

Code No: Z – 52 – 2015

FACULTY OF ENGINEERING & TECHNOLOGY
S.E. (Civil) (Revised) Examination
MAY/JUNE, 2015

Surveying – I

Time: Three Hours

Max. Marks: 80

“Please check whether you have got the right the question paper”

- Note:
- 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.*

SECTION-A

- Q.1 Attempt any five : 10
- (a) Define “Surveying”.
 - (b) Principle of Surveying
 - (c) Direct and indirect ranging.
 - (d) What do you mean by representative fraction.
 - (e) Define bench mark.
 - (f) Enlist the fundamental lines of a theodolite.
 - (g) Explain the methods of contouring.
 - (h) Give the uses of contours.
 - (i) Enlist the accessories used in plane table surveying.
 - (j) Give the advantages and disadvantages of plane table surveying.
- Q.2 (a) Explain with neat sketch the construction and working of 08
- (i) Optical square
 - (ii) Line ranger.
- (b) What is Meridian? What are the different types of meridian? Explain. 07

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- Q.3 (a) The following are the bearings taken for compass traverse. Find the included angles and corrected bearings of the line. 08

Line	F.B.	B.B.
PQ	190°30'	13°15'
QR	39°45'	221°15'
RS	21°45'	201°30'
ST	242°45'	62°45'
TP	329°45'	148°30'

- (b) What are the sources of errors in chaining a line? How to compensate these errors? 07
- Q.4 (a) What are the temporary adjustments of a level. Explain the steps involved in leveling. 07
- (b) In fly leveling from a B.M. of RL.150.0m the following readings were observed 08
Back sight : 1.545, 2.695, 1.415, 2.925.
Fore sight : 0.575, 1.235, 0.595.
From the last position of the instrument six pegs at 20m intervals are to be set out on a uniformly rising gradient of 1 in 50, the first peg is to have R.L. of 140.00m. Find the staff readings and reduced levels of the pegs.
- Q.5 (a) Explain the various methods of plane table surveying in detail. 07
- (b) State and explain in detail “Three Point Problem”. 08

SECTION-B

- Q.6 Attempt any five : 10
- (a) Describe the process of temporary adjustment of a theodolite.
 - (b) What are the functions of theodolite?
 - (c) What do you mean by swinging and transiting of theodolite.
 - (d) What is a direct angle?
 - (e) What do you mean by “Consecutive Coordinates” and “Independent Coordinates”.
 - (f) What are latitudes and departures.
 - (g) State the different types of cross section.
 - (h) What do the term “Lead” and “Lift” mean?
 - (i) Explain “Tacheometric surveying”.
 - (j) What is Tangential Tacheometry?

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- Q.7 (a) Explain method of repetition for horizontal angle measurement. **07**
(b) Explain balancing of a traverse. **08**
- Q.8 (a) Explain the procedure for extending a surveying line by “Double Sighting method”. **07**
(b) A closed traverse was conducted round an obstacle and the following observations were made. Work out the missing quantities. **08**

Line	Length	Bearing
AB	500	$98^{\circ}30'$
BC	620	$30^{\circ}20'$
CD	468	$298^{\circ}30'$
DE	?	$230^{\circ}0'$
EA	?	$150^{\circ}10'$

- Q.9 (a) Describe in detail “Mass Haul Diagram”. **08**
(b) Derive an expression for Prismoidal correction (C_p) **07**
- Q.10 (a) Explain the field method of determining the tacheometric constants. **07**
(b) A tacheometer fitted with anallatic lens is used for taking observations. The instrument was set up above datum over B.M. 600.00m and R.L. of the instrument axis was 601.4m. Assuming multiplying const to be 100.00. Calculate R.Ls of the vertically held staff stations from the following observations.

Staff station	Upper	Middle	Lower	Vertical angle
A	1.620	1.035	0.450	$+5^{\circ}15'$
B	1.680	1.260	0.860	$+7^{\circ}20'$
C	2.400	1.780	1.185	$+8^{\circ}10'$
