UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
END Semester Examination, May 2019

Programme Name: B-TECH APE_UP   Semester   : IV
Course Name   :   SURVEYING   Time   : 03 hrs
Course Code   :   PEGS-2003   Max. Marks: 100
Nos. of page(s)   : 3

Instructions: All the questions of section A is compulsory. The Q 3, Q 4 & Q 5 is compulsory from Section B, Attempt   i **OR** ii from Q.6. From section C Q.7 is compulsory, Q.8 i,ii, OR iii, vi, v C. Wherever necessary do with neat sketches.

SECTION A

S. No.		Marks	CO
Q 1	Write a brief note for the following terms: a) Inverted eye piece b) Telescopic alidade c) Aplanation d) Diaphragm e) Optical square	**10**	**CO1**
Q 2	Fill in the blanks with suitable answer: i. The closing error in a closed travers is adjusted by……………. rule ii. ………………….. method is used in case of direct and indirect ranging is not possible in the thick forest area. iii. In tachometer survey stadia hairs are not used, the readings being taken against the horizontal cross-hair is ----------------------------methods iv. If the magnetic bearing of the sun at a palace at noon in southern hemisphere is 167 degree the magnetic declination at that place is ………………….. v. The size of the theodolite is specified by the ………………….. Of ………………….plate vi. The cross hairs in the surveyor telescope is placed much closer to the ……………………. than to the object lens. vii. Sensitiveness of the level tube is designated by the………………of level tube. viii. The refraction correction is partially eliminated by ………………….. correction. ix. The unit of plane angle 100 grad is equal to …………… degree x. The angle between the prolongation of the preceding line and the forward line of a traverse is called as ……………….. angle	**10**	**CO2**

SECTION B

Q 3	Distinguish between the following terms: a) Chromatic and spherical aberration d) Solid staff and Target levelling staff b) Prismatic compass and surveyor compass e) Trivet and Tribrach c) Turnion and Swing in theodolite	**10**	**CO3**

Q 4	i)	Describe in brief the application of parts of theodolite with neat sketch	7.5+2.5	CO4
	ii)	In the year 2000 a line was drawn on map at **207° 20°.** The magnetic declination at that place was **6° 15° E**. If the value of magnetic declination during 2015 was **3° 40° W**. Compute the present magnetic bearing of the line		
Q.5	a)	The bearing of the lines OA, OB, OC, and OD are **40° 15', 120°15', 230° 45'& 300° 30'** respectively. Calculate the angles of **∠AOB, ∠BOC and ∠COD.**	4+6	CO4 & CO3
	b)	Describe in brief the application of different type of leveling.		
Q 6	i)	Explain in brief the following methods of survey and their advantages and disadvantages. I) Radiation, ii) Intersection and Resection survey.	10	
		OR		CO4 & CO5
	ii)	Describe in brief the procedure, merit and demerit of different methods of theodolite survey.		
			10	
		SECTION C		
Q.7		a) A compass traverse ABCDEA was run anticlockwise and following bearing were taken	12+8	CO5

Line	FB	BB
AB	**150° 15'**	**330° 15'**
BC	**20° 30'**	**200° 30'**
CD	**295° 45'**	**115° 45'**
DE	**218° 0'**	**38° 00'**
EA	**120° 30'**	**300° 30'**

Determine the local attraction and correct all the bearings and angles.

c) A steel tape of nominal length 30m was used to measure a line AB by suspending it between supports. If the measured was 49.35m when the slope, angle was 2° 45' and the mean length temperature and tension applied were respectively 20° C and 115 N, the standard length of the tape was 20.22m at 30° C and 75 N tension. The tape weighed 0.28 N/m and had a cross sectional area of 1.70mm^2. Find the correct horizontal length. E= 2x10^5 N/mm^2 α=1.14x10^{-5} per°C

Q.8			12+8	CO4
	i)	Describe in brief the procedure, advantages and disadvantages of different methods of Tachometric survey.		CO6
	ii)	Explain in brief the classification of following terms and their significance in compass surveying; a) Bearings and b) Meridians		CO5

OR

iii) Find the missing reading and complete the level book with arithmetic check.

BS	IS	FS	Rise	Fall	HI	RL
?					?	?
	2.32			0.484		?
	?		0.82			?
4.11		3.35		?	?	?
?		2.051	?		?	?
	2.15			1.12		?
	2.986			?		?
	?			0.32		?
		2.88	?			130

iv) Three ships A, B, & C started sailing from Mumbai at the same time in three direction. The speed of all the three ships was the same is 30 Km/hour, their bearings were measured to be **N 70° E, S60° E & S 10° E,** after on hour the captain of ship B, determine the bearings and distance of other ships. What is the distance of A and C.

v) The Surveyors measure a distance of point CD as **39.56 ft** using break chaining. The tape was not accurately level and the plum bob end is **2ft** lower than actual positions. Calculate the correct distance of the line CD.

11+6+3 **CO6**

****