MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

DEPARTMENT OF MECHANCIAL ENGINEERING

II B.Tech II Sem I MID Examinations Question Bank(Subjective Paper)

SUB: Dynamics of machines

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.No.	Question	Bloom's Taxonomy Level	CO
	Module I		
1.	Explain the effect of Gyroscopic couple on a Naval ship during pitching.	understanding	**1**
2.	Explain the effect of Gyroscopic couple on aeroplane.	understanding	**1**
3.	Each paddle wheel of a steamer have a mass of 1600kg and a radius of gyrationof 1.2meters.The steamer turns to port in a circle of 160meters radius at24Km/hr.The speed of the paddle is 90rpm.Find the magnitude and effect of thegyroscopic couple acting on the steamer.	Applying	**2**
4.	The rotor of a turbine yatch rotates at 1200rpm clockwise when viewed fromstern. The rotor has a mass of 750 kg and radius of gyration of 250mm.Find themaximum gyroscopic couple transmitted to the hull when yacht pitches with amaximum angular velocity of 1 rad/s.What is the effect of this couple?	Applying	**2**
5.	The turbine rotor of a ship has a mass of 20 tonnes and a radius of gyration0.75.Its speed is 2000rpm.The ship pitches 6° above and below the horizontalposition .One complete oscillation takes 18 seconds and the motion is simpleharmonic. Determine (i) the maximum couple tending to shear the holding down bolt of the turbine (ii)The maximum angular acceleration of the ship during pitching (iii) The direction in which the bow will tend to turn while, if the rotation of therotor is clockwise when locking from rear.	Applying	**2**

6.	The mass of the motor cycle along with the rider is 180kg. the height of the centre of gravity of total mass is 600mm above the ground when it moves straight. Each wheel has a diameter of 700mm and mass moment of inertia of 2 kgm^2. The engine rotates at a speed 5 times the road wheel and engine rotating parts have mass moment of inertia of 0.2 kgm^2. Determine the angle of wheel required if the motor cycle negotiates curves of radius 100 meters at a speed of 108km/hr.	Applying	**2**
7.	What is the gyroscopic effect on a ship when it turns towards left and the propeller rotates counter clockwise when viewed from stern?	understanding	**1**
8.	What is the gyroscopic effect on a ship when it turns towards right and the propeller rotates clockwise when viewed from stern?	understanding	**1**
	<u>Module II</u>		
1.	The crank and connecting rod of a reciprocating engine are 200 mm and 700mm respectively. The crank is rotating in clockwise direction at 120 rad/s. Find **1.** Velocity and acceleration of the piston, **2.** Velocity and acceleration of the mid point of the connecting rod, and **3.** Angular velocity and angular acceleration of the connecting rod, at the instant when the crank is at 30° to I.D.C. (inner dead centre).	Applying	3
	OR		
2.	If the crank and the connecting rod are 300 mm and 1 m long respectively and the crank rotates at a constant speed of 200 r.p.m., determine:**1.** The crank angle at which the maximum velocity occurs, and **2.** Maximum velocity of the piston.	Applying	3
3.	The crank and connecting rod of a steam engine are 0.3 m and 1.5 m in length. The crank rotates at 180 r.p.m. clockwise. Determine the velocity and acceleration of the piston when the crank is at 40 degrees from the inner dead centre position. Also	Applying	3

	determine the position of the crank for zero acceleration of the piston.		
	OR		
4.	The crank-pin circle radius of a horizontal engine is 300 mm. The mass of the reciprocating parts is 250 kg. When the crank has travelled 60° from I.D.C., the difference between the driving and the back pressures is 0.35N/mm2. The connecting rod length between centres is 1.2 m and the cylinder bore is 0.5 m. If the engine runs at 250 r.p.m. and if the effect of piston rod diameter is neglected, calculate :**1.** pressure on slide bars, **2.** Thrust in the connecting rod, **3.** tangential force on the crank-pin, and **4.** Turning moment on the crank shaft..	Applying	3
5.	A vertical double acting steam engine has a cylinder 300 mm diameter and450 mm stroke and runs at 200 r.p.m. The reciprocating parts has a mass of225 kg and the piston rod is 50 mm diameter. The connecting rod is 1.2 m long. When the crank has turned through 125° from the top dead centre, the steam pressure above the piston is 30 kN/m2and below the piston is 1.5 kN/m2. Calculate the effective turning moment on the crank shaft.	Applying	3
	OR		
6.	The crank and connecting rod of a petrol engine, running at 1800 r.p.m.are50 mm and 200 mm respectively. The diameter of the piston is 80 mm andthe mass of the reciprocating parts is 1 kg. At a point during the powerstroke, the pressure on the piston is 0.7 N/mm2, when it has moved 10 mmfrom the inner dead centre. Determine :**1.** Net load on the gudgeon pin, **2.**Thrust in the connecting rod, **3.** Reaction between the piston and cylinder,and **4.** The engine speed at which the above values become zero.	Applying	3
7.	During a trial on steam engine, it is found that the acceleration of the piston is 36 m/s2 when the crank has moved 30° from the inner dead centre position. The net effective steam pressure on the piston is 0.5 N/mm2 and the frictional resistance is equivalent to a force of 600 N. The diameter of the piston is 300	Applying	4

	mm and the mass of the reciprocating parts is 180 kg. If the length of the crank is 300 mm and the ratio of the connecting rod length tothe crank length is 4.5, find: **1.** Reaction on the guide bars, **2.** Thrust on the crank shaft bearings, and **3.** Turning moment on the crank shaft.		
OR			
8.	A vertical petrol engine 100 mm diameter and 120 mm stroke has a connecting rod 250 mm long. The mass of the piston is 1.1 kg. The speed is2000 r.p.m. On the expansion stroke with a crank 20° from top dead centre ,the gas pressure is 700 kN/m2. Determine: **1.** Net force on the piston, **2.**Resultant load on the gudgeon pin, **3.** Thrust on the cylinder walls, and **4.**Speed above which, other things remaining same, the gudgeon pin load would be reversed in direction.	Applying	4
Module III			
1.	1) A single plate clutch has two pairs of contacting surfaces, transmits power of 35 kW at 1440 rpm. The coefficient of friction between the contacting surfaces is 0.3 and intensity of pressure is limited to 0.38 MPa . The outer diameter of friction disc is limited to 290 mm. Assuming service factor is 1.25, determine: i) Inner diameter of friction disc. ii) Axial force required to engage the clutch.	Applying	5
OR			
2.	A multiple disk plate clutch is oil immersed type, which transmits a torque of 10 N-m. Allowable intensity of pressure is 0.1 N/mm2 and coefficient of friction is 0.2. The diameter of friction lining are 65 and 100 mm respectively. Account for the radial slots the contacting surface can be increased by 5%. Calculate the number of contacting surfaces assuming the uniform wear theory	Applying	5
3.	A centrifugal clutch has four shoes each having weight 150 N. When engaged the radius of the centre of gravity of shoe is	Applying	5

	110mm while the inner radius of drum is 140mm. The spring force at the begining of engagement is 700 N. Using coefficient of friction as 0.3 and running speed 1440 rpm calculate 1. The engagement speed (the speed at which engagement begins) 2. The power transmitted by clutch.		
OR			
4.	A cone clutch transmits power at 500 rpm. The semi cone angle is 12.5^0 . The mean diameter of clutch is 300 mm and face width is 100 mm. Taking u=0.3 and Pmax=0.08 calculate the force required to engage the clutch and the power transmitting capacity of the cone clutch.	Applying	5

Signature of the faculty **HoD,ME**

Dynamics of machines (MID 1 Objective Question bank)

1. The axis of spin and axis of precessions are
   A. Parallel to each other
   B. Perpendicular to each other
   C. Opposite to each other
   D. None of the above
2. The angular velocity of precession is noted as
   A. ω rad/s
   B. ø rad/s
   C. ∏ rad/s
   D. ωp rad/s
3. A disc is spinning with an angular velocity ω rad/s about axis of spin. The couple applied to the disc causing precession will be
   A. ½.I. ω2
   B. ω2
   C. ½.I.ω.ωp
   D. I.ω.ωp
4. When a body moves along a curved path with a uniform linear velocity ,a force in the direction of centripetal acceleration has to be applied externally over the body is called
   A. Couple
   B. Reactive force
   C. Active force
   D. Resultant force.
5. The term dθ/dt is known as
   A. Angular momentum
   B. Angular velocity
   C. Angular velocity of precession
   D. None of the above
6. The term nose related to
   A. Four wheeler
   B. Two wheeler
   C. Ship
   D. Aero plane
7. When the disc is rotating at 1000rpm and it is under a couple of 100N-m with mass of 150kg find the precessional angular velocity will be (take radius of disc is 50mm
   A. 5.09 rad/s
   B. 7.5 rad/s
   C. 5.50 rad/s
   D. 5.72 rad/s
8. 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 gyro couple on the plane 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
9. The engine of an aeroplane rotates in clockwise direction when seen from the tail end and the aeroplane takes a turn to the right. The effect of gyro couple on the plane 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

