SUBJECT CODE NO:- K-274
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(Civil) Examination Oct/Nov 2016
Surveying-I
(Revised)

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 and Q.No.6 are compulsory.
ii) Solve any two questions from the remaining questions from each section.
iii) Assume suitable data, if necessary.
iv) Figures to the right indicate full marks.

Section- A

Q.1 Solve any five. 10

1) Define the following terms.
   (a) Subsidiary station
   (b) Tie station
2) Differentiate between chain surveying and compass surveying.
3) Define:- True Meridian and magnetic meridian.
4) Write the statement of three point problem.
5) Enlist the accessories used in plane table surveying.
6) What is magnetic declination?
7) What are the advantages of plane tables surveying?
8) What are contours?
9) Define – i) Line of collimation
   ii) Bench Mark.
10) What is local attraction?

Q.2 A) In traverse, following observations are taken. At which station do you suspect local attraction and find out the corrected fore bearings and Back bearings of lines. 08

Line	FB	BB
AB	68°15′	$248^0$15′
BC	148°45′	$326^0$15′
CD	224°30′	$46^0$00′
DE	217°15′	$38^0$15′
EA	327°45′	$147^0$45′

B) Describe the two peg method of permanent adjustment of a dumpy level. 07

Q.3 A) A line was measured by 20m chain which was accurate before starting the day's work. After chaining 900m the chain was found to be 6 cm too long. After chaining total distance of 1575 m. The chain was found to be 14 cm too long. Find the true distance of line. 08

B) Explain the various methods of orientation in plane table survey. 07

Q.4 A) Write the statement of two point problem. Explain the solution of two point problem in details. 07

B) Describe with the help of sketches characteristics of contours. 08

Q.5 A) The following reciprocal observations were made during the testing of a dumpy level. Distance between A and B=200m, find out, 08
1) The collimation error.

2) The true RL of B.
3) Whether the line of collimation is inclined upwards or downwards.

Instrument	Staff Reading at		Remark
is at	A	B	RL of A=450.000m
A	1.725	2.245	
B	2.145	3.045	

B) Describe the method of reciprocal levelling with neat sketch. 07

Section – B

Q.6 Solve any five. 10

1) Enlist the fundamental lines of transit theodolite.
2) What is the least count?
3) State the prismoidal rule and trapezoidal rule.
4) State the principle of stadia method.
5) What is the zero circle of the planimeter?
6) What are the tachometric constants?
7) What is the mass diagram?
8) What are the lifts and leads?
9) Define the consecutive and independent Co-ordinates.
10) State the Bowditch rule.

Q.7 A) Derive an expression for the area of two level section. 08

B) The area enclosed by contours lines at 5 m intervals for a reservoir up to the face of a proposed dam, are shown below. 07

Value of contour	1005	1010	1015	1020	1025	1030	1035
Area	400	1500	3000	8000	18000	25000	40000

Taking 1005 m and 1035 m as the bottom most and highest water levels respectively. Determine the capacity of reservoirs by-

1) Trapezoidal Rule
2) Prismoidal Rule

Q.8 A) Explain the methods of traversing by theodolite. 07

B) The traverse data given in the table contains the lengths and interior angles of the traverse. The bearing of line PQ was measured as S 36°12' 30''ϵ. check the traverse for angles and closing errors. Find the correct latitudes and departures by the Bowditch rule. 08

Line	Length	Station	Included Angle
PQ	102.8	P	131°14' 30''
aR	98.4	Q	84°19' 25''
RS	110.8	R	116°35' 25''
ST	82.8	S	119°58'05''
TP	113.29	T	87°54' 05''

Q.9 A) Explain the method of repetition for the measurement of horizontal Angle. 07

B) The following observations were taken with tachometers, fitted with an anallatic lens, the staff being held vertical. The constant of tachometer is 100. Calculate the RL of station B and the distance between A and B. 08

Inst. Station	HI	Staff station	Vertical Angel	Reading	Remark
P	1.255	BM	-4°20'	1.325, 1.825, 2.325	RL of BM=255.75m
P	1.255	A	+6°30'	0.850, 1.600, 2.350	
B	1.450	A	-7°24'	1.715, 2.315, 2.915	

Q.10 Write the short notes on:- (Any three) 15

1) Theory of anallatic lens.
2) Prismoidal correction.
3) Gale's Traverse table.
4) Methods of interpolation of contours.
5) Measurement of deflection angle.