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| Q 1.  The steering of a ship means |
| a) Movement of a complete ship up and down in vertical plane about transverse axis | b) Turning of a complete ship in a curve towards right or left, while it moves forward |
| c) Rolling of a complete ship sideways | d) None of the above |
| Correct answer: B |  |
| Q 2. The secondary unbalanced force is maximum when the angle of inclination of the crank with the line of stroke is |
| a) 0° and 90° | b) 180° and 360° |
| c) Both (A) and (B) | d) None of these |
| Correct answer: C |  |
| Q 3. The velocity of piston in a reciprocating steam engine is given by (where ω = Angular velocity of crank, r = Radius of crank pin circle, θ = Angle turned by crank from inner dead center, andn = Ratio of length of connecting rod to the radius of crank) |
| a)ωr [sin θ + (sin 2θ/n)] | b)ωr [cos θ + (cos 2θ/n)] |
| c) ω²r [sin θ + (sin 2θ/n)] | d)  ω²r [cos θ + (cos 2θ/n)] |
| Correct answer: A |  |
| Q 4. The Ackerman steering gear mechanism is preferred to the Davis steering gear mechanism, because |
| a)  Whole of the mechanism in the Ackerman steering gear is on the back of the front wheels | b)The Ackerman steering gear consists of turning pairs |
| c)The Ackerman steering gear is most economical | d)Both (A) and (B) |
| Correct answer: D |  |
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| Q 5. Spur gear design normally begins with selecting this: |
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| a)Rack size | b)Tooth size |
| c)Gear size | d)Pitch diameter |
| Correct answer: D |  |
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| Q 6. The most common geometric form used in gears today is this: |

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| a)Involute profile | b)Convolute profie |
| c)Base circle | d)Spur circle |
| Correct answer: A |  |
| Q 7. Gear teeth formed on a flat surface are called this: |
| a)Pinion | b)Rack |
| c)Spur | d)Teeth |
| Correct answer: B |  |
| Q 8. The Hooke's joint consists of: |
| a)Two forks | b)One fork |
| c)Three forks | d)Four forks |
| Correct answer:A |  |
| Q 9. A system of masses rotating in different parallel planes is in dynamic balance if the |
| a)Resultant force is equal to zero | b) Resultant couple is equal to zero |
| c)Resultant force and resultant couple are both equal to zero | d) Resultant force is numerically equal to the resultant couple, but neither of them need necessarily be zero |
| Correct answer:C |  |
| Q 10.  Inertia force acts |
| a) Perpendicular to the acceleration force | b) Along the direction of acceleration force |
| c) Opposite to the direction of acceleration force | d) None of the above |
| Correct answer:C |  |
| Q 11. The axis of precession is \_\_\_\_\_\_\_\_\_\_ to the plane in which the axis of spin is going to rotate. |
| a) Parallel | b) Perpendicular |
| c) Both A and B | d) None of these |
| Correct answer: B |  |
| Q 12. A disc spinning on its axis at 20 rad/s will undergo precession when a torque 100 N-m is applied about an axis normal to it at an angular speed, if mass moment of inertia of the disc is the 1 kg-m2 |
| a) 2rad/s | b) 5rad/s |
| c)10rad/s | d) 20rad/s |
| Correct answer: B |  |
| Q 13. The engine of an aeroplane rotates in clockwise direction when seen from the tail end and the aeroplane takes a turn to the left. The effect of the gyroscopic couple on the aeroplane will be |
| a) to raise the nose and dip the tail | b) to dip the nose and raise the tail |
| c) to raise the nose and tail | d) to dip the nose and tail |
| Correct answer: A |  |
| Q 14. The air screw of an aeroplane is rotating clockwise when looking from the front. If it makes a left turn, the gyroscopic effect will |
| a) tend to depress the nose and raise the tail | b) tend to raise the nose and depress the tail |
| c) tilt the aeroplane | d) none of the above |
| Correct answer: B |  |
| Q 15. The rotor of a ship rotates in clockwise direction when viewed from the stern and the ship takes a left turn. The effect of the gyroscopic couple acting on it will be |
| a) to raise the bow and stern | b) to lower the bow and stern |
| c) to raise the bow and lower the stern | d) to lower the bow and raise the stern |
