |

The observed *N* value is

(A) 8

(B) 14

(C) 18

(D) 24

43. Negative skin friction occurs when

(A) an upward drag exists in pile

(B) the surrounding soil settles more than the pile

(C) the pile passes continuously through a firm soil

(D) the driving operation begins

**44.** A given soil sample on sieving has 80% of its constituents retain on 75 micron sieve with the rest of the sample exhibiting a plasticity of 3·5%. The sample belongs to

(A) SP

(B) SC

(C) SM

(D) SM-SC

**45.** According to Darcy's law for flow through porous media, the velocity is directly proportional to

(A) cohesion

(B) stability number

(C) effective stress

(D) hydraulic gradient

**46.** The survey in which the earth's curvature is also considered is called

(A) geodetic survey

(B) plane survey

(C) preliminary survey

(D) topographical survey

**47.** The plan of a map was photocopied to a reduced size such that a line originally 100 mm measures 95 mm. What is the shrinkage ratio?

(A) 10/9·5

(B) 1/9·5

(C) 1/10

(D) 0·95

**48.** The bearing of a survey line is N 31° 30′ W. Its azimuth observed from north is

(A) 328·5°

(B) 28·5°

(C) 31·5°

(D) 211·5°

**49.** The rise and fall method provides an arithmetic check on

(A) back sights and foresights

(B) intermediate sights

(C) back sights and intermediate sights

(D) back sights, foresights and intermediate sights

**50.** Which of the following statements is false?

(A) A plumb bob line runs along direction of gravity

(B) Mean sea level (MSL) is used as a reference surface for establishing the horizontal control

(C) Mean sea level (MSL) is a simplification of the Geoid

(D) Geoid is an equipotential surface of gravity

**51.** The staff reading taken on a workshop floor using level machine is 0·645 m. The inverted staff reading taken to the bottom of a beam is 2·96 m. The reduced level of the floor is 40·500 m. The reduced level (in metres) of the bottom of the beam is

(A) 44·105

(B) 43·460

(C) 42·815

(D) 41·145

**52.** Which of the following statements is ***not*** correct?

(A) The first reading of level station is called foresight

(B) The contours of different elevation may intersect each other in case of an overhanging cliff

(C) Basic principle of surveying is to work from whole to part

(D) Planimeter is used for measuring area

**53.** Which of the following methods may be used to predict the missing rainfall data of a particular measuring station if somehow it cannot be recorded in time?

(A) Arithmetic progression method

(B) Geometrical normalization

(C) Normal ratio method

(D) None of the above

**54.** In respect of hydrograph, which of the following statements is ***not*** correct?

(A) Hydrograph is a bar graph showing the intensity of rainfall with time

(B) Hydrograph is a bar graph showing variation of discharge with time

(C) The rising limb is a component related to single peaked hydrograph

(D) The recession limb is not a component related to single peaked hydrograph

**55.** In respect of repelling groynes used for river training, which of the following statements is correct?

(A) It is constructed perpendicular to river bank

(B) It is constructed in such a way that it is pointing towards upstream at an angle of 10° to 30° to the line normal to river bank

(C) It is constructed in such a way that it is pointing towards downstream at an angle of 10° to 30° to the line normal to river bank

(D) It is constructed parallel to river bank

**56.** Reynolds number is defined as the ratio of

(A) inertia force to gravity force

(B) gravity force to inertia force

(C) viscous force to inertia force

(D) inertia force to viscous force

**57.** In limit state design method of concrete structures, the recommended partial safety material factor ($y_m$) for steel according to IS : 456-2000 is

(A) 1·5

(B) 1·15

(C) 1·00

(D) 0·87

**58.** As IS : 456-2000 for the design of reinforced concrete beam, the maximum allowable shear stress ($\tau_c$ max) depends on the

(A) grade of concrete and steel

(B) grade of concrete only

(C) grade of steel only

(D) grade of concrete and % of reinforcement

**59.** The effective length of circular electric pole of length $L$ and constant diameter erected on ground is

(A) $0{\cdot}8L$

(B) $1{\cdot}20L$

(C) $1{\cdot}50L$

(D) $2{\cdot}00L$

**60.** The span-depth ratio limit is specified in IS : 456-2000 for the reinforced concrete beams, in order to ensure that the

(A) tensile crack window width is below a limit

(B) shear failure is avoided

(C) stress in tension reinforcement is less than allowable limit

(D) deflection of the beam is below the limiting value

**61.** A reinforced concrete slab with effective depth of 80 mm is simply supported at two opposite ends on 230 mm thick masonry walls. The centre-to-centre distance between the walls is 3·30 m. As per IS : 456-2000, the effective span of the slab (in m), up to two decimal places is

