



17310

14115

3 Hours/100 Marks

Seat No.

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- Instructions :**
- (1) **All** questions are **compulsory**.
 - (2) Answer **each** next main Question on a **new** page.
 - (3) Illustrate your answers with **neat** sketches **wherever** necessary.
 - (4) Figures to the **right** indicate **full** marks.
 - (5) Assume **suitable** data, **if necessary**.
 - (6) **Use** of Non-programmable Electronic Pocket Calculator is **permissible**.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.

MARKS

1. a) Attempt **any six** of the following :

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- i) State the Principles of Survey.
- ii) State the two uses of survey based on geodetic surveying.
- iii) Give any four codes of signals used to direct assistant in ranging.
- iv) Define : WCB and Quadrantal Bearing System.
- v) How would you detect presence of local attraction at a place ?
- vi) State the situation where plane table is suitable.
- vii) Define :
 - 1) Bench mark,
 - 2) Datum surface
 - 3) Line of collimation
 - 4) Change point.
- viii) Define fly levelling and profile levelling.

b) Attempt **any two** of the following :

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- i) Differentiate between plane surveying and geodetic surveying.
- ii) Draw conventional symbols for the following :
 - a) Pucca building
 - b) Lake
 - c) Embankment
 - d) Church.
- iii) The down hill end of the 30 m tape is held 80 cm too low, what is horizontal length ?

P.T.O.



2. Attempt **any four** of the following :

16

- a) Explain indirect ranging with neat sketch.
- b) Explain the method of chaining on a sloping ground.
- c) Length of a survey line measured with a 30 meter chain was found to be 1000 meter. At the end of survey, the chain was compared with a standard chain, it was found to be 0.15 meter too long. Find correct length of the line.
- d) What are offsets ? How are they taken and recorded ? Explain with sketch.
- e) What considerations would you have while selecting survey stations and survey lines in a chain survey ?
- f) Describe with neat sketch, the optical square and explain its principle.

3. Attempt **any four** of the following :

16

- a) Prepare a page of field showing chain line with following details.
 - i) Length of base line 100 m.
 - ii) A electric pole 25 m perpendicular from chainage 20 m at left.
 - iii) The corner of building are 40 m and 55 m from chainage 60 m and 80 m to the right of chain.
- b) Convert the following R.B. to W.C.B.
 - i) $N40^{\circ}30'W$
 - ii) $S 49^{\circ}30'E$
 - iii) $S 43^{\circ}30'W$
 - iv) $N 45^{\circ}00'E$
- c) Draw a neat sketch of Prismatic compass and label its component parts.
- d) Find the back bearing of the following lines.
 - i) $AB - N48^{\circ}E$
 - ii) $EF - 270^{\circ}30'$
 - iii) $CD - S 58^{\circ}30'W$
 - iv) $GH - 180^{\circ}$
- e) What is meant by closing error ? Explain graphical method of adjustment of closing errors.
- f) Give the differences between closed and open traverse survey.



MARKS

4. Attempt **any four** of the following :

16

- a) The following bearings were taken in traverse survey conducted with a prismatic compass at a place where local attraction was suspected. At what station do you suspect local attraction ? Find the correct bearings of the line.

Line	Fore Bearing	Back Bearing
AB	44°30'	226°30'
BC	124°30'	303°15'
CD	181°00'	1°0'
DA	289°30'	108°45'

- b) What are the sources of errors in plane tabling.
- c) State advantages and disadvantages of plane table survey.
- d) State any four accessories of plane table with their uses.
- e) What is meant by orientation of plane table ? Explain any one method.
- f) Draw a neat sketch of dumpy level and name all parts.

5. Attempt **any four** of the following :

16

- a) Define the following :
 - i) Height of instrument
 - ii) Back sight
 - iii) Fore sight
 - iv) Axis of bubble tube.
- b) State the fundamental axes and mention their relationship for a dumpy level.
- c) Differentiate between collimation plane method and rise and fall method.
- d) What are the advantages of auto level ?
- e) Explain importance of Bench mark in levelling and state types of bench mark.
- f) The following consecutive reading were taken with a dumpy level and 4 m levelling staff on continuously sloping ground A to B at every 30 m interval. 0.355 m on A, 0.730, 1.055, 2.690, 3.950, 0.485, 1.020, 1.895, 2.535. The R.L. of A was 560.250 m. Prepare page of level book and check your calculation by usual method. Determine the gradient of the line AB.

