

B.E. Civil Engineering (Model Curriculum) Sem-V
PCCCE505 : Surveying II

P. Pages : 2

Time : Three Hours



GUG/W/22/13728

Max. Marks : 80

- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Two straights AB and BC intersect at chainage 1024.50 m The angle of intersection is 110° . It is required to set out a simple circular curve of 224 m radius to connect two straights. Calculate all the data necessary to set out the Curve by the Rankine method with peg interval of 20 m and 20 "theodolite. **8**
- b) A road bend which deflects 60° is to be designed for a maximum speed of 110 km/hr, a maximum centrifugal ratio of $\frac{1}{4}$ and max. rate of change of acceleration of 30 cm/sec^3 , the curve consisting of a circular arc combined with two cubic spiral. Calculate: **8**
- i) Radius of circular arc
 - ii) The requisite length of transition curve
 - iii) total length of composite curve.
 - iv) The chainage of the beginning and the end of the transition curve, and of the junctions of the transition curves with the circular arc if the chainage of the P.I. is 5325.0 m.

OR

2. a) A Reverse curve is to be set out between two parallel tangents 30 m apart. the line joining the two tangent points is 300 m. apart. The two arc of the curve have same radius. Calculate the necessary data to set the curve of the field by offset from long chord at the interval of 20 m. from common tangent point. **8**
- b) describe the method of setting out a simple curve by offset from the chords produced. **4**
- c) What are the different types of curves? Draw neat sketches of each. Explain all the types in brief. **4**
3. a) Define the following **6**
- i) Celestial sphere
 - ii) Hour Angle
 - iii) The prime vertical
- b) Find GMT corresponding to LMT **10**
- 1) 9 hr 40 min 12 sec at place in Longitude $42^\circ 36' \text{W}$
 - 2) 4 hr 32 min 10 sec at place in Longitude $56^\circ 32' \text{W}$

OR

4. a) Define the following: **6**
- i) Celestial Horizon
 - ii) Vertical circle
 - iii) Zenith and Nadir
- b) The standard meridian in India is $82^\circ 30'$ if the standard time at any instant is 20 hr 24 min 6 sec find LMT for two places having Longitude **10**
- 1) 20°E
 - 2) 20°W

5. a) Explain the different system of co-ordinate in the astronomy why is it essential to have all of them together. **8**
- b) An observation was made on a star lying west of the meridian at a place in latitude of $40^{\circ}20'36''$ N to determine the azimuth of the survey line AB. The mean observed altitude was $42^{\circ}10'24''$ and the clockwise horizontal angle from AB to the star was $108^{\circ}18'48''$. The declination of the star was $24^{\circ}54'35''$. Find the azimuth of the survey line AB. **8**

OR

6. a) Explain in detail Celestial Co-ordinate systems. **6**
- b) Explain in detail different time systems. **6**
- c) Apparent altitude and corrections. **4**
7. a) Explain Current and discharge method of hydrographic surveying. **6**
- b) Explain sounding methods of Hydrographic surveying. **6**
- c) Explain three point problem in Hydrographic surveying. **4**

OR

8. a) Explain Cadastral Surveying. **4**
- b) What are the applications of Hydrographic surveying explain in detail. **8**
- c) Explain in details shore signal and Buoys. **4**
9. a) Determine most probable values of the angle A, B, C, D from following data $A = 87^{\circ}34'22''$ $Wt\ 2$ $B = 98^{\circ}42'18''$ $Wt\ 3$ $C = 102^{\circ}26'9''$ $Wt\ 4$ $D = 71^{\circ}17'4''$ $Wt\ 1$ $A+B+C+D = 360^{\circ}$. **8**
- b) Determination of the most probable values of quantities. **4**
- c) Explain theory of least squares. **4**

OR

10. a) Explain satellite station and reduction to center? **6**
- b) Find the most probable values of the angles A, B, C from the following observation at a station P:- **10**

A	= $38^{\circ}25'20''$	Weight 1
B	= $32^{\circ}36'12''$	Weight 1
A+B	= $71^{\circ}01'29''$	Weight 2
A+B+C	= $119^{\circ}10'43''$	Weight 1
B+C	= $80^{\circ}45'28''$	Weight 2

AAAA
Subject Name
(Course)

Time :

Max. Marks :

-
- सुचना :- 1. सर्व प्रश्न सोडविणे आवश्यक आहे.
2. सर्व प्रश्नांना समान गुण आहे.

1. अअअअअअ

AAAA
Subject Name
(Course)

Time :

Max. Marks :

सुचनाएँ :- 1. सभी प्रश्न अनिवार्य हैं।
2. सभी प्रश्नों के अंक समान हैं।

1. અઅઅઅઅઅ

[illegible]