

## Objective questions on MET – 08

1. Which of the following disciplines provides study of inertia forces arising from the combined effect of the mass and the motion of the parts?

- (a) Theory of machines
- (b) Applied mechanics
- (c) Mechanisms
- (d) Kinetics
- (e) Kinematics.

2. Which of the following disciplines provides study of relative motion between the parts of a machine?

- (a) Theory of machines
- (b) Applied mechanics
- (c) Mechanisms
- (d) Kinematics.

3. Which of the following disciplines provides study of the relative motion between the parts of a machine? And the forces acting on the parts

- (a) Theory of machines
- (b) Applied mechanics
- (c) Mechanisms
- (d) Kinetics

4. The type of pair formed by two elements which are so connected that one is constrained to turn or revolve about a fixed axis of another element is known as

- (a) Turning pair
- (b) Rolling pair
- (c) Sliding pair
- (d) Spherical pair

5. Which of the following is a lower pair?

- (a) Ball and socket I
- (b) Piston and cylinder
- (c) Cam and follower
- (d) (a) and (b) above

6. If two moving elements have surface contact in motion, such pair is known as

- (a) Sliding pair
- (b) Rolling pair
- (c) Surface pair
- (d) Higher pair.

7. The example of lower pair is
- (a) Shaft revolving in a bearing
  - (b) Straight line motion mechanisms
  - (c) Automobile steering gear
  - (d) all of the above
8. Pulley in a belt drive acts as
- (a) Cylindrical pair
  - (b) Turning pair
  - (c) Rolling pair
  - (d) Sliding pair
9. The example of rolling pair is
- (a) Bolt and nut
  - (b) Lead screw of a lathe
  - (c) Ball bearing and roller bearing
  - (c) None of these
10. Any point on a link connecting double slider crank chain will trace a
- (a) Straight line
  - (b) Circle
  - (c) Ellipse
  - (d) Parabola
  - (e) Hyperbola.
11. The purpose of a link is to
- (a) Transmit motion
  - (b) Guide other links
  - (c) Act as a support
  - (d) all of the above
12. A universal joint is an example of
- (a) Higher pair
  - (b) Lower pair
  - (c) Rolling pair
  - (d) Sliding pair
13. Rectilinear motion of piston is converted into rotary by
- (a) Cross head
  - (b) Slider crank
  - (c) Connecting rod
  - (d) Dudgeon pin

14. Pitch point on a cam is
- (a) Any point on pitch curve
  - (b) The point on cam pitch curve having the maximum pressure angle
  - (c) Any point on pitch circle
  - (d) The point on cam pitch curve having the minimum pressure angle
15. The example of spherical pair is
- (a) Bolt and nut
  - (b) Lead screw of a lathe
  - (c) Ball and socket joint
  - (d) Ball bearing and roller bearing
16. Cross head and guides form a
- (a) Sliding pair.
  - (b) Higher pair
  - (c) Turning pair
  - (d) Rolling pair
17. A circular bar moving in a round hole is an example of
- (a) Incompletely constrained motion
  - (b) Partially constrained motion
  - (c) Completely constrained motion
  - (d) Successfully constrained motion
18. Kinematic pairs are those which have two elements that
- (a) Have line contact
  - (b) Have surface contact
  - (c) Permit relative motion
  - (d) Are held together
19. The lower pair is a
- (a) Open pair
  - (b) Closed pair
  - (c) Sliding pair
  - (d) Point contact pair
20. Automobile steering gear is an example of
- (a) Higher pair
  - (b) Lower pair.
  - (c) Turning pair
  - (d) Rotary pair

21. In higher pair, the relative motion is
- (a) Purely turning
  - (b) Combination of sliding and turning.
  - (c) Purely rotary
  - (d) Purely surface contact
22. Which of the following has sliding motion?
- (a) Crank
  - (b) Connecting rod
  - (c) Crank pin
  - (d) cross-head
23. The example of higher pair is
- (a) Belt, rope and chain drives
  - (b) Gears, cams
  - (c) Ball and roller bearings
  - (d) all of the above
24. Which of the following mechanism is obtained from lower pair?
- (a) gyroscope
  - (b) Pantograph
  - (c) Valve and valve gears
  - (d) all of the above.
25. Which of the following would constitute a link?
- (a) Piston, piston rings and dudgeon pin
  - (b) Piston, piston-rod and cross head
  - (c) Piston rod and cross head
  - (d) Piston, crank pin and crank shaft
  - (e) Piston, piston-rod and cross head
26. A completely constrained motion can be transmitted with.
- (a) 1 link with pin joints
  - (b) 2 links with pin joints
  - (c) 3 links with pin joints
  - (d) 4 links with pin joints
27. Oldham's coupling is the
- (a) Second inversion of double slider crank chain
  - (b) Third inversion of double slider crank chain
  - (c) Second inversion of single slider crank chain
  - (d) Third inversion of slider crank chain
  - (e) Fourth inversion of double slider cranks chain.