(A) 3·15

(B) 3·30

(C) 3·08

(D) 3·03

**62.** The minimum length of reinforced bar which must be embedded in concrete to develop full stress is called

(A) development length

(B) anchorage length

(C) bonding length

(D) flexural length

63. Which of the following basic concepts is involved in the analysis of pre-stressed concrete?

(A) Principle of stresses

(B) Combined and bending stresses

(C) Overhead stresses

(D) Shear stresses

64. Out of the following statements, which one is ***not*** true in case of over-reinforced beam section?

(A) Concrete is fully stressed, while steel is not fully stressed

(B) Sudden failure may be happened

(C) Actual neutral axis is above the critical neutral axis

(D) Actual neutral axis is below the critical neutral axis

65. As per IS : 456-2000, the limit of longitudinal reinforcement (Fe 415) with respect to gross sectional area in RCC column is

(A) minimum 0·8% and maximum 4%

(B) minimum 0·6% and maximum 5%

(C) minimum 0·8% and maximum 6%

(D) minimum 0·8% and maximum 8%

66. As per IS : 456-2000, edge thickness of isolated RCC column footing should be less than

(A) 100 mm

(B) 150 mm

(C) 200 mm

(D) 250 mm

67. The moment of resistance of a T-beam is more due to large

(A) tensile steel

(B) compressive steel

(C) compression area of flange

(D) None of the above

68. Shear reinforcement is provided in the form of

(A) vertical stirrups

(B) inclined stirrups

(C) stirrups

(D) All of the above

69. The maximum spacing of vertical stirrups should not be exceeded (if $d$ is the effective depth of beam)

(A) $0{\cdot}75d$ or 300 mm whichever is less

(B) $0{\cdot}75d$ or 300 mm whichever is greater

(C) $0{\cdot}65d$ or 300 mm whichever is less

(D) $0{\cdot}65d$ or 300 mm whichever is greater

**70.** Out of the following, which roof truss can be used for maximum span?

(A) King post roof truss

(B) Queen post roof truss

(C) Belfast roof truss

(D) Combination of King post and Queen post roof truss

**71.** Rivet value is described as

(A) lesser of the bearing strength of the rivet and shearing strength of the rivet

(B) lesser of the bearing strength of the rivet and shearing strength of the thinner plate

(C) greater of the bearing strength of the rivet and shearing strength of the rivet

(D) lesser of the shearing strength of the rivet and shearing strength of the thinner plate

**72.** For the square edged plate, maximum size of the fillet weld is

(A) 15 mm less than the thickness of the plate

(B) half of the thickness of the plate

(C) equal to the thickness of the plate

(D) 15 mm more than the thickness of the plate

**73.** The permissible stress in axial tension in steel member on the net effective area of the section shall not exceed which of the following values where $f_y$ is the yield value?

(A) $0{\cdot}80\, f_y$

(B) $0{\cdot}75\, f_y$

(C) $0{\cdot}60\, f_y$

(D) $0{\cdot}50\, f_y$

**74.** Two steel columns $P$ and $Q$ having length $L$ and $2L$ and yield strength $f_y$ 250 MPa and 500 MPa respectively for same sectional area and end conditions. The ratio of bulking load of column $P$ to that of column $Q$ is

(A) 0·5

(B) 1·0

(C) 2·0

(D) 4·0

**75.** The maximum strain at the level of compression steel for a rectangular section having effective cover to compression steel as $d'$ and neutral axis depth from compression face as $x_u$, is

(A) $0 \cdot 0035\left(1-\frac{d'}{x_u}\right)$

(B) $0 \cdot 002\left(1-\frac{d'}{x_u}\right)$

(C) $0 \cdot 0035\left(1-\frac{x_u}{d'}\right)$

(D) $0 \cdot 002\left(1-\frac{x_u}{d'}\right)$

**76.** In curve, the pavement is widened to prevent off tracking the rear wheels. This type of widening is known as

(A) curve widening

(B) mechanical widening

(C) safe widening

(D) psychological widening

**77.** Flexible pavement is a

(A) multi-layered system with low flexible strength

(B) single-layered system with low flexible strength

(C) multi-layered system with high flexible strength

(D) multi-layered system with no flexible strength

**78.** As per IRC : 73-1980, the minimum radius of circular curve for national highway for plain terrain is

(A) 60 m

(B) 160 m

(C) 260 m

(D) 360 m

**79.** The total thickness of pavement by CBR method depends on the CBR value of

(A) base course

(B) surface course

(C) subgrade

(D) all layers

**80.** The coefficient of friction in the longitudinal direction of a highway is estimated as 0·396. The braking distance for a car at the speed of 65 kmph is

(A) 82 m

(B) 62 m

(C) 42 m

(D) 22 m

**81.** Which of the following sleeper densities is ***not*** used in India?

(A) M-4

(B) M-7

(C) M-6

(D) M-8

**82.** Which is the correct relation between superelevation ($e$), gauge ($G$), radius of curve ($R$) and gravity force ($g$)? (All quantities are in standard units)

(A) $e = \frac{Gv^2}{gR}$

(B) $e = \frac{GR^2}{gv^2}$

(C) $e = \frac{gv^2}{GR}$

(D) $e = \frac{GR}{gv^2}$

**83.** What will be the grade compensator for a 3° curve on a BG track?

(A) 0·16%

(B) 0·12%

(C) 0·08%

(D) 0·04%

**84.** How many dog spikes are needed in a length of 1·0 km if the number of timber sleepers used in this distance is 1200?

