

5. THEORY OF ERRORS AND FIELD ASTRONOMY

1. Theory of errors and adjustments deals with minimizing the effects of
- (a) Instrumental errors
 - (b) Mistakes
 - (c) Systematic errors
 - (d) Personal and accidental errors

Ans.

2. From the probability equation it is found that the most probable values of series of errors arising out of the observations of equal weightage are those for which the sum of their squares is
- (a) zero
 - (b) Infinity
 - (c) Minimum
 - (d) Maximum

Ans.

3. In accordance to 'Gauss rule', weights to be assigned are proportional to
- (a) $1/(\text{Sum of the residual errors of observations})$
 - (b) $1/(\text{Sum of the square of the residual errors of observations})$
 - (c) Sum of the square roots of the residual errors of observations
 - (d) Sum of the cube roots of the residual errors of observations

Ans.

4. Which one of the following methods would give accurate results in determining the direction of the observer's meridian?
- (a) Observation of circumpolar stars on the same vertical
 - (b) Observation of circumpolar stars at culmination
 - (c) Extra-meridian observation of a circumpolar star
 - (d) Observation of the sun at equal altitudes

Ans.

5. Given that δ denotes declination, θ the latitude of the place of observation and α the altitude of a star at the prime vertical, then
- (a) $\sin \alpha = \sin \delta \cos \theta$
 - (b) $\sin \theta = \sin \delta \operatorname{cosec} \alpha$
 - (c) $\cos \alpha = \cos \delta \sin \theta$
 - (d) $\sin \delta = \sin \alpha \cos \theta$

Ans.

6. Which one of the following surveys is required in observations of stars?
- (a) Astronomical survey
 - (b) Cadastral survey
 - (c) Aerial survey
 - (d) Photogrammetric survey

Ans.

7. At a given place of observation, the declination of a circumpolar star is
- (a) Greater than the latitude
 - (b) Equal to the latitude
 - (c) Less than the co-latitude
 - (d) Greater than the co-latitude

Ans.

8. Which one of the following represents a circumpolar star?
- (a) Upper culmination above horizon, lower culmination below horizon
 - (b) Both upper and lower culminations below horizon
 - (c) Both upper and lower culminations above horizon
 - (d) Altitude at upper culmination is minimum

Ans.





9. Flamsteed gave numbers to stars observed by him in each constellation according to their
 (a) Brilliance (b) Altitudes
 (c) Co-declinations (d) Right ascensions

Ans.

10. If δ is the declination of a star and ϕ is the latitude of the place of observation, then for a circumpolar star
 (a) $\delta \leq \phi$ (b) $\delta \geq \phi$
 (c) $\delta > (90^\circ - 2\phi)$ (d) $\delta \leq (90^\circ - 2\phi)$

Ans.

11. Which one of the following conditions requires geodetic surveying?
 (a) Horizontal curve ranging
 (b) Vertical curve ranging
 (c) Survey of a country
 (d) Reconnaissance survey

Ans.

12. Which of the following coordinate system is the most convenient way to specify the position of the star on celestial sphere?
 (a) Latitude and longitude
 (b) Altitude and azimuth
 (c) Declination and right ascension
 (d) Declination and hour angle

Ans.

13. Which one of the following linear methods of setting out a circular curve needs reference of the centre of the curve?
 (a) Offset from chord produced
 (b) Radial offset
 (c) Perpendicular offset
 (d) Successive bisection of arcs

Ans.

14. How many sidereal days are there in a solar year?
 (a) 365.2840 (b) 365.2422
 (c) 360.2500 (d) 365.0000

Ans.

15. The declination of a celestial body is the arc of the declination circle intercepted between that body and the
 (a) Prime vertical through that body
 (b) Azimuth of the body
 (c) Equinoxes of the Earth
 (d) Equator of the Earth

Ans.

16. The difference between the apparent solar time and mean solar time is known as
 (a) Real time (b) Average time
 (c) Equation of time (d) Sidereal time

Ans.

Answer Sheet

1. (d)	2. (c)	3. (b)	4. (b)	5. (b)	6. (a)	7. (d)	8. (e) ^d	9. (d)	10. (c)
11. (b) ^c	12. (b)	13. (b)	14. (b)	15. (d)	16. (c)				

11 → c

8 → d