| Correct answer: C |  |
| Q 16. In an automobile, if the vehicle makes a left turn, the gyroscopic torque |
| a) increases the forces on the outer wheels | b) decreases the forces on the outer wheels |
| c) does not affect the forces on the outer wheels | d) none of the above |
| Correct answer: A |  |
| Q 17. A motor car moving at a certain speed takes a left turn in a curved path. If the engine rotates in the same direction as that of wheels, then due to the centrifugal forces |
| a) the reaction on the inner wheels increases and on the outer wheels decreases | b) the reaction on the outer wheels increases and on the inner wheels decreases |
| c) the reaction on the front wheels increases and on the rear wheels decreases | d) the reaction on the rear wheels increases and on the front wheels decreases |
| Correct answer: B |  |
| Q 18. When the crank is at the inner dead centre, in a horizontal reciprocating steam engine, then the velocity of the piston will be |
| a)Mean | b)Minimum |
| c)Maximum | d)Zero |
| Correct answer: D |  |
| Q 19. A rigid body, under the action of external forces, can be replaced by two masses placed at a fixed distance apart. The two masses form an equivalent dynamical system, if |
| a) the sum of two masses is equal to the total mass of the body | b) the centre of gravity of the two masses coincides with that of the body |
| c) the sum of mass moment of inertia of the masses about their centre of gravity is equal to the massmoment of inertia of the body | d) all of the above |
| Correct answer: D |  |
| Q 20. In an engine, the work done by inertia forces in a cycle is |
| a)Positive | b)Zero |
| c)Negative | d)None of these |
| Correct answer :A |  |
| Q 21. The analysis of mechanism deals with |
| a) the determination of input and output angles of a mechanism | b) the determination of dimensions of the links in a mechanism |
| c) the determination of displacement, velocity and acceleration of the links in a mechanism | d) none of the above |
| Correct answer: C |  |
| Q 22. The synthesis of mechanism deals with |
| a)the determination of input and output angles of a mechanism | b)the determination of dimensions of the links in a mechanism |
| c)the determination of displacement, velocity and acceleration of the links in a mechanism | d)none of the above |
| Correct answer: B |  |
| Q 23. The three precision points in the range 1 ≤*x* ≤3 are |
| a)1.1, 2, 2.6 | b)1.6, 2.5, 2.95 |
| c)1.134, 2, 2.866 | d)1.341, 2 , 2.686 |
| Correct answer: |  |
| Q 24. In a simple gear train, if the number of idle gears is odd, then the motion of driven gear will |
| a)be same as that of driving gear | b)be opposite as that of driving gear |
| c)depend upon the number of teeth on the driving gear | d)none of the above |
| Correct answer: A |  |
| Q 25. The train value of a gear train is |
| a)equal to velocity ratio of a gear train | b)reciprocal of velocity ratio of a gear train |
| c)always greater than unity | d) always less than unity |
| Correct answer: B |  |
| Q 26. When the axes of first and last gear are co-axial, then gear train is known as |
| a)simple gear train | b)compound gear train |
| c)reverted gear train | d)epicyclic gear train |
| Correct answer: C |  |
| Q 27. In a clock mechanism, the gear train used to connect minute hand to hour hand, is |
| a) epicyclic gear train | b)reverted gear train |
| c)compound gear train | d)simple gear train |
| Correct answer: B |  |
| Q 28. In a gear train, when the axes of the shafts, over which the gears are mounted, move relative to a fixed axis, is called |
| a) Simple gear train | b)reverted gear train |
| c)compound gear train | d)epicyclic gear train |
| Correct answer: D |  |
| Q 29. For static balancing of a shaft, |
| a)the net dynamic force acting on the shaft is equal to zero | b)the net couple due to the dynamic forces acting on the shaft is equal to zero |
| c) both (a) and (b) | d)none of the above |
| Correct answer :A |  |
| Q 30. What is meant by pitching of ship? |
| a) up and down motion of bow and stern along transverse axis | b) up and down motion of bow and stern along longitudinal axis |
| c) up and down motion of port and starboard along transverse axis | d) none of the above |
| Correct answer: a |  |