59/2019

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet alpha code viz A, B, C & D.

2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.

3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.

4. If you get a question booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.

5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is unnumbered, please get it replaced by new question booklet with same alpha code.

6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.

7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so, he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.

8. A blank sheet of paper is attached to the question booklet. This may be used for rough work.

9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**

10. Each question is provided with four choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.

11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**

12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.

13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

001. A plane figure bounded by more than four equal straight lines and containing more than four equal angles is termed as

(A) Polygon

(B) Regular polygon

(C) Quadrilateral

(D) Rhombus

002. Standard dimension of the A2 size drawing sheet in millimetres is

(A) 594 × 841

(B) 420 × 594

(C) 297 × 420

(D) 210 × 297

003. Scale used in a drawing is 1:2. The actual length of a 10 mm line in the drawing is

(A) 5 mm

(B) 10 mm

(C) 20 mm

(D) None of the above

004. In the first angle projection,

(A) Object is between the observer and the plane of projection.

(B) Plane of projection is between the observer and the object.

(C) Both A and B.

(D) None of the above.

005. In CAD, the command used to enlarge or reduce the size of a drawing to the required ratio is

(A) STRETCH

(B) EXTEND

(C) SCALE

(D) None of the above

006. FILLET command is used to

(A) draw an arc between two non-parallel lines.

(B) draw an arc between two non-parallel arcs.

(C) Both A and B.

(D) None of the above.

007. Area of any irregular figure of plotted map is obtained by

(A) Clinometer

(B) Bowditch rule

(C) Simpson rule

(D) Planimeter

008. Are is the unit of area of a square of side

(A) 1 metre

(B) 5 metre

(C) 10 metre

(D) 20 metre

A

009. Volume of Earthwork can be calculated using

(A) mean area
(B) prismoidal formula
(C) trapezoidal formula
(D) All of the above

010. In metric survey chain, number of links per metre is

(A) 2
(B) 5
(C) 8
(D) 10

011. Instrument used to measure angles or drawing lines at the given angles is called as

(A) mini drafter
(B) pro-circle
(C) protractor
(D) compass

012. Fractional parts of the smallest division of the main scale can be measured using

(A) plain scale
(B) vernier scale
(C) diagonal scale
(D) Comparative scale

013. When 1 cm on a map represents 10 m on the ground, representative fraction of the scale is

(A) 1/10
(B) 1/100
(C) 1/1000
(D) 1/10000

014. Standard size of drawing sheets recommended by the Bureau of Indian Standards is

(A) 210 mm x 297 mm
(B) 297 mm x 420 mm
(C) 420 mm x 594 mm
(D) All of the above

015. The path described by a point moving in a plane at a fixed distance from a fixed point is a

(A) chord
(B) circle
(C) segment
(D) sector

016. Geometric method of projection obtained on the plane of projection when the projectors are parallel to each other and perpendicular to the plane of projection is

(A) isometric projection
(B) convergent projection
(C) oblique projection
(D) orthographic projection

017. The distance of the top view of a point A situated 20 mm below HP and 30 mm behind VP is

(A) 20 mm above xy line
(B) 30 mm above xy line
(C) 20 mm below xy line
(D) 30 mm below xy line

018. Dimensioning starting from a common feature and shown to the right and to the left of the common feature is called as

(A) chain dimensioning
(B) parallel dimensioning
(C) dimensioning by coordinates
(D) combined dimensioning

019. The command used to lock the movement of cross hair of the pointing device to the nearest grid point is

(A) snap
(B) grid
(C) ortho
(D) object snap

020. Modifying commands used in autocad are

(A) extend
(B) erase
(C) trim
(D) All of the above

021. Command used to create a new object which has shape of the object selected that can be copied to any plane parallel to the old one is

(A) offset
(B) move
(C) rotate
(D) None of these

022. Command used to create multiple copies of an object or objects in a rectangular or circular pattern is

(A) copy
(B) mirror
(C) array
(D) None of these

023. A circle of radius 7 m has a standard error of 0.02 m on the radius. The standard error of its area is

(A) 0.04 m²
(B) 0.14 m²
(C) 0.28 m²
(D) 0.88 m²

024. One hectare of an area is equivalent to

(A) 10^2 m²
(B) 10^4 m²
(C) 10^6 m²
(D) 10^8 m²

A

025. A rectangular piece of property has sides measuring 300 m and 200 m. What is the area of the property in acres?

(A) 14.82

(B) 15.34

(C) 13.60

(D) 19.50

026. Simpson's rule is used to determine the area when the no. of offsets are

(A) even

(B) odd

(C) 2

(D) 3

027. Area of any irregular figure of plotted map can be obtained accurately by

(A) pentagraph

(B) sextant

(C) optical square

(D) planimeter

028. The rule based on the assumption that the boundaries are curved lines and are considered as portions of parabolic arc is