28. A mechanism is an assemblage of
- (a) Two links
  - (b) Three links
  - (c) Four links or more than four links
  - (d) all of the above
29. The number of links in pantograph mechanism is equal to
- (a) 2
  - (b) 3
  - (c) 4
  - (d) 5
30. Elements of pairs held together mechanically is known as
- (a) Closed pair
  - (b) Open pair
  - (c) Mechanical pair
  - (d) Rolling pair
31. Shaft revolving in a bearing is the following type of pair
- (a) Lower pair
  - (b) Higher pair
  - (c) Spherical pair,
  - (d) Cylindrical pair
32. Rectangular bar in a rectangular hole is the following type of pair
- (a) Completely constrained motion
  - (b) Partially constrained motion
  - (c) Incompletely constrained motion
  - (d) Freely constrained motion
33. The tendency of a body to resist change from rest or motion is known as
- (a) Mass
  - (b) Friction
  - (c) Inertia
  - (d) Resisting force
34. In automobiles the power is transmitted from gear box to differential through
- (a) bevel gear
  - (b) Universal joint
  - (c) Hooke's joint
  - (d) Knuckle joint

35. Transmission of power from the engine to the rear axle of an automobile is by means of

- (a) Compound gears
- (b) Worm and wheel method
- (c) Hooke's joint

36. Governor is used in automobile to

- (a) Decrease the variation of speed
- (b) To control fluid supply
- (c) To control speed variations
- (d) all of the above

37. In gramophones for adjusting the speed of the turntable, the following type of governor is commonly employed

- (a) Hurting governor
- (b) Wilson Hartnell governor
- (c) Pickering governor
- (d) Inertia governor

38. Crowning on pulleys helps

- (a) In increasing velocity ratio
- (b) In decreasing the slip of the belt
- (c) For automatic adjustment of belt position so that belt runs centrally
- (d) Increase belt and pulley life

39. Idler pulley is used

- (a) For changing the direction of motion of the belt
- (b) For applying tension
- (c) For increasing -velocity ratio
- (d) all of the above

40. In multi-V-belt transmission, if one of the belt is broken, we have to change the

- (a) Broken belt
- (b) Broken belt and its adjacent belts
- (c) All the belts
- (d) There is no need of changing any one as remaining belts can take care of

41. The moment on the pulley which produces rotation is called

- (a) Inertia
- (b) Torque.
- (c) Moment of momentum
- (d) Work

42. Creep in belt drive is due to

- (a) Material of the pulley
- (b) Material of the belt
- (c) Larger size of the driver pulley

43. To transmit power from one rotating shaft to another whose axes are neither parallel nor intersecting, use?

- (a) Spur gear
- (b) Spiral gear
- (c) Bevel gear
- (d) Worm gear

44. To obviate axial thrust, following gear drive is used

- (a) Double helical gears having opposite teeth
- (b) Double helical gears having identical teeth
- (c) Single helical gear in which one of the teeth of helix angle  $\alpha$  is more
- (d) Miter gears

45. Which of the following is false statement in respect of differences between machine and structure?

- (a) Machines transmit mechanical work, whereas structures transmit forces
- (b) In machines, relative motion exists between its members, whereas same does not exist in case of structures
- (c) Machines modify movement and work, whereas structures modify forces
- (d) Efficiency of machines as well as structures is below 100%

46. Typewriter constitutes

- (a) Machine
- (b) Structure
- (c) Mechanism
- (d) Inversion

47. A pantograph is a mechanism with

- (a) Lower pairs
- (b) Higher pairs
- (c) Rolling pairs
- (d) Turning pairs

48. Kinematic pairs are those which have

- (a) Point or line contact between the two elements when in motion
- (b) Surface contact between the two elements when in motion
- (c) Elements of pairs not held together mechanically
- (d) Two elements that permit relative motion

49. The maximum fluctuation of energy is the

- (a) Sum of maximum and minimum energies
- (b) Difference between the maximum and minimum energies
- (c) Ratio of the maximum energy and minimum energy
- (d) Ratio of the mean resisting torque to the work done per cycle

50. In a turning moment diagram, the variations of energy above and below the mean resisting torque line is called

- (a) Fluctuation of energy
- (b) Maximum fluctuation of energy
- (c) Coefficient of fluctuation of energy
- (d) None of the above

51. The ratio of the maximum fluctuation of speed to the mean speed is called

- (a) Fluctuation of speed
- (b) Maximum fluctuation of speed
- (c) Coefficient of fluctuation of speed
- (d) None of these

52. The ratio of the maximum fluctuation of energy to the, is called coefficient of fluctuation of energy.

- (a) Minimum fluctuation of energy
- (b) Work done per cycle

53. The balancing of rotating and reciprocating parts of an engine is necessary when it runs at

- (a) Slow speed (b) medium speed (c) high speed

54. 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

55. for dynamic balancing of a shaft,

- (a) The net dynamic force acting on the shaft is equal to zero
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- (c) Both (a) and (b)
- (d) None of the above