10.The engine of an aeroplane rotates in anticlockwise direction when seen from the tail end and the aeroplane takes a turn to the right.The effect of gyro couple on the plane 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

11. The engine of an aeroplane rotates in anticlockwise direction when seen from the tailend and the aeroplane takes a turn to the left. The effect of gyro couple on the plane 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

12. The mass moment of inertia of propeller and engine is

A. Mr2/2
B. Mk2
C. M2r/2
D. m2k

13. While applying right hand screw rule to vectordiagram of angular momentum, the direction of gyro couple will show by

A. Fore finger .
B. Thumb
C. four fingers
D. None of the above

14. When the pitching of a ship upward, the effectof gyro couple acting on it will be

A. To move the ship towards portside
B. To move the ship towards star-board
C. To raise the bow and lower the stern
D. To raise the stern and lower the bow

15. When the pitching of a ship downward, theeffect of gyro couple acting on it will be

A. To move the ship towards portside
B. To move the ship towards star-board
C. To raise the bow and lower the stern
D. To raise the stern and lower the bow

16. The rotor of a ship rotates in clockwise direction when seen from the stern and the shiptakes a turn to the left. The effect of gyro couple on the ship will be

A. To raise the bow and lower the stern
B. To raise the stern and lower the bow
C. To raise the bow and stern
D. To lower the bow and stern

17. The rotor of a ship rotates in clockwise direction when seen from the stern and the shiptakes a turn to the right. The effect of gyro couple on the ship will be

A. To raise the bow and lower the stern
B. To raise the stern and lower the bow
C. To raise the bow and stern
D. To lower the bow and stern

18. The rotor of a ship rotates in anticlockwisedirection when seen from the stern and the ship takes a turn to the left. The effect of gyrocouple on the ship will be
    A. To raise the bow and lower the stern
    B. To lower the stern and bow
    C. To raise the bow and stern
    D. To lower the bow and raise the stern
19. The terms related to ship are
    A. Skidding and floating
    B. Pitching and rolling
    C. Steering and flying
    D. All of the above
20. The terms port and star board are related to
    A. Cycle
    B. Ship
    C. Car
    D. Aeroplane
21. The motion considered in pitching of ship
    A. Reciprocating motion
    B. Rectilinear motion
    C. Simple harmonic motion
    D. All of the above
22. The angular velocity of precession in pitchingof ship
    A. ø.ω1
    B. ø2.ω1
    C. θ.ωp
    D. θ2.ωp
23. In an automobile, if the vehicle makes a leftturn, 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.
24. The maximum acceleration during pitching is
    A. ø.ω2
    B. ø2.ω1
    C. θ.ωp
    D. θ2.ωp
25. The maximum gyroscopic couple duringpitching
    A. ω. ωpmax
    B. ω2. ωpmax
    C. I2. ω. ωpmax
    D. ω1. Ω
26. In case of four wheeler the ratio of angularvelocity of rotating parts to the angular velocity of the wheels is known as
    A. Gear ratio
    B. Gear index
    C. Either a or b
    D. None of above
27. The rear end of the ship is known as
    A. Stern

B. bow
C. either a or b
D. None of above

28. During rolling of the ship the effect ofgyroscopic couple is
A. Move the ship towards star-board
B. Move the ship towards port-side
C. No effect
D. None of above

29. When the axis of spin itself moves with angular velocity ωp, the disc isSubjected to
A. Active couple
B. reactive couple
C. Both a&b
D. None of above

30. The net gyroscopic couple in 4 wheeler
A. C=Cw+Ce
B. C= Cw-Ce
C. C=Cw=Ce
D. C=Cw+Ce

31. When the wheels and rotating parts of enginerotate in same direction then the sign followed in net gyrocouple will be
A. Negative
B. Positive
C. Equal
D. All of the above

32. The centrifugal force acting when the vehiclemoves along the curved path
A. Fc= 1/2mv2
B. Fc= mv2
C. Fc= mv2 /R
D. Fc=v/R

33. Which of the following statements is/are falsefor active gyroscopic couple
A. Reactive gyroscopic couple and activegyroscopic couple are opposite in direction
B. In right hand rule, curled fingers denotedirection of precession
C. In active gyroscopic couple spin vector andprecession vector are parallel to each other
D. All the statements are false

34. In case of rolling of a ship the axis ofprecission is always to the axis of spin
A. Perpendicular
B. Parallel
C. Either a or b
D. None of above

35. 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 , the due to the centrifugal forces
A. The reaction on the inner wheels increases andon the outer wheel decreases
B. The reaction on the outer wheels increases andon the inner wheel decreases
C. The reaction on the front wheels increases and on the rear wheel decreases
D. The reaction on the rear wheels increases andon the front wheel decreases

36. The linear velocity of two wheeler
A. v=ωw x rw
B. v= ωp x rp
C. v= rw x ω1
D. None of the above

37. The gear ratio of four wheeler
    A. G= ωe/ωw
    B. G=W/E
    C. G= ωø/ωe
    D. G= E/W
38. The angle between the axis of spin and new axis of spin is noted by
    A. dθ
    B. ωθ
    C. δθ
    D. All of the above
39. The angular acceleration of disc αc is known as
    A. ω. ωp
    B. ω. ωpmax
    C. ω/ωpmax
    D. ω+ ωpmax
40. The application of gyroscope
    A. Aeroplanes
    B. Monorails
    C. Gyrocompasses
    D. All of the above
41. When the engine or propeller rotates in clockwise direction when seeing from the front and aeroplane takes left turn , then the effect ofgyroscope couple will be
    A. Raise the nose and dip the tail
    B. Raise the tail and nose
    C. Raise the tail and dip the nose
    D. Dip the nose and tail
42. The angularvelocity of simple harmonicmotionω1( )
    A. tp/4∏
    B. 2∏/4t
    C. 2∏/tp
    D. None of the above
43. When the body, itself, is moving with uniform linear velocity along a circular path it is subjected to the centrifugal force radially outwards. Then the centrifugal force is calledas
    A. Active force
    B. Momentum
    C. Couple
    D. Reactive force
44. The angular acceleration is also known as
    A. Linear acceleration
    B. Gyroscopic acceleration
    C. Linear momentum
    D. All of the above
45. When the engine or propeller rotates in clockwise direction when seeing from the front and aeroplane takes right turn , then the effectof gyroscope couple will
    A. Raise the nose and dip the tail
    B. Raise the tail and nose
    C. Raise the tail and dip the nose
    D. dip the nose and tail
46. A pair of action and reaction forces acting on abody are known as
    A. applied forces

B. constraint forces
C. accelerating forces
D. inertia forces

47. In static equilibrium, the vector sum of all the forces acting on the body and all the movements about------- point is zero.
A. a fixed
B. a particular
C. any arbitrary
D. a permanent

48. If the lines of action of three or more forces intersect at a point, it is known as the ------ point.
A. equilibrium
B. central
C. zero
D. concurrency

49. A part isolated from the mechanism be inequilibrium.
A. may
B. may or may not
C. must
D. none of the above

50. A pair of action and reaction forces which constrain two connected bodies to behave in a particular manner are known as--------
A. constraint forces
B. applied forces
C. point of concurrency
D. free body diagram

51. A member under the action of three forces will be in equilibrium if the resultant force is zero and the lines of action of the forces intersectat a point, known as the --------
A. applied forces
B. accelerating forces
C. point of concurrency
D. constraint force

52. The work done during a virtual displacementfrom the equilibrium is zero is known as -----
A. point of concurrency
B. The principle of virtual work
C. system of forces
D. free-body diagram

53. Crank effort is the net force applied at the crankpin----- to the crank which gives the required turning movement on the crankshaft.
A. parallel
B. perpendicular
C. at 45◦
D. 135◦

54. In a dynamically equivalent system, a uniformly distributed mass is divided into---- point masses.
A. two
B. three
C. four
D. five

55. Any distributed mass can be replaced by two point masses to have the same dynamical

properties if

A. the sum of the two masses is equal to thetotal mass
B. the combined centre of mass coincides withthat of the rod
C. the movement of inertia of two point masses about perpendicular axis through their combined centre of masses is equal to that ofthe rod
D. all of the above

56. Which of the following is not the required condition for replacing a rigid body by a dynamically equivalent system of two masses

A. the sum of the two masses is equal to thetotal mass
B. the sum of the square of two masses is equalto square of the total mass.
C. the combined centre of mass coincides withthat of the rod
D. the movement of inertia of two point masses about perpendicular axis through their combined centre of masses is equal to that ofthe rod

57. The maximum fluctuation of energy is the

A. ratio of maximum and minimum energies
B. sum of maximum and minimum energies
C. difference of maximum and minimumenergies
D. difference of maximum and minimumenergies from mean energy

