Register Number.....

B.E. DEGREE EXAMINATIONS: APRIL / MAY 2009

Third Semester

CIVIL ENGINEERING

U07CE306 Surveying - I

Time: Three Hours **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (20 x 1 = 20 Marks)

1. The main principle of surveying to work from
   a) higher level to the lower level
   b) lower level to the higher level
   c) part to the whole
   d) whole to the part.
2. The R.F of scale 1 cm = 1 km is
   a) 1/1,00,000 b)1/1,000 c)1/10,000 d)1/10,00,000
3. A well conditioned triangle should not have angles more than
   a) 30° b)120° c)45° d)60°
4. For setting out an offset at an angle of 45° with a chain line, the instrument used is
   a) an Optical Square b)an open cross staff c)a French cross staff d)a prism square
5. The whole circle bearing of a line is 300°, its quadrantal bearing is.
   a) W 30° N b)N 60° W c)N 30° W d)W 60° N
6. The angle of dip at a point on equator is
   a) 0° b)45° c)90° d)180°
7. If the plotted position of an instrument station is not known , the most accurate orientation of the plane table cab be achieved by
   a) Trough compass
   b) Observations of two well- defined points
   c) Observations of three well – defined points
   d) Back sighting
8. Major source of error in small mapping by plane table is due to
   a) inaccurate centering b) long right
   c) Shrinkage of drawing sheet d) Few observations
9. Leveling deals with measurement in
   a) Horizontal plane
   b) Vertical plane.
   c) Both horizontal & vertical planes
   d) Horizontal, vertical & inclined planes.

10. A back sight reading on bench mark of 100m was 3.250 m. The inverted staff read to the bottom of the girder was 1.250m. The reduced level of the bottom of girder is

a) 101.250 m b) 102.0 m c) 104.5 m d) 103.250 m

10. The sensitivity of a bubble tube is 20". A staff is held at a distance of 200 m. What the error in reading it if the bubble is out by one division?

a) 0.704 m b) 0.0704m c) 0.0194m d) 0.1940 m

12. To Calculate the amount of cut and fill

a) Only profile leveling is sufficient,
b) Only cross – sectioning is required
c) Both profile leveling and cross – sectioning are required
d) Both profile leveling and reciprocal leveling are required.

13. The size of a theodolite is defined by

a) Diameter of the graduated circle of lower plate.
b) Diameter of the graduated circle of upper plate
c) length of the theodolite
d) length of the telescope.

14. The operation consisting of revolving the telescope through 180 ° in a vertical pla about its horizontal axis is called

a) transiting b) face right c) face left d) traversing

15. In a traverse survey, the deflection angle is always

a) $< 90°$
b) $90°$
c) Difference Between 180° and internal angle
d) Sum of 90° and internal angle

16. Departure of a line of traverse is its length multiplied by

a) cosine of reduced bearing b) sine of reduced bearing
c) secant of reduced bearing d) tangent of reduced bearing

17. Over turning of vehicles on a curve can be avoided by using a

a) compound curve b) vertical curve
c) reverse curve d) Transition curve

18. Different grades are joined together by a

a) compound curve
b) Transition curve
c) Reverse curve
d) vertical curve

19. Designation of a curve is done by the

a) angle subtended by a chord of any lengh
b) angle subtended by an arc of specified length.
c) Radius of the curve.
d) Curvature of the Curve

20.

21. (a)

22. (a)

(b

23. (a)

(b)

staff readi
girder is

20. The angle of intersection of a curve is the angle between
    a) Back tangent and forward tangent.
    b) forward tangent and long chord
    c) back tangent and long chord
    d) prolongation of back tangent and forward tangents

m. What

PART B (5 x 16 = 80 Marks)

21. (a) (i) Bring out the classification of surveying . (8)

(ii) Explain the reciprocal ranging with a neat sketch. (8)

(OR)

(i) How will you drop a perpendicular to a chain line from an outside point? (8)

(ii) Explain the use of optical square with a heat sketch. (8)

22. (a) Following are the bearings taken in a closed compass traverse.

rtical pla

Line	Fore Bearing	Back Bearing
AB	S 37° 30' E	N 37° 30'W
BC	S 43° 15' W	N 44° 15' E
CD	N 73° 00' W	S 72° 15' E
DE	N 12° 45' E	S 13° 15' E
EA	N 60° 00' E	S 59° 00' E

Compute the interior angles and correct them for observational errors.

(OR)

(b) Explain the Radiation method and Intersection method of plane table surveying with neat sketches.

23. (a) The following consecutive readings were taken with a level and a 4 m staff on a continuously sloping ground at a common interval of 30m.,0.78m, 1.535m, 1.955m, 2.430m, 2.985m, 3.480m, 1.155m, 1.960m, 2.365m, 3.640m, 0.935m, 1.045m, 1.630m & 2.545m.

Calculate the reduced levels of the points by RISE and FALL method.
Find the gradient of the line. Take the reduced level of first point, as 180.75m.

(OR)

(b)The following offsets were taken from a chain – line to a hedge.

Distance(m)	0	20	40	60	80	100	120	140	160
Offset (m)	23	40	42	30	32	60	10	14	22

Calculate the area enclosed between the chain-line, the hedge and end-offse hectares by

(i) Simpson's rule

(ii) Trapezoidal rule

24. (a) (i) Explain the procedure of measuring horizontal angle by the method of reitera with a neat sketch

(ii) A leveling staff is held vertical at distances of 100m and 300m from axis tacheometer and the staff intercept for horizontal sights are 0.99m and 3.(respectively. Find the constants of the instrument. The instrument is set u station A and the staff is held vertical at a point B. With a telescope inclined a angle of depression of 10° to the horizontal the readings on staff are 2.67 1.835m, 1.000m.Calculate the reduced level of B and its horizontal distance f A. The height of the instrument is 1.42m and reduced level of A is 450.

(OR)

(b) To find the elevation of the top of a chimney, the following observations were m from two stations pond Q 50m apart.

Horizontal angle at station P, between chimney and Q = 60°
Horizontal angle at station Q, between chimney and P = 50°
Angle of elevation from P to the top of chimney = 30°
Angle of elevation from Q to the top of chimney = 29°
R.L of the line of collimation at P = 22.5m
R.L of the line of collimation at Q = 20.5m

Determine the elevation the top of the chimney.

25. (a) Two straights AB and BC intersect at a chainage of 4242.0 m. The angle intersection is 140°. It is required to set out a 5° simple circular curve to connect t straights. Calculate all the data necessary to set out the curve by the method offsets from the chord produced with an interval of 30m.

(OR)

(b) A compound curve, consisting of two simple circular curves of radii 350m an 500m, is to be laid out between two straights. The angle of intersection betwee the tangents and the two straights are 25° and 55°. Calculate the various elemen of the compound curve.

****