B.Sc. DEGREE EXAMINATION,APRIL 2019
II Year IV Semester
STATICS

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. State Newton's laws of motion.
2. If two forces P and Q act on a particle in the same direction,What is the resultant?
3. Define Equlibrium of a particle.
4. State Lami's theorem.
5. Define Moment of a force.
6. Define like parallel force.
7. Define couple.
8. Write the equation of the line of action of the resultant.
9. Write down the cotangent formulae.
10. Define centre of gravity.
11. State the triangle law of forces.
12. What is centre of gravity of a circular arc?

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Find the magnitude and direction of the resultant of two forces F_1 and F_2
14. Show that if three forces keep a particle in equlibrium then the forces are coplanar.
15. P and Q are two like parallel forces. If Q is moved parallel to itself through a distance x, Prove that the resultant of P and Q moves through a distance Qx /P+Q.
16. Show that a system of coplanar forces reduce either to a single force or to a single couple.
17. Find the centre of gravity of solid hemisphere.
18. Forces with components (1,0) (-2,0) (1,1) act respectively at the points (0,0) (1,1) (1,0) Find the resultant force and the equation of line of action.

19. If O is the orthocentre of a triangle ABC. If forces of magnitude P,Q,R acting along OA,OB,OC are in equlibrium , Show that P:Q:R =a:b:c

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. The magnitude of the resultant of two given forces P,Q is R.If Q is doubled ,then R is doubled .If Q is reversed, then also R is doubled. Show that P:Q:R = $\sqrt{2} : \sqrt{3} : \sqrt{2}$.
21. State and Prove lami's theorem
22. State and Prove Varignon's theorem.
23. ABCDEF is a regular hexagon .Forces P,2P,3P,2P,5P,6P act along AB,BC, DC, DE,EF,AF.Show that they are equivalent to a couple and find the moment of the couple.
24. Find the centre of gravity of a hollow right circular cone.

B.Sc. DEGREE EXAMINATION,APRIL 2019
II Year IV Semester
STATICS

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. State Newton's laws of motion.
2. If two forces P and Q act on a particle in the same direction,What is the resultant?
3. Define Equlibrium of a particle.
4. State Lami's theorem.
5. Define Moment of a force.
6. Define like parallel force.
7. Define couple.
8. Write the equation of the line of action of the resultant.
9. Write down the cotangent formulae.
10. Define centre of gravity.
11. State the triangle law of forces.
12. What is centre of gravity of a circular arc?

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Find the magnitude and direction of the resultant of two forces F_1 and F_2
14. Show that if three forces keep a particle in equlibrium then the forces are coplanar.
15. P and Q are two like parallel forces. If Q is moved parallel to itself through a distance x, Prove that the resultant of P and Q moves through a distance Qx /P+Q.
16. Show that a system of coplanar forces reduce either to a single force or to a single couple.
17. Find the centre of gravity of solid hemisphere.
18. Forces with components (1,0) (-2,0) (1,1) act respectively at the points (0,0) (1,1) (1,0) Find the resultant force and the equation of line of action.

19. If O is the orthocentre of a triangle ABC. If forces of magnitude P,Q,R acting along OA,OB,OC are in equlibrium , Show that P:Q:R =a:b:c

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. The magnitude of the resultant of two given forces P,Q is R.If Q is doubled ,then R is doubled .If Q is reversed, then also R is doubled. Show that P:Q:R = $\sqrt{2} : \sqrt{3} : \sqrt{2}$.
21. State and Prove lami's theorem
22. State and Prove Varignon's theorem.
23. ABCDEF is a regular hexagon .Forces P,2P,3P,2P,5P,6P act along AB,BC, DC, DE,EF,AF.Show that they are equivalent to a couple and find the moment of the couple.
24. Find the centre of gravity of a hollow right circular cone.