58. The maximum fluctuation of energy in a flywheel is equal to

A. $I\omega(\omega 1 - \omega 2)$
B. $I\omega 2k$
C. 2KE
D. all

59. A machine requires a torque of $(300+50 \sin 2\theta)$ to drive it. It is directly coupled to an engine producing a torque of $(300+50 \sin \theta)$ in a cycle. How many times the values of torque of the machine and the engine will be same

A. 1
B. 2
C. 4
D. 8

60.If a mean radius of a rim type flywheel is halved, its stored energy is ----- of the original

A. flywheel at the same speed.
B. two times
C. half
D. same as
E. one-fourth

61. In a slider crank mechanism, the connecting rod has zero angular velocity when the crank angle is

A. 00
B. 450
C. 900
D. 1800

62. The amount of energy absorbed by a flywheelis found from

A. Speed-energy diagram
B. Velocity-crank angle diagram
C. acceleration-crank angle diagram
D. torque-crank angle diagram

63. If K is the coefficient of fluctuation of speed and E is the kinetic energy of the flywheel at mean speed, the maximum fluctuation ofenergy is equal to

A. EK

B. EK2
C. 2EK
D. 2EK2

64. The external force acting on a system of body from outside the system are called
A. applied force
B. constraint fore
C. Inertia force
D. Accelerating force

65. Which law is used to measure a forcequantitatively
A. Newton’s first law
B. Newton’s second law
C. Newton’s third law
D. all of the above

66. When will the two force member inEquilibrium
A. The two forces are same magnitude
B. The forces act along the same line
C. The forces re in opposite direction
D. all of the above

67. When will the tree force member inequilibrium
A. The resultant of the forces is zero
B. the line of action of the forces intersect at apoint
C. A and B
D. None of the above

68. Rate of change of momentum of a body is directly proportional to---------
A. static forces
B. constraint forces
C. applied force
D. force acting on it

69. The property of matter offering resistance to any change of its state of rest or of uniform motion in a straight line is known as
A. static force analysis
B. dynamic force analysis
C. inertia
D. constraint forces

70. The inertia forces and torques, and the external forces and torques acting on a body together result in static equilibrium is called
A. static force analysis
B. D’ Alembert’s principle
C. dynamic force analysis
D. all of the above

71. The force which can replace both inertia forceand inertia torque called
A. Equivalent offset inertia force
B. principle of superposition
C. compound pendulum
D. inertia

72. Principle of superposition has a limitation thatit cannot be applied for ----------
A. static equilibrium
B. linear systems
C. non-linear systems
D. none of the above

73. Klien's construction method has ------ and -----diagrams constructed on the configuration diagram itself.
    A. Velocity, acceleration
    B. velocity, pressure
    C. acceleration, pressure
    D. All of the above
74. The net force applied at the crank pinperpendicular to the crank is called ----
    A. piston pin
    B. crank-pin effort
    C. crank effort
    D. piston effort
75. The value of correction couple is always --------and its direction will be the same as that of ----
    A. positive, angular acceleration
    B. negative, angular acceleration
    C. positive, angular velocity
    D. negative, angular velocity
76. Relative pole of moving link is it'scentre ofrotation relative to a link
    A. fixed link
    B. moving link
    C. any link
    D. all of the above
77. Function generation means designing a mechanism in which-------- are related by afunction.
    A. input and coupler links
    B. output and coupler links
    C. output and input links
    D. none of the above
78. What is meant by coupled differentialequation?
    A. The differential equation in which onlyrectilinear motions exit
    B. The differential equation in which onlyangular motions exit
    C. The differential equation in which both rectilinear and angular motions exit
    D. None of the above
79. Why are graphical errors caused duringfunction generation?
    A. Choice of scale
    B. Wrong graphical procedure
    C. Both a. and b.
    D. None of the above
80. The analysis of mechanism deals with
    A. the determination of input and output anglesof a mechanism
    B. the determination of dimensions of the links in a mechanism
    C. the determination of displacement, velocityand acceleration of the links in a mechanism
    D. none of these
81. The synthesis of mechanism deals with
    A. the determination of input and output anglesof a mechanism
    B. the determination of dimensions of the links ina mechanism
    C. the determination of displacement, velocity and acceleration of the links in a mechanism
    D. none of these
82. The three precision points in the range $1 \leq x \leq 3$
    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

83. A rigid body possesses how many number of degrees of freedom in space
A. one
B. three
C. four
D. six

84. A rigid body possesses how many number ofdegrees of freedom in a plane
A. one
B. three
C. four
D. six

85. A higher pair has
A. point contact
B. surface contact
C. zero contact
D. none of these

86. A lower pair has
A. point contact
B. surface contact
C. line contact
D. none of these

87. Transmission angle is the angle between
A. input and coupler
B. input and fixed
C. output and coupler
D. output and fixed

88. Which of the following is a higher pair
A. turning pair
B. screw pair
C. belt and pulley
D. all of the above

89. Which of the following is an open pair
A. journal bearing
B. ball and socket joint
C. lead screw and nut
D. none of these

90. Which of the following is a lower pair
A. turning pair
B. screw pair
C. belt and pulley
D. both (a) and (b)

91. In a ball bearing, ball and bearing forms a
A. turning pair
B. rolling pair
C. screw pair
D. spherical pair

92. A link in a mechanism must be a
A. rigid body
B. resistant body

C. flexible body
D. fluid body

93. Formula for number if instantaneous centersin a mechanism
A. n(n-1)/3
B. n(n-2)/2
C. n(n-3)/3
D. n(n-1)/2

94. Number of instantaneous centers of a four barmechanism are
A. 4
B. 5
C. 6
D. 2

95. Which of the following brakes is commonlyused in motor cars ?
A. band brake
B. shoe brake
C. band and block brake
D. internal expanding shoe brake

96. Brakes commonly used in trains are
A. band brake
B. shoe brake
C. band and block brake
D. internal expanding shoe brake

97. In a self-locking brake, the force required to apply the brake is
A. minimum
B. zero
C. maximum
D. none of these

98. When the frictional force helps the appliedforce in applying the brake, the brake is
A. self locking
B. automatic
C. self energizing
D. none of these

99. In an internal expanding shoe brake, more than 50% of the total braking torque issupplied by
A. leading shoe
B. trailing shoe
C. any of the above
D. none of these

100. Tractive resistance during the propulsion of awheeled vehicle depends on
A. road resistance
B. aerodynamic resistance
C. gradient resistance
D. all the above

101. Which lubricant is used in a rope brakedynamometer ?
A. oil
B. water
C. grease
D. no lubricant

102. 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
C. zero
D. infinite

103. Which of the following is an absorption typedynamometer?
A. prony brake
B. rope brake
C. torsion
D. both (a) and (b)

104. Double block brake is a type of
A. band brake
B. internal expanding shoe brake
C. shoe brake
D. none of these

105. Which energy is absorbed by the brakes of anelevator during braking process
A. potential energy
B. kinetic energy
C. both (a) and (b)
D. none of these

106. In single shoe brake, when is uniform normalpressure observed between block and drum
A. $\Theta<60$
B. $2\Theta<90$
C. $2\Theta<60$
D. $\Theta>30$

107. Which parameters can be measured using adynamometer ?
A. force
B. torque
C. power
D. all the above

108. Identify the type of absorption dynamometer ?
A. epicyclic dynamometer
B. prony brake dynamometer
C. torsion dynamometer
D. all of the above

109. When brakes are applied on a moving vehicle,the kinetic energy is converted to
A. mechanical energy
B. heat energy
C. electrical energy
D. potential energy

110. The force required to stop a vehicle isdependent on
A. the weight of a vehicle
B. the deceleration rate
C. both (a) and (b)
D. none of these

111. The following is not a brake drum
A. external contracting brake
B. internal expanding brake
C. disc brake
D. all the above

112. The hand brake of the automobile is usually
A. external contracting brake

B. internal expanding brake
C. disc brake
D. all the above

113. In disc brake, the disc is attached to the
A. wheel
B. axle
C. suspension system
D. none of these

114. The mechanical brakes are operated by meansof
A. levers
B. bell cranks
C. cams
D. all of the above

115. Hand brake is applicable to
A. only front wheels
B. only rear wheels
C. both front and rear wheels
D. all of the above

116. The following factors contribute to theeffectiveness of the brakes
A. area of brake linings
B. radius of car wheel
C. amount of pressure applied
D. all of the above

117. The power brake may be exerted by
A. electrical energy
B. engine vaccum
C. air pressure
D. all of the above

118. The frictional torque transmitted by a disc or aplate clutch is same as that of
A. flat pivot bearing
B. flat collar bearing
C. conical pivot bearing
D. trapezoidal pivot bearing

119. The frictional torque transmitted by a coneclutch is same as that of
A. flat pivot bearing
B. flat collar bearing
C. conical pivot bearing
D. trapezoidal pivot bearing

120. The active gyro couple and reactive gyrocouple are in
A. In the direction of parallel to each other
B. In the direction of opposite to each other
C. In the direction of perpendicular to each other
D. None of the above