(A) 1200

(B) 2400

(C) 3600

(D) 4800

**85.** What is the minimum gradient that can be used in station yards for drainage?

(A) 1 in 100

(B) 1 in 500

(C) 1 in 1000

(D) 1 in 1500

**86.** What is the maximum degree of curvature for a BG track in India?

(A) 9°

(B) 10°

(C) 11°

(D) 12°

**87.** 1 (one) TCU is equivalent to the colour produced by

(A) 1 mg/L of chloroplatinate ion

(B) 1 mg/L platinum ion

(C) 1 mg/L platinum in the form of chloroplatinate ion

(D) 1 mg/L of organic-chloroplatinate ion

**88.** Zero hardness of water can be achieved by

(A) lime soda process

(B) excess lime treatment

(C) ion exchange treatment

(D) excess alum and lime treatment

**89.** In domestic wastewater sample, COD and BOD are measured. Generally which of the following statements is true for their relative magnitude?

(A) COD = BOD

(B) COD > BOD

(C) COD < BOD

(D) Can't be said

**90.** In disinfection, which of the following forms is the most effective in killing the pathogenic bacteria?

(A) Cl

(B) OCl

(C) $NH_2Cl$

(D) HOCl

**91.** The total hardness in raw water is 500 mg/L as $CaCO_3$. The total hardness of this raw water, expressed in milligram equivalent per litre is (Take atomic weight of Ca, C and O as 40 g/mol, 12 g/mol and 16 g/mol respectively)

(A) 10

(B) 100

(C) 1

(D) 5

**92.** Temporary hardness of water is caused by the presence of

(A) bicarbonates of Ca and Mg

(B) sulphates of Ca and Mg

(C) chlorides of Ca and Mg

(D) nitrates of Ca and Mg

**93.** Which of the following methods of population forecasting would give the best result for an old and large city with negotiable industrial growth and maximum development already achieved?

(A) Geometric method

(B) Decreasing rate of growth method

(C) Arithmetic increase method

(D) Incremental increase method

**94.** Water distribution systems are designed to meet the greater of either maximum hourly demand or the coincidental draft. What does the coincidental draft consist of?

(A) Average hourly demand and fire demand

(B) Maximum daily demand and fire demand

(C) Maximum daily demand only

(D) Average daily demand and fire demand

**95.** Which one of the following pairs is ***not*** correctly matched?

(A) Check valve : It is used to ensure water flows in one direction only. Flow in the pipe opposite direction is stopped automatically

(B) Air valve : It allows accumulated air to escape from the pipe

(C) Sluice valve : It is used to help drain the pipe of the sand and silt deposited in it during operation, inspection and repair of the pipe

(D) Pressure relief valve : It is used to keep the pressure in the pipe below the predetermined value, for safety reasons

**96.** Camber on highway pavement is provided to take care of

(A) centrifugal force

(B) drainage

(C) sight distance

(D) off-tracking

**97.** Stopping distance is the minimum distance available on a highway which is the

(A) distance of sufficient length to stop the vehicle without collision

(B) distance visible to a driver during night driving

(C) height of the object above the road surface

(D) distance equal to the height of the driver's eye above the road surface

**98.** In respect of confined aquifer, which of the following statements is ***not*** related?

(A) It is also known as artesian aquifer

(B) It is also known as water table aquifer

(C) Water is confined under pressure greater than atmospheric pressure

(D) Confined aquifer is analogous to pipelines

**99.** One hectare land is equal to

(A) $10^2\ m^2$

(B) $10^3\ m^2$

(C) $10^4\ m^2$

(D) $10^6\ m^2$

**100.** The relation between absolute pressure, atmospheric pressure and gauge pressure is

(A) absolute pressure = atmospheric pressure + gauge pressure

(B) absolute pressure = atmospheric pressure – gauge pressure

(C) absolute pressure = gauge pressure – atmospheric pressure

(D) absolute pressure = gauge pressure × atmospheric pressure

**SPACE FOR ROUGH WORK**

**SPACE FOR ROUGH WORK**

**SPACE FOR ROUGH WORK**

SEAL

★★★