(A) trapezoidal rule

(B) mid-ordinate rule

(C) Simpson's rule

(D) None of these

029. A cutting formed in level ground has a formation width of 12 m with the sides sloping at 1 vertical to 3 horizontal. If the formation height is 3 m, then the cross sectional area is

(A) 60 m^2

(B) 63 m^2

(C) 65 m^2

(D) 67 m^2

030. The prismoidal formula for determining the volume is

(A) $h/6 (A_1+2A_m+A_2)$

(B) $h/2 (A_1+A_2)$

(C) $h/3 (A_1+2A_m+A_2)$

(D) $h/6 (A_1+4A_m+A_2)$

031. If the smallest division of a vernier is longer than the smallest division of its primary scale, the vernier is known as

(A) Retrograde vernier

(B) Double vernier

(C) Simple vernier

(D) Direct vernier

032. The curvature of earth is taken into account when the extent of survey is more than

(A) 80 sq km.

(B) 500 sq km.

(C) 260 sq km.

(D) 1500 sq km.

033. The difference between the most probable value of a quantity and its observed value is called

(A) conditional error
(B) true error
(C) residual error
(D) safe error

034. The errors which arise from inattention, inexperience, carelessness and poor judgment or confusion in the mind of an observer is termed as

(A) systematic errors
(B) mistakes
(C) accidental errors
(D) discrepancy

035. The error due to bad ranging is

(A) cumulative negative
(B) cumulative positive
(C) systematic error
(D) compensative error

036. A triangle is said to be well-conditioned if none of its angles is less than

(A) 20°
(B) 40°
(C) 45°
(D) 30°

037. In surveyor's compass the Zero is marked at the _____ of the circular graduated ring.

(A) both north and south ends
(B) south end
(C) east end
(D) north end

038. The Fore bearings of the lines AB and BC are 80° 10' and 120° 20', and their corresponding back bearings are 259° and 301° 50' respectively; then the angle B is

(A) 138°40'
(B) 131°0'
(C) 120°40'
(D) 128°40'

039. Local attraction in a compass survey may exist due to

(A) faulty adjustment in compass
(B) presence of magnetic materials
(C) Loss of magnetism in the needle
(D) Friction of the needle at the point

040. At the equator the amount of dip is

(A) 0°
(B) 45°
(C) 60°
(D) 90°

041. If 'n' is the number of sides, then the total sum of the exterior angle in a closed traverse is

(A) $(n + 2) \times 90$ (B) $(2n - 4) \times 90$

(C) $(2n + 4) \times 90$ (D) $(4n - 2) \times 90$

042. Magnetic meridian and true meridian are

(A) always parallel   (B) parallel at equator

(C) parallel near the poles   (D) never parallel

043. The magnetic bearing of a line is $85°30'$ and the magnetic declination at that place is $4°30'$ East. True bearing will be

(A) $84°$ (B) $90°$

(C) $81°$ (D) $91°$

044. If the bearing of a line is N 34°30'W, then the back bearing of that line will be

(A) N 34°30' E   (B) S 34°30' E

(C) 315°30'   (D) S 34°30' W

045. The method used to orient a plane table at A with reference to two accessible points A and B is

(A) Radiation method   (B) Intersection method

(C) Resection method   (D) Two-point problem

046. The rays drawn to the points of known location from the unplotted section occupied by the plane table are called

(A) Inter sectors   (B) Resectors

(C) Medians   (D) Modullary rays

047. Which of the following is not a methodology for the solution of a three-point problem?

(A) Tracing paper method   (B) Bessel's graphical method

(C) Lehman's method   (D) Kirchoff's method

048. A compound lens free from spherical aberration is called

(A) Achromatic combination   (B) Astimatic combination

(C) Aplanitic combination   (D) Huygens lense

049. The accuracy required in precise levelling is of the order of

(A) √K mm   (B) 3√K mm

(C) 5√K mm   (D) None of the above

050. Closed contours with higher value inside represent a

(A) Depression   (B) Hill

(C) Plain surface   (D) Ridge

051. Two contours of different elevations do not cross each other except in case of a

(A) Cliff   (B) Ridge

(C) Overhanging cliff   (D) Valley

052. The contour lines are perpendicular to the

(A) Ridge line   (B) Valley line

(C) Cliff   (D) Both (A) and (B)