121. The magnitude of both gyro couples are
A. Unequal
B. Equal
C. Depend upon case
D. None of the above

122. The units for mass moment of inertia
A. N-m

B. Kg/M2
C. Rad/sec
D. Kg-m2

123. The units for linear velocity
A. Kg-m
B. m/s
C. KN-m
D. M/s2

124. 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 angular speed, if mass moment of inertia of the disc is the 1 Kg-m2
A. 2 rad/s
B. 5 rad/s
C. 10 rad/s
D. 20 rad/s

125. Which energy is absorbed by the brakes of anelevator during braking process
A. potential energy
B. kinetic energy
C. both (a) and (b)
D. none of these

Signature of the faculty **HoD,ME**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

B. Tech– III Sem (MR 18-(2018-19 Admitted Students))

I Mid Examination Subjective Question Bank

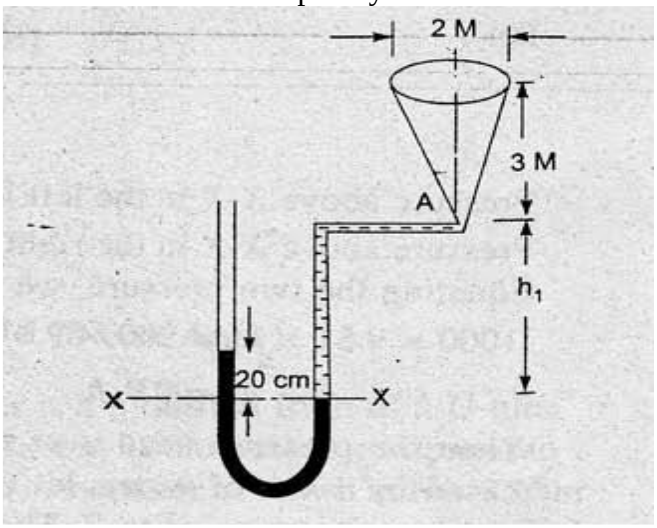
Subject: Fluid Mechanics and Hydraulic Machines **Branch: ME**

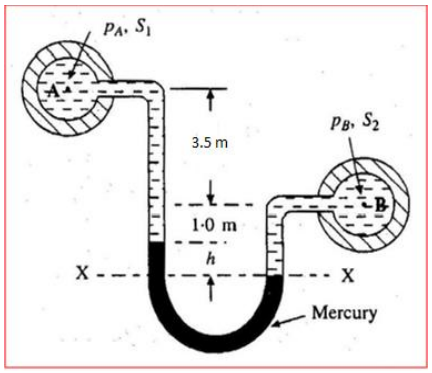
Name of the faculty. A. Saravan bhavan

Instructions:

1. All the questions carry equal marks

2. Solve all the questions

Q. No.	Question	Bloom's Taxonomy Level	CO
Module-I			
1.	(a) Define viscosity. Derive the Expression for coefficient of viscosity. (b) A plate 0.025 mm distance from a fixed plate, moves at a speed of 60 cm/s and requires a force per unit area of 2 N per m^2 to maintain this speed. Determine the fluid viscosity between plates.	Applying	1
2.	Define the following terms: i) Specific Weight ii) Specific Gravity iii) Compressibility iv) Kinematic Viscosity v) Capillary height.	Understanding	1
3.	Figure shows a conical vessel having its outlet at A to which a U- tube manometer is connected. The reading of the manometer given in figure shows when the vessel is empty. Find the reading of the manometer when the vessel is completely filled. 	Applying	1
4.	What are the pressure measuring devices? Explain the manometers in detail.	Understanding	1

5.	What is the difference between simple manometer and differential manometer? Where are they used?	Understanding	1
6	Explain different types of differential manometers?	Understanding	1
7	A differential manometer is connected at the two point A and B of two pipes as shown in fig the pipe A contains a liquid of sp.gr 1.5 while pipe B contains a liquid of sp.gr 0.9. The pressure at A and B are 98kN/m^2 and 176kN/m^2 respectively. Find the difference in mercury level in the differential manometer. 	Applying	1
8	A rectangular plane surface is 2m wide and 3m deep. It lies in vertical which is in water. Determine the total pressure and position of centre of pressure on the plane surface when its upper edge is horizontal and a) coincides with water surface b) 2.5m below the free water surface	Applying	1
Module II			
1.	Define the following i) stream line ii) streak line iii) path line iv) stream tube.	Understanding	2
2.	What are the different types of fluid flows? Explain in detail with suitable examples.	Understanding	2
3.	(a) Derive the Bernoulli's equation with the help of Euler's equation. (b) The water is flowing through a pipe having diameters 20 cm and 10 cm at sections 1 and 2 respectively. The rate of flow through pipe is 35 liter/s. the section 1 is 6 m above from the datum line and section is 4 m above from the datum line. If the pressure at section 1 is 39.24 N/cm^2, then find the pressure at section 2 in N/cm^2.	Applying	2
4.	What is a venture meter? Derive an expression for the coefficient of discharge of venture meter.	Applying	2
5.	A horizontal venture meter with inlet diameter 20 cm and throat diameter 10 cm is used to measure the flow of oil of specific gravity 0.8. The discharge of oil through venture meter is 60 liter/s. Find the	Applying	2

	reading of differential manometer liquid. Assume the manometer liquid as Mercury and coefficient of discharge as 0.98.		
6.	A 300 mm diameter pipe carries water ahead of 20 meters with a velocity of 3.5 m/s. if the axis of the pipe turns through 45^0; find the magnitude and direction of the resultant force at the bend.	Applying	2
7	Derive the Bernoulli's equation form the Euler's equation of motion	Applying	2
8	Explain briefly (i) Potential head (ii) Velocity head (iii) Datum head	Understanding	2
Module III			
1.	Explain in detail hydraulic gradient line and total energy line	Understanding	3
2.	A horizontal pipe of 150 mm diameter is joined by sudden enlargement to a 225 mm diameter pipe. Water is flowing through it at the rate of 0.05 m^3/s. find: i. Loss of head due to abrupt expansion, ii. Pressure difference in the two pipes. And iii. Change in pressure if the change of section is gradual without any loss.	Applying	3
3.	The difference in water surface level in two tanks which are connected by three pipes in series of lengths 450m, 255m and 315m and of diameters 300mm 200mm and 400mm respectively is 18m. Determine the rate of flow of water if co-efficient of friction is 0.0075, 0.0078 and 0.0072 respectively. Considering i) minor losses also ii) neglecting minor losses.	Applying	3
4.	Derive the expression for Darcy Weisbach equation.	Applying	3
5.	Define the following a)Pipes in series b)Pipes in parallel	Understanding	3
6.	Explain about energy losses in pipes in brief	Applying	5

Signature of the Faculty **Signature of the HoD**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
II B.Tech II Sem (MR18 - Regulations)-I mid Objective Question Bank 2019-20

Subject: FMHM
Branch: Mechanical Engineering **Name of the Faculty:A. Saravan Bhavan**

Multiple choice questions

1 Pascal-second is the unit of [ ]
A. pressure
B. kinematic viscosity
C. dynamic viscosity
D. surface tension

2 An ideal fluid is [ ]
A. one which obeys Newton's law of viscosity
B. frictionless and incompressible
C. Very viscous
D. frictionless and compressible

3 The viscosity of a gas [ ]
A. decreases with increase in temperature
B. increases with increase in temperature
C. is independent of temperature
D. is independent of pressure for very high pressure intensities

4 If the dynamic viscosity of a fluid is 0.5 poise and specific gravity is 0.5, then the kinematic viscosity of that fluid in stokes is [ ]
A. 0.25
B. 0.50
C. 1.0
D. none of the above

5 The unit of kinematic viscosity is [ ]
A. $gm/cmsec^2$
B. $dynesec/cm^2$
C. gm/cm^2sec
D. cm^2/sec

6 Fluid is a substance that [ ]
A. cannot be subjected to shear forces
B. always expands until it fills any container
C. has the same shear stress. at a point regardless of its motion
D. cannot remain at rest under action of any shear force

7 Fluid is a substance which offers no resistance to change of [ ]
A. pressure
B. flow
C. shape
D. volume

8 Practical fluids [ ]
A. are viscous
B. possess surface tension
C. are compressible
D. possess all the above properties

9 A fluid is said to be ideal, if it is [ ]

A. incompressible
B. inviscous
C. inviscous and incompressible
D. inviscous and compressible

10 Density of water is maximum at [ ]
A. 0°C
B. 0°K
C. 4°C
D. 100°C

11 Property of a fluid by which its own molecules are attracted is called [ ]
A. adhesion
B. cohesion
C. viscosity
D. compressibility

12 Mercury does not wet glass. This is due to property of liquid known as [ ]
A. adhesion
B. cohesion
C. surface tension
D. viscosity

13 Property of a fluid by which molecules of different kinds of fluids are attracted to each other is called [ ]
A. adhesion
B. cohesion
C. viscosity
D. compressibility