56. In order to have a complete balance of the several revolving masses in different planes

- (a) The resultant force must be zero
- (b) The resultant couple must be zero
- (c) both the resultant force and couple must be zero
- (d) None of the above

57. The brakes commonly used in railway trains is

- (a) Shoe brake
- (b) Band brake
- (c) Band and block brake
- (d) Internal expanding brake

58. The brake commonly used in motor cars is

- (a) Shoe brake
- (b) Band brake
- (c) Band and block brake
- (d) Internal

59. When brakes are applied to all the four wheels of a moving car, the distance travelled by the car before it is brought to rest, will be

- (a) Maximum
- (b) Minimum

60. Which of the following is an absorption type dynamometer?

- (a) pony brake dynamometer
- (b) Rope brake dynamometer
- (c) a & b
- (d) None of these

61. The velocity ratio of two pulleys connected by an open belt or crossed belt is

- (a) directly proportional to their diameters
- (b) inversely proportional to their diameters
- (c) directly proportional to the square of their diameters
- (d) inversely proportional to the square of their diameters

62. In a cone pulley, if the sum of radii of the pulleys on the driving and driven shafts is constant, then

- (a) open belt drive is recommended
- (b) cross belt drive is recommended
- (c) both open belt drive and cross belt drive are recommended
- (d) the drive is recommended depending upon the torque transmitted

63. Due to slip of the belt, the velocity ratio of the belt drive

- (a) decreases
- (b) increases
- (c) does not change

64. When two pulleys of different diameters are connected by means of an open belt drive, then the angle of contact taken into consideration should be of the

- (a) larger pulley
- (b) smaller pulley
- (c) average of two pulleys

65. The centrifugal tension in belts

- (a) increases power transmitted
- (b) decreases power transmitted
- (c) have no effect on the power transmitted
- (d) increases power transmitted upto a certain speed and then decreases

66. When the belt is stationary, it is subjected to some tension, known as initial tension. The value of this tension is equal to the

- (a) tension in the tight side of the belt
- (b) tension in the slack side of the belt
- (c) sum of the tensions in the tight side and slack side of the belt
- (d) average tension of the tight side and slack side of the belt

67. The two parallel and coplanar shafts are connected by gears having teeth parallel to the axis of the shaft. This arrangement is called

- (a) spur gearing
- (b) helical gearing
- (c) bevel gearing
- (d) spiral gearing

68. The type of gears used to connect two non-parallel non-intersecting shafts are

- (a) spur gears
- (b) helical gears
- (c) spiral gears
- (d) none of these

69. An imaginary circle which by pure rolling action, gives the same motion as the actual gear, is called

- (a) addendum circle
- (b) dedendum circle
- (c) pitch circle
- (d) clearance circle

70. The size of a gear is usually specified by

- (a) pressure angle
- (b) circular pitch
- (c) diametral pitch
- (d) pitch circle diameter

71. The radial distance of a tooth from the pitch circle to the bottom of the tooth, is called

- (a) dedendum
- (b) addendum
- (c) clearance
- (d) working depth

72. The product of the diametral pitch and circular pitch is equal to

- (a) 1
- (b)  $1/\pi$
- (c)  $\pi$
- (d)  $2\pi$

73. The module is the reciprocal of

- (a) diametral pitch
- (b) circular pitch
- (c) pitch diameter
- (d) none of these

74. Mitre gears are used for

- (a) great speed reduction
- (b) equal speed
- (c) minimum axial thrust
- (d) minimum backlash

75. The condition of correct gearing is

- (a) pitch line velocities of teeth be same
- (b) radius of curvature of two profiles be same
- (c) common normal to the pitch surface cuts the line of centres at a fixed point
- (d) none of the above

77. Law of gearing is satisfied if

- (a) two surfaces slide smoothly
- (b) common normal at the point of contact passes through the pitch point on the line joining the centres of rotation
- (c) number of teeth = P.C.D. / module
- (d) addendum is greater than dedendum

78. The following is not a Friction clutch

- (a) Fluid clutch
- (b) Centrifugal clutch
- (c) Cone clutch
- (d) Disc clutch

79. The following is known as positive clutch

- (a) Single plate clutch
- (b) Cone clutch
- (c) Dog clutch
- (d) Centrifugal clutch

80. The torque which a clutch can transmit, depends upon the

- (a) Coefficient of friction
- (b) Spring force
- (c) Contact surfaces
- (d) all of the above

81. In Disc clutch, the clutch disc acts as a

- (a) Driving member
- (b) Driven member
- (c) Neutral member
- (d) Any of the above

82. The following is an automatic clutch which is controlled by engine speed

- (a) Cone clutch
- (b) Centrifugal clutch
- (c) Fluid clutch
- (d) Disc clutch