053. The Horizontal distance between any two consecutive contours is called

(A) Vertical equivalent   (B) Contour interval

(C) Horizontal equivalent   (D) Contour gradient

054. In an area the contour lines are parallel and equidistant, then the area should be

(A) Plane   (B) Steep slope

(C) Gentle slope   (D) Uniform slope

055. The square method of indirect contouring is commonly used in

(A) Hilly areas   (B) nearly flat areas

(C) Flat areas   (D) Valleys

056. In direct method of contouring the process of locating point lying on a contour is known as

(A) Horizontal control   (B) Ranging

(C) Vertical control   (D) None of the above

057. In double-line river the contours are

(A) Stopped at the banks of the river   (B) Stopped at the edge of the river

(C) Drawn across the water   (D) None of the above

058. A point of known elevation above the datum line is called

(A) Benchmark

(B) Datum point

(C) Reduced level

(D) Datum level

059. The capability of telescope to produce sharp images is known as its

(A) Magnifying power

(B) Sensitivity

(C) Aperture

(D) Resolving power

060. The line joining the optical centre of the object glass and the centre of the eye piece is

(A) Line of collimation

(B) Axis of telescope

(C) Axis of bubble tube

(D) Trunnian axis

061. In levelling any surface parallel to the mean spheroid of the earth is called

(A) Horizontal surface

(B) Parallel surface

(C) Level surface

(D) Tangential surface

062. The combined correction due to refraction and curvature is _____ times of curvature correction

(A) 3/7

(B) 4/7

(C) 5/7

(D) 6/7

063. The Simpson's rule for determination of the area is used when the number of offsets are

(A) Odd

(B) 4

(C) Even

(D) 3

064. Which method gives more accurate results in area calculation?

(A) Mean area method

(B) Mid-area method

(C) Simpson's rule

(D) Trapezoidal rule

065. A person of height 1.65 m standing on a cliff of height 20 m above the water level on seashore can sight a ship at a distance of about

(A) 10 km

(B) 18 km

(C) 30 km

(D) 40 km

066. The branch of surveying in which measurements of distances is done by computations, is known as

(A) Tacheometry
(B) Plane tabling
(C) Theodolite
(D) Compassing

067. Generally the multiple constant of most of the instruments in tacheometry is

(A) 100
(B) 50
(C) 104
(D) 150

068. A voice communication system mounted on the total station is

(A) Geotronics Unicom
(B) Lumiguide
(C) Reflectometer
(D) Retroreflector

069. In electromagnetic distance measurement the number of cycles completed by the wave in one second is called

(A) Wavelength
(B) Frequency
(C) Amplitude
(D) Period

070. In electronic surveying instruments for the purpose of precise centering _____ is used

(A) Plumb bob
(B) U frame
(C) Optical plummet
(D) Micrometer

071. The error occurring in Total station Instrument such that the tilting axis is not perpendicular to the vertical axis is

(A) Line of sight error
(B) Tilting axis error
(C) Vertical axis error
(D) Vertical index error

072. In a total station the first part of the distance error is independent of the distance measured is called

(A) Line of sight error
(B) Zero error
(C) Distance error
(D) Collimation error

073. The algebraic sum of deflection angles in a closed traverse is

(A) 360
(B) 180
(C) 0
(D) 270

074. Which method gives more accurate results in theodolite measurements?

(A) reiteration

(B) repetition

(C) resection

(D) All of the above

075. Bowditch rule is applied to

(A) An open traverse for graphical adjustments

(B) determine the effect of local attraction

(C) A closed traverse for adjustments of closing error

(D) Angular correction

076. In a total station if the instrument is not firmly tightened on the tripod head, the error introduced is known as

(A) Parallax

(B) Slip

(C) Inaccurate centering

(D) Inaccurate levelling

077. The area of land acquired for the road along its alignment is

(A) Roadway

(B) Formation

(C) Lay-byes

(D) Right of way

078. Range of camber to be provided on water-bound Macadam roads is

(A) 4% to 3%

(B) 3% to 2.5%

(C) 2% to 1.7%

(D) 2.5% to 2%

079. For a constant value of co-efficient of lateral friction, the value of super elevation increases with

(A) increase in speed and decrease in radius of curve

(B) decrease in speed and increase in radius of curve

(C) increase in both speed and radius of curve

(D) decrease in speed and radius of curve

080. Ruling gradient for roads in plain terrain is

(A) 1 in 14.3

(B) 1 in 12.5

(C) 1 in 30

(D) 1 in 20

081. Beginning of the curve where the alignment changes from a tangent to a curve is

(A) point of curve

(B) point of tangency

(C) point of intersection

(D) point of deflection

082. A clothoid is another name of a

(A) Lemniscate

(B) Cubic parabola

(C) Circular curve

(D) Spiral

083. A sprinkler irrigation system is suitable when

(i) the land cannot be suitable for surface methods

(ii) Soil is excessively permeable or impermeable

(iii) Depth of soil is shallow over gravel or sand

(A) Only (i) and (ii)