14 Specific weight of water in S.I. units is equal to [ ]
A. 1000 N/m^3
B. (b) 10000 N/m^3
C. (c) 9.81 xl03 N/m^3
D. (d) 9.81 xl06N/m^3

15 Which of the following is dimensionless [ ]
A. specific weight
B. specific volume
C. specific speed
D. specific gravity

16 Surface tension has the units of [ ]
A. newtons/m sec
B. $newtons/m^2$
C. new tons/m
D. newtons

17 The units of viscosity are [ ]
A. $metres^2$ per sec
B. kg sec/meter
C. Newton-sec per $metre^2$
D. Newton-sec per meter

18 Choose the correct relationship [ ]
A. specific gravity = gravity x density
B. dynamic viscosity = kinematic viscosity x density
C. gravity = specific gravity x density
D. kinematic viscosity = dynamic viscosity x density

19 The units of kinematic viscosity are [ ]
A. $metres^2$ per sec
B. kg sec/meter
C. Newton-sec per meter
D. Newton-sec per meter

20 Which of the following is the unit of kinematic viscosity [ ]
A. Pascal
B. poise
C. stoke
D. faraday

21 A pressure of 25 m of head of water is equal to [ ]
A. 25 kN/m^2
B. 245 kN/m^2
C. 2500 kN/m^2
D. 2.5kN/m^2

22 Free surface of a liquid tends to contract to the smallest possible area due to force of [ ]
A. surface tension
B. viscosity
C. friction
D. cohesion

23 Poise is the unit of [ ]
A. surface tension
B. capillarity
C. viscosity
D. shear stress in fluids

24 The property by virtue of which a liquid opposes relative motion between its different layers is called [ ]
A. surface tension
B. co-efficient of viscosity
C. viscosity
D. osmosis

25 Capillary action is due to [ ]
A. surface tension
B. cohesion of the liquid
C. adhesion of the liquid molecules and the molecules on the surface of a solid
D. all of the above

26 Newton's law of viscosity shear stress is directly proportional to [ ]
A. shear stress and velocity gradient or shear strain
B. shear stress and viscosity
C. shear stress, velocity and viscosity
D. pressure, velocity and viscosity

27 **A Piezometer is used to measure the pressure of a** [ ]
A. **Gas**
B. **Liquid**
C. **Gas as well as liquid**
D. **None**

28 **A manometer is used to measure the pressure of a** [ ]
A. **Heavy liquids**
B. **Light liquids**
C. **Both light as well as heavy liquids**
D. **None of the above**

29 Pressure which is lower than atmospheric pressure is known as [ ]
A. suction pressure
B. vacuum pressure
C. negative back pressure
D. all of these

30 The contact angle for mercury in capillary tube [ ]
A. 20°
B. 80°

C. 128°
D. 170°

31 Gauge pressure is [ ]
A. higher then atmospheric pressure
B. lower then atmospheric pressure
C. equal to atmospheric pressure
D. none of above

32 Pascal law is [ ]
A. pressure at all point is different
B. pressure at all point is same
C. pressure at all point is zero
D. none of above

33 Differential manometer is used measure [ ]
A. for one tube
B. for more then one tube
C. difference between the pressure of two tubes
D. none of above

34 1 Kgf/cm^2 is equal to…….. N/m^2 [ ]
A. 1
B. 100
C. 1000
D. 9.81*10000

35 The liquid which follows Bernoulli's equation is [ ]
A. Ideal liquid
B. ideal plastic liquid
C. Newtonian liquid
D. non Newtonian liquid

36 Weight per unit volume is called [ ]
A. specific volume
B. Specific weight
C. specific gravity
D. specific mass

37 Newtonian fluid shear stress is equal to [ ]
A. $T = (du/dy)$
B. $T = \mu (du/dy)$
C. $T = \mu (dy/du)$
D. $T = 2\mu (du/dy)$

38 **The unit of pressure one bar is** [ ]
A. 1 Pascal
B. 1 kilo Pascal
C. 100 kPascal
D. 1000 kPascal

39 **The dynamic viscosity of liquid is 1.2×10^{-4} Ns/m^2, whereas, the density is 600 kg/m^3. The kinematic viscosity in m^2/s is** [ ]
A. 72×10^{-3}
B. 20×10^{-8}
C. 7.2×10^{3}
D. 70×10^{6}

40 **Property of fluid that describes its internal resistance is known as:** [ ]
A. Viscosity
B. Friction
C. Resistance
D. Internal energy

41 In equilibrium condition, fluids are not able to sustain [ ]
A. Shear force

B. Resistance to viscosity
C. Surface tension
D. Geometric similitude

42 The ratio of dynamic viscosity to mass density is termed as [ ]
A. kinematic viscosity
B. specific gravity
C. pressure
D. none of above

43 Atmospheric pressure at sea level at 15°C is [ ]
A 101.3 kN/m^2
B.10.3 m of water
C. 760 mm of mercury
D. all of above

44 When the pressure measured above atmospheric pressure it is called [ ]
A. Absolute pressure
B. Atmospheric pressure
C. Gauge pressure
D. Vacuum pressure

45 It is a product of mass density and gravitational acceleration [ ]
A. specific weight
B. specific gravity
C. force
D. pressure

46 When fluid mechanics is applied to fluid at rest is [ ]
A. fluid statics
B. fluid dynamics
C. fluid kinematics
D. none of above

47 What is the pressure difference between inside and outside of a droplet of water [ ]
A. $2\sigma/d$
B. $4\sigma/d$
C. $6\sigma/d$
D. $8\sigma/d$

48 What is the pressure difference between inside and outside of a Hollow Bubble or soap bubble [ ]
A. $2\sigma/d$
B. $4\sigma/d$
C. $6\sigma/d$
D. $8\sigma/d$

49 What is the pressure difference between inside and outside of a water jet [ ]
A. $2\sigma/d$
B. $4\sigma/d$
C. $6\sigma/d$
D. $8\sigma/d$

50 A Piezometer tube is used only for measuring [ ]
A. High pressure
B. moderate pressure
C. low pressure
D. high pressure

51 The continuity equation is connected with [ ]
A. viscous/inviscous fluids
B. compressibility of fluids
C. conservation of mass
D. steady/unsteady flow

52 Liquids transmit pressure equally in all the directions. This is according to [ ]
A. Boyle's law
B. Archimedes principle
C. Pascal's law
D. Newton's formula

53 Which of the following instruments is used to measure flow on the application of Bernoulli's theorem [ ]
A. Venturimeter
B. Orifice plate
C. nozzle
D. All of above

54 An ideal flow of any fluid must satisfy [ ]
A. Pascal law
B. Newton's law of viscosity
C. boundary layer theory
D. continuity equation

55 Uniform flow occurs when [ ]
A. the flow is steady
B. the flow is streamline
C. size and shape of the cross section in a particular length remain constant
D. size and cross section change uniformly along length

56 The flow which neglects changes in a transverse direction is known as [ ]
A. one dimensional flow
B. uniform flow
C. steady flow
D. turbulent flow

57 The flow in which each liquid particle has a definite path and their paths do not cross each other is called [ ]
A. one dimensional flow
B. uniform flow
C. steady flow
D. streamline flow

58 The flow in which conditions do not change with time at any point, is known as [ ]
A. one dimensional flow
B. uniform flow
C. steady flow
D. turbulent flow

59 Flow occurring in a pipeline when a valve is being opened is [ ]
A. steady
B. unsteady
C. laminar
D. vortex

60 Uniform flow occurs when [ ]
A. the direction and magnitude of the velocity at all points are identical

B. the velocity of successive fluid particles, at any point, is the same at successive periods of time
C. the magnitude and direction of the velocity do not change from point to point in the fluid
D. the fluid particles move in plane or parallel planes and the streamline pat-terns are identical in each pleasure

61 Pitot tube is used for measurement of [ ]
A. pressure
B. flow
C. velocity
D. discharge

62 The equation of continuity holds good when the flow [ ]
A. is steady
B. is one dimensional
C. velocity is uniform at all the cross sections
D. all of the above

63 All the terms of energy in Bernoulli's equation have dimension of [ ]
A. energy
B. work
C. mass
D. length

64 Bernoulli equation deals with the law of conservation of [ ]
A. mass
B. momentum
C. energy
D. work

65 The continuity equation $P_1 V_1 A_1 = P_2 V_2 A_2$ is based on the following assumption regarding flow of fluid [ ]
A. steady flow
B. uniform flow
C. incompressible flow
D. frictionless flow

66 Stream lines and path lines always coincide in case of [ ]
A. steady flow
B. laminar flow
C. uniform flow
D. turbulent flow

67 Equation of continuity is based on the principle of conservation of [ ]
A. mass
B. energy
C. momentum
D. none of the above

68 In steady flow of a fluid, the total acceleration of any fluid particle [ ]
A. can be zero
B. is never zero
C. is always zero
D. is independent of coordinates

69 The theoretical value of coefficient of contraction of a sharp edged orifice is [ ]
A. 0.611
B. 0.85
C. 0.98
D. 1.00

70 Which of the following is used to measure the discharge? [ ]
A. current meter
B. venturimeter

C. pitot tube
D. hotwire anemometer

71 Size of a venturimeter is specified by [ ]
A. pipe diameter
B. throat diameter
C. angle of diverging section
D. both pipe diameter as well as throat diameter

72 Any difference between two stream lines represents [ ]
A. velocity
B. discharge
C. head
D. pressure

73 The major loss of energy in long pipes is due to [ ]
A. sudden enlargement
B. sudden contraction
C. gradual contraction or enlargement
D. friction

74 Flow in which each particle of fluid follows an irregular path is called [ ]
A. Laminar flow
B. Turbulent flow
C. Mixed flow
D. None of these

75 Flow in which each particle of fluid follows a smooth path is called [ ]
A. Laminar flow
B. Turbulent flow
C. Mixed flow
D. None of these

76 A line that represents total head available to fluid is called [ ]
A. Fluid line
B. Energy line
C. Head line
D. None of these

77 A line that is everywhere tangent to velocity field is [ ]
A. Flow line
B. Stream line
C. Strake line
D. None of These

78 $A_1V_1 = A_2V_2$, this equation is called [ ]
A. continuity equation
B. Bernoulli's equation
C. volume equation
D. area equation

79 **Bernoulli's equation cannot be applied when the flow is** [ ]
A. rotational
B. turbulent
C. unsteady
D. all of the above

80 **Streamline and equipotential lines in a flow field** [ ]
A. are parallel to each other
B. are identical to each other
C. are perpendicular to each other
D. intersect at acute angles

81 **The continuity equation is the result of application of the following law to the flow field** [ ]
A. First law of thermodynamics

B. Conservation of energy
C. Newton's second law of motion
D. Conservation of mass

82 A flow in which each liquid particle has a definite path and their paths do not cross each other, is called [ ]
A. Steady flow
B. Uniform flow.
C. Streamline flow
D. Turbulent flow

83 Cavitations is caused by [ ]
A. High velocity
B. Low barometric pressure
C. High pressure
D. Low pressure

84 The volume of fluid flowing across the section per second is [ ]
A. Discharge
B. velocity
C. acceleration
D. all the above

85 Continuity equation is [ ]
A. q_1/q_2
B. $Q_1=Q_2$
C. $A_1V_1 = A_2V_2$
D. b &C

86 Size of a venturimeter is specified by [ ]
A. Pipe diameter
B. throat diameter
C. angle of diverging section
D. both pipe diameter as well as throat diameter

87 Coefficient of contraction is the ratio of [ ]
A. actual velocity of jet at vena contracta to the theoretical velocity
B. Area of jet at vena contracta to the area of orifice
C. Loss of head in the orifice to head of water available at the exit of the orifice
D. Actual discharge through an orifice to the theoretical discharge

88 Irrotational flow is characterized as the one in which [ ]
A. The fluid flows along a straight path
B. The net rotation of fluid particles about their mass centers remains zero
C. The streamlines of flow are curved & closely spaced
D. the fluid does not rotate as it moves along

89 Which branch of fluid mechanics deals with translation, rotation and deformation of the fluid element without considering the force and energy causing such as [ ]
A. Statics
B. Kinematics
C. dynamics
D. None of these

90 Bulk modulus is the ratio of [ ]
A. shear stress to volumetric strain
B. volumetric strain to shear stress
C. compressive stress to volumetric strain
D. volumetric strain to compressive stress

91 What is the correct formula for loss at the exit of apipe? [ ]
A. $h_L = 0.5 (V^2/ 2g)$
B. $h_L = (V^2/ 2g)$
C. $h_L = (2 V^2/ g)$
D. $h_L = (4 V^2/ g)$

92 What is the correct formula for Euler's equation of motion? Where,
ρ = density of the fluid
p = pressure force
g = acceleration due to gravity
v = velocity of the fluid [ ]

A. $(\partial p / \rho) + (\partial g / \rho) + (\partial v / \rho) = 0$
B. $(\partial p / \rho) + (\partial g / \rho) + (v\ dv) = 0$
C. $(\partial p / \rho) + (g\ dz) + (v\ dv) = 0$
D. $(p\ dp) + (g\ dz) + (v\ dv) = 0$

93 In a steady, ideal flow of an incompressible fluid, total energy at any point of the fluid is always constant. This theorem is known as [ ]

A. Euler's theorem
B. Navier stockes theorem
C. Reynold's theorem
D. Bernoulli's theorem

94 The study of force which produces motion in a fluid is called as [ ]

A. Statics
B. Kinematics
C. dynamics
D. None of these

95 The net force of an ideal flow is equal to the sum of nonzero values of [ ]

A. pressure force and gravity force
B. viscous force and gravity force
C. pressure force and viscous force
D. pressure force, viscous force and compressibility force

96 Which of the following forces generally act on fluid while considering fluid dynamics?
1. Viscous force
2. Pressure force
3. Gravity force
4. Turbulent force
5. Compressibility force [ ]

A. (1), (3), (4) and (5)
B. (1), (2), (3) and (5)
C. (1), (2), (3) and (4)
D. (1), (2), (3), (4) and (5)

97 Flow at constant velocity through a Varying diameter pipe is
i) steady flow
ii) uniform flow
iii) unsteady flow
iv) nonuniform flow [ ]

A. and (ii)
B. (i)and(iv)
C. and (iii)
D. and (iv)

98 Stream lines and path lines always coincide in case of [ ]

A. steady flow
B. laminar flow
C. uniform flow
D. turbulent flow

99 The theoretical value of coefficient of contraction of a sharp edged orifice is [ ]

A. 0.611
B. 0.85
C. 0.98
D. 1.00

100 The major loss of energy in long pipes is due to [ ]

A. sudden enlargement
B. sudden contraction
C. gradual contraction or enlargement
D. friction

101 Minor losses do not make any serious effect in [ ]
A. short pipes
B. long pipes
C. both the short as well as long pipes
D. cannot say

102 The value of friction factor 'f' for smooth pipes for Reynolds number 106 is approximately equal to
[ ]
A. 0.1
B. 0.01
C. 0.001
D. 0.0001

103 In a two-dimensional velocity field with velocities u and v along the x and y directions respectively, the convective acceleration along the x-direction is given by: [ ]

A. $$u\frac{\partial v}{\partial x}+v\frac{\partial u}{\partial y}$$
B. $$v\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}$$
C. $$u\frac{\partial v}{\partial x}+v\frac{\partial u}{\partial y}$$
D. $$v\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}$$

104 Two pipe systems are said to be equivalent when [ ]
A. head loss and discharge are same in two systems
B. length of pipe and discharge are same in two systems
C. friction factor and length are same in two systems
D. length and diameter are same in two systems

105 In series-pipe problems [ ]
A. the head loss is same through each pipe
B. the discharge is same through each pipe
C. a trial solution is not necessary
D. the discharge through each pipe is added to obtain total discharge

106 For laminar flow in circular pipes, the Darcy's friction factor f is equal to [ ]
A. 16/Re
B. 32/ Re
C. 64/ Re
D. none of the above where R is Reynolds number.

107 Minor losses occur due to [ ]
A. sudden enlargement in pipe
B. sudden contraction in pipe
C. bends in pipe
D. all of the above

108 What is Darcy Weisbach formula for heat loss due to friction?

Where, f = Darcy's coefficient of friction [ ]

A. $h_f = (f\ l\ V^2) / (g\ d)$
B. $h_f = (f\ l\ V^2) / (2\ g\ d)$
C. $h_f = (4\ f\ l\ V^2) / (2\ g\ d)$
D. $h_f = (16\ f\ l\ V^2) / (2\ g\ d)$

109 Darcy-Weisbach equation is used to find loss of head due to [ ]

A. sudden enlargement
B. sudden contraction
C. friction
D. none of the above

110 Give an expression for loss of head due to sudden enlargement of the pipe [ ]

A. $h_e = (V_2-V_1)^2 /2g$
B. $h_e = (V_1-V_2)^2 /2g$
C. $h_e = (V_1-V_2)/2g$
D. $h_e = (V_1-V_2)^2$

111 Loss of head at entrance to a pipe if given as [ ]

A. $\frac{V^2}{2g}$
B. $\frac{V}{2}$
C. $0.5\frac{V^2}{2g}$
D. $\frac{V^3}{2g}$

112 Loss of head exit to a pipe if given as [ ]

A. $\frac{V^2}{2g}$
B. $\frac{V^2}{g}$
C. $\frac{V^3}{g}$
D. $\frac{V^3}{2g}$

113 Two pipes of same length and diameters d and 2d respectively are connected in series. The diameter of an equivalent pipe of same length is [ ]