(B) Only (i) and (iii)

(C) All of the above

(D) None of the above

084. Which of the following is a major kharif crop in India?

(A) Wheat

(B) Rice

(C) Barley

(D) Sesame

085. The first watering before sowing the crop is

(A) Kor watering

(B) Open discharge

(C) Paleo

(D) Nominal duty

086. Match correctly the measurement of duty taken at various points.

List-I

(i) head of branch canal

(ii) outlet of a canal

(iii) head of main canal

(iv) head of the land to be irrigated

List-II

(p) Gross quantity

(q) Lateral quantity

(r) outlet factor

(s) Net quantity

(A) (i)-q, (ii)-p, (iii)-r, and (iv)-s

(B) (i)-q, (ii)-r, (iii)-s and (iv)-p

(C) (i)-p, (ii)-q, (iii)-s and (iv)-r

(D) (i)-q, (ii)-r, (iii)-p and (iv)-s

087. The extension of one or more courses of brick or stone from the face of wall which serves as a support for wall plate is

(A) cornice

(B) corbel

(C) coping

(D) string course

088. Foundation suitable for black cotton soil is

(A) Under-ream pile
(B) Inverted arch footing
(C) Batter piles
(D) Sheet piles

089. A window provided on the sloping roof is

(A) Clerestory window
(B) Dormer window
(C) Bay window
(D) Awning window

090. A triangular space formed between the extrados and the horizontal line drawn through the crown of an arch is

(A) Spandril
(B) Haunch
(C) Springer
(D) Impost

091. The roof truss to be used when a room is required to be provided in the roof is

(A) Belfast roof truss
(B) Scissors truss
(C) French truss
(D) Truncated roof truss

092. For plastering on walls

(i) For small openings upto 0.65 sqm, no deduction is made

(ii) For openings above 2 sqm, deduction is made for both faces of the opening

(A) Only (i) is true
(B) Only (ii) is true
(C) Both (i) and (ii) are false
(D) Both (i) and (ii) are true

093. If d is the vertical distance between centres of the upper and lower arms of the bent-up bar, then for a 45° cranked bar, the additional length to be provided for one bent-up is

(A) 0.45 d
(B) 0.52 d
(C) 0.48 d
(D) 0.38 d

094. The painting coefficient for panelled door is

(A) 2
(B) 2 ½
(C) 2 ¼
(D) 3

095. The effects of the excessive presence of the various ingredients in bricks are given. Match list I with list II and select the correct answer using the codes given below the lists.

List-I		List-II
(p) Alumina	(u)	melt and lose its shape
(q) Silica	(v)	Shrink and warp during drying and burning
(r) Lime	(w)	Decay of bricks
(s) Iron oxide	(x)	Destroys cohesion and makes bricks brittle
(t) Magnesia	(y)	Makes bricks dark blue

Codes

(A) p-v, q-u, r-y, s-w, t-x

(B) p-v, q-x, r-u, s-y, t-w

(C) p-x, q-v, r-w, s-y, t-u

(D) p-x, q-w, r-v, s-u, t-y

096. Soundness test of cement is performed with the help of

(A) Briquette testing machine

(B) Air permeability apparatus

(C) Vicat Apparatus

(D) Le Chatelier Apparatus

097. A peculiar curved swelling found on the body of a tree is known as

(A) Burls

(B) Rindgalls

(C) Callus

(D) Upsets

098. Carbon content in mild steel is

(A) 0.30 to 0.45%

(B) 0.40 to 0.50%

(C) 0.10 to 0.25%

(D) 0.25 to 0.40%

099. An example of a sedimentary rock is

(A) dolerite

(B) basalt

(C) granite

(D) limestone

100. Rapid hardening cement develops at the age of 3 days the same strength as that is expected of ordinary portland cement at _____

(A) 7 days

(B) 14 days

(C) 3 days

(D) None of the above