A. less than d
B. between d and 1.5 d
C. between 1.5 d and 2d
D. greater than 2d

114 In series pipe problems [ ]

A. the head loss is same through each pipe
B. the discharge is same through each pipe
C. a trial solution is not necessary
D. the discharge through each pipe is added to obtain total discharge

115 Two pipe systems are said to be equivalent when [ ]

A. head loss and discharge are same in two systems

B. length of pipe and discharge are same in two systems
C. friction factor and length are same in two systems
D. length and diameter are same in two systems

116 The hydraulic grade line is [ ]
A. always above the centre line of pipe
B. never above the energy grade line
C. always sloping downward in the direction of flow
D. all of the above

118 For laminar flow in a pipe of circular cross-section, the Darcy's friction factor f is [ ]
A. directly proportional to Reynolds number and independent of pipe wall roughness
B. directly proportional to pipe wall roughness and independent of Reynolds number
C. inversely proportional to Reynolds number and independent of pipe wall roughness
D. inversely proportional to Reynolds number and directly proportional to pipe wall roughness

119 The losses are more in [ ]
A. laminar flow
B. transition flow
C. turbulent flow
D. critical flow

120 The head loss in turbulent flow in pipe varies [ ]
A. Directly as the velocity
B. Inversely as the square of the velocity
C. inversely as the square of the diameter
D. Approximately as the square of the velocity

121 A pipeline is said to be equivalent to another, if in both [ ]
A. Length and discharge are the same
B. Velocity and discharge are the same
C. Discharge and frictional head loss are the same
D. Length and diameter are the same

122 Navier Stoke’s equation represents the conservation of [ ]
A. Energy
B. Mass
C. Pressure
D. Momentum

123 For laminar flow in a pipe of circular cross section, the Darcy's friction factor f is [ ]
A. directly proportional to Reynolds number and independent of pipe wall roughness
B. directly proportional to pipe wall roughness and independent of Reynolds number
C. inversely proportional to Reynolds number and indpendent of pipe wall roughness
D. inversely proportional to Reynolds number and directly proportional to pipe wall

124 The ratio of average velocity to maximum velocity for steady laminar flow in circular pipes is [ ]
A. 1/2
B. 2/3
C. 3/2
D. 2

125 The horse power transmitted through a pipe is maximum when the ratio of loss of head due to friction and total head supplied is [ ]
A. 1/3
B. 1/4
C. 1/2
D. all of the above

Code: 80M02

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

II B.Tech II Semester I Mid Question Bank 2019-20

MR18 (2018 Admitted Batch)

Subject: Gender Sensitization

Name of the Faculty : R V S Madhuri

Subjective Question Bank:

MODULE– I

1. Why should we study Gender Sensitization? (Remembering)
2. Narrate the story of Mary Kom and Onler? (Remembering)
3. Discuss about story of Love and Acid ? (Applying)
4. Write down love and affection of Fathers and Mothers? (Remembering)
5. Explain the Rosa Parks and their Braveheart? (Understanding)
6. Discuss the story of Dr. B. R. Ambedkar at the age of nine against caste discrimination ? (Applying)

MODULE – II

1. Explain the problems of declining Sex ratio? (Understanding)
2. Discuss the struggles against sex selective abortions? (Applying)
3. Explain the struggles with gender discrimination in case of sports? (Understanding)
4. Discuss about transgender? (Applying)
5. Explain about body parts of men? (Understanding)
6. Discuss about body parts of women ? (Applying)

Module III

1. Explain about invisible labour at home? (Understanding)
2. Discuss continous works of a mother at house? (Applying)
3. Explain the concept of load sharing with mother? (Understanding)

Signature of the Faculty **Signature of the HOD**

Code: 80M02

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

II Tech II Semester I Mid Question Bank 2019-20

MR18 (2018 Admitted Batch)

Subject: Gender Sensitization

Name of the Faculty: R V S Madhuri

Objective Question Bank:

1 Gender is physical and social condition of being _____
Male
Female
Both a & b
None of the above

2 Independent India was among the very ___countries in the world to have universal suffrage.
first
Second
third
None of the above

3 Women got the right to vote in_____
1935
1945
1955
1966

4 Article 14 of the Indian constitution guarantees the _____ of all citizens.
Equality
Not equality
different
None of the above

5 One of the very first groups of this kind was the ____of women formed by osmania university women.
Equality
Progressive Organization
violence
None of the above

6 Stree Shakti Sanghatana formed in ___
1978
1968
1977
1965

7 The 73rd amendment to the Indian constitution passed in 2009, provides for the reservation for ____of one third of the seats in village panchayats.
women
Gent

violence
None of the above

8 This is also an illustration of the process through which society shapes and trains people to become social individuals social scientists call this process_____
violence
Shakti Sanghatana
socialization
None of the above

9 Growing up male by ____further explores these issues from the perspective of a boy growing up in a small town in india
Krishna kumar
Joopaka subhadra
Khadeer babu
None of the above

10 “Girl” written by the well-known Caribbean writer ____, was first published in the New Yorker in 1978.
Krishna kumar
Joopaka subhadra
Khadeer babu
Jamaica Kincaid

11 Socialization gives rise to so many problems, schools should be places of ___ by this he means that education should try and change the way society socializes women and men.
Socialization
Counter- Socialization
inequality
None of the above

12 Girls went to a school that was designed differently ____from the boys school.
conspicuously
Shakti Sanghatana
socialization
None of the above

13 Dr.B R Ambedkar was the primary___ for the dalits in our country
spokesperson
National leader
Society
None of the above

14 Dr.B R Ambedkar family was from ratnagiri district in _____
Goregaon
Maharashtra
gandhinagar
None of the above

15 She is a five times world amateur boxing champion_____
Onler
Mary kom
Khadeer babu
None of the above

16 ____ also from Manipur was the president of the student’s body in Delhi.
Onler

Khadeer babu
Mary kom
None of the above

17 Behind every successful man there is a _____
Friend
women
father
None of the above

18 Onler recalls I first met mary at the Nehru stadium in ____
Delhi
hyderabad
Maharashtra
None of the above

19 ____year Mary kom from Manipur was travelling by train to baangalore.
2000
2003
2005
2006

20 Love and ___just do not mix
Friendship
Acid
Relationship
None of the above

21 They work together on a campaign that they hope will eradicate ___in india
Acid attacks
sports
Social works
None of the above

22 Laxmi and alok now together run the _____Campaign
Stop acid attacks
Social works
Rural Development
None of the above

23 If men don't feel the need to _____, women won't have to be controlled.
control
School
domination
None of the above

24 We begin with a set of unique love letters unlike any other from_____to her husband jotiba phule
Mary kom
Khadeer babu
Savitribai phule
None of the above

25 Savitribai phule and jotiba phule are renowned for having taken up the cause of window, starting girls school in _____
Maharashtra
Delhi
Pune
None of the above

26 A hierarchical system in which cultural, political, and economic structures are dominated by males is an_____
elite model
gendered division of labour
pluralist model
patriarch

27 According to the text, the terms masculinity and femininity are most closely linked to _____
sexism
gender
sex
patriarch

28 Gender roles refer to
The rights, responsibilities, expectations, and relationships of women and men.
The subordination of women based on the assumption of superiority of men
Chromosomal and hormonal differences that cause inevitable differences in the behavior of men and women
None of the above

29 Men currently outnumber women in _____ programs
doctoral
education
psychology
allied health field

30 Women are over-represented in _____ work because it often provides greater flexibility to meet family responsibilities
semiskilled
private sector
Public sector
contingent

31 All of the following statements regarding the media and gender socialization are correct, except
More male than female roles are shown on television, and male characters are strikingly different from female ones
Few, if any, changes have occurred in the roles men and women play in movies
Most social analysts agree that the media simply reflect existing gender roles in society
None of the above

32 The _____ perspective combines the exploitation of women by capitalism with patriarchy in the home in its analysis of gender inequality
liberal feminist
socialist feminist
Public sector
None of the above

33 When were women (over21) allowed to vote in the UK ?
1935
1928
1933
1926

34 Men do not need tenderness and are less sensitive than _____
women

scientists
education
None of the above

35 Negative and partial attitude acknowledgement and assessment of the characteristics, position, role and capacity of _____
Man
Woman
Both a &b
None of the above

36 Among _____ Americans there are more than two recognized gender roles
Asian
Native
African
None of the above

37 What concept refers to the ways in which society conveys to the individual its norms or expectations for his/her behavior?
socialization
gender schema
gender scripts
gender stereotypes

38 Regarding discerning others' emotions from non-verbal cues
men do it better than women
women do it better than men
Both a & b
None of the above

39 Children as young as _____ years of age are aware of gender stereotypes
6
5
3
4

40 Men and women both disclose at equal rates about their sexual preference.
True
False
Both a & b
None of the above

41 We are attracted to a person who is similar to us in attitudes because
we get positive reinforcement from that person agreeing with us
the other person's agreement bolsters our sense of rightness
we anticipate positive interactions with that person
All of the above

42 Some kinds of love are highly idealized, such as a _____love
Mother
Father
Both a & b
None of the above

43 Many people still hold the notion that there are fixed and intrinsic differences between _____
Men
women
Both a & b

None of the above

44 Gender roles are continuously challenged by the
Behavior
women
Both a & b
None of the above

45 People always talk about a ____duties and responsibilities.
Mother
Father
Both a & b
None of the above

46 Reservation for women in urban local governance was introduced by which constitutional Amendment?
72
73
74
86

47 “One is not born but rather becomes a woman”.
Who said this?
John Stuart Mill
Betty Friedan
Simone de Beauvoir
Shulamith Firestone

48 One of the major causes of high maternal mortality rate in India is :
Anaemia among Women
Carelessness of doctors
Illiteracy
Adolescent pregnancies

49 The first woman who called for International Women’s Day in 1910 was :
Margret Cousin
ArunaAsaf Ali
Clara Zetkin
Lucy Stone

50 The SAARC Decade for the Girl Child was :
1961 – 1970
1991 – 2000
1971 – 1980
1975 – 1985

51 Choose the correct expansion of MHFW.
Minimum Health, Food and Welfare
Maternal Health and family Welfare
Model Health, Food and Welfare
Ministry of Health and Family Welfare

52 Ain’t I a Woman?’ which emphasized the plight of black women, is written by:
Sojourner Truth
Angela Davis
Anna Julia Cooper
Kathleen Cleaver

53 Which ideological movement emerged as a response to the large-scale destruction of

environment and the subsequent impact on women:
Euphemism
Ecofeminism
Androcentricism
Existential Feminism

54 SABLA scheme focuses on
Destitute women
Adolescent girls
Maternity benefits
Victims of commercial sexual exploitation

55 The first Indian woman boxer to clinch gold medal at the Asian Games 2014 is
Laishram Sarita Devi
Aruna Mishra
Mary Kom
Sarjubala Devi

56 Which among the following is not a liberal feminist?
Mary Wollstonecraft
Harriet Taylor
Shulamith Firestone
Betty Friedan

57 The first ever women's rights convention known as Seneca Falls Convention was held in:
1888
1848
1828
1808

58 AIWC stands for:
All Indian Women's Convention
All India Women's Conference
All India Women's Congregation
All Indian Woman Conference

59 Which among the following is not a part of Section 354A of the Indian Penal Code:
Showing pornography against the will of a woman
Intercourse by a man with his wife during separation
A demand or request for sexual favours
Making sexually coloured remarks

60 A Working Group on 'Women's Agency and Empowerment' was constituted under:
Sixth Five Year Plan
Twelfth Five Year Plan

First Five Year Plan

Ninth Five Year Plan

61 What was one of the strategies of Mahatma Gandhi behind using Charkha? Women could participate even from their homes in the movement ( ) by using charkha.
Charkha was easily available
Charkha was easy to use

Charkha did not break the laws

62 Bill on Protection of Women on Domestic Violence was passed in the year
1995
2006
1980
2005

63 Newspaper run by the effort of rural women journalists
KhabarLahariya
Open Magazine
Dalit Times
Avadhnama

64 Whose efforts led to Widow Remarriage Act of 1856
Ram Mohan Roy
Ishwar Chandra Vidyasagar
PanditaRamabai
JyotiraoPhule

65 The United Nations Entity for Gender Equality and the Empowerment of Women is also
known as :
U N Women
UNIFEM
INSTRAW
UNDG

66 When was the POCSO (Protection of Children from Sexual Offences) Act passed?
1983
2004
2012
2013

67 A special award has been constituted which is given for Best Reporting on Women in Panchayati Raj. What is the name of that award?
Durga Bai Deshmuk Award
Indira Award
Sarojini Naidu Award
Mother Teresa Award

68 One among the following is a woman cricketer who received the Padmasri Award.
Choose the correct answer:
Anjum Chopra
AnjumShiya
Manju Chopra
Priti Bhalla

69 Who said “I don’t wish them (women) to have power over men, but over themselves”?
Simone de Beauvoir
Mary Wollstonecraft
Rosemarie Tong
Elshtain

70 Mark the odd one out
Right to Information – Aruna Roy

Narmada Bachao Movement – Medha Patkar
Chipko Movement - Sundar Lal Bahuguna
Anti- Corruption Movement – Mohsina Qidwai

71 The famous Shah Bano case is related to Muslim wife's:
Right to Divorce
Right to Separation
Right to maintenance after Divorce
Right to Husband's property

72 Which among the following Acts had declared polygamy among Hindus to be illegal?
Sharada Act 1929
The Hindu Marriage Act 1955
The Hindu succession act 1956
Shariat Bill 1937

73 The UN Decade of Women 1976-85 ended with the Conference in:
Nairobi
Beijing
Bangkok
Stony point, New York

74 The Child Marriage Act amended in ------- (year) raised the minimum age of marriage for girls from 15 to 18 years.
1986
1976
1929
1991

75 A world Conference on the issues of women was organised by the United Nations in 1975. Which among the following was the venue?
Mexico
Beijing
Copenhagen
Nairobi

76 In the Population Census of 2011, it was revealed that the population ratio of India was -----females per……. of males
940/1000
500/1000
1000/940
600/900

77 Causes for Decling Sex Ratio
Selective terminations of pregnancy
female infanticide
female babies are more likely to be undernourished
All

78 are the reason is basically that a girl is seen as a liability
She will get married and leave the house
You have to pay a huge dowry
Needs to be protected much more
Needs to be protected much more

79 NGO's estimate that women and children are trafficked into the country annually from neighboring states for the sex trade.

10,000-15,000
10,000-15,000
13,000-25,000
5,000-50,000

80 Every year,…… children fall into the clutches of the gangs
4000
44,000
50,000
10,000

81 The gender spectrum perceives gender as having many options it is a linear model, ranging from 100% man to …… woman
100%
90%
60%
50%

82 When we meet a newborn baby, most of us ask the same question
how is the hospital
how many doctors checked
boy or girl
none

83 Experts who work with youth and gender issues tell us the two most common myths are these

i.gender is binary, offering only two options;

ii.gender and sex are the same thing. Summed up,

i is true
ii is true
both true
none

84 Every person is either male or female, and the distinction is based on that
analysis
etiology)
physiology
person's anatomy

85 More than 63 million women are "missing" statistically across
India
world
Pakistan
Telengana

86 Studies have shown that Indian girls receive ……education
high
less
Average
none

87 Many women – including educated, wealthy women – say they face
intense pressure
most often from mothers-in-law, to have sons.
both a and b
none

88 By analysing birth rates and the gender of last-born children, the report also estimated that more than ……..Indian girls are not wanted by their families.
1 million
2 million
21 million
10 million

89 The challenge of gender is long-standing, probably going back millennia," wrote the report's author, chief economic adviser……..., noting that India must "confront the societal preference for boys".

Arvind Subramanian
sarojini naidu
Ambedkar
apj abdul kalam

90 The sex ratio of 927 in the ……age group is only the national average for India.
1-5
2-8
10-15
0 – 6

91 The sex ratio of Himachal Pradesh ……..
900
750
896
900

92 The sex ratio of Punjab ……..
793
486
456
123

93 The sex ratio of Chandigarh ……..
789
845
159
758

94 The sex ratio of Uttaranchal ……..
906
458
782
753

95 The sex ratio of Haryana
887
978
819

967

96 The sex ratio of Delhi
865
458
787
369

97 The sex ratio of Rajasthan
995
987
896
909

98 The sex ratio of Gujarat
879
458
825
876

99 Which state lowest sex ration
Punjab
Haryana
telengana
andhrapradesh

100 The prejudice against the girl child continues to be an issue of concern for UNICEF in India, which, together with its partners conceptualized …….. project to address the problem of female foeticide
Initiative to increase Sex determination & Pre-Birth Elimination of Females
Initiative to Reduce Sex determination & Pre-Birth Elimination of Females
Initiative to Sex determination & Pre-Birth Elimination of Females
Initiative to Reduce Sex determination

101 Initiative to Reduce Sex determination & Pre-Birth Elimination of Females
result of the project activities in Mandya district in the state of……, the issue of sex selection and female foeticide was put on the public agenda and created mass awareness among the people in both rural and urban areas.
telengana
Andhra pradesh
Karnataka
Haryana

102 CSR
Child sex ration
Corporate Social Responsibility
Canterbury's Community & Student Radio
Corporate social ratio

103 OSR
Open Space Reservation
Overall sex ratio
Overall Stripping Ratio
Organization Systems Renewa

104 PC&PNDT Act 1994 fetures
Prohibits sex selection before and after conception

Prohibits advertisements of such techniques for detection or determination of sex of foetus even through
Registration compulsory for facilities providing preconception and prenatal diagnostics capable if determine the sex
all

105 Stop sex selection , save the girl child concept in
PC&PNDT Act 1945
PC&PNDT Act 1956
PC&PNDT Act 1994
PC&PNDT Act 1986

106 PC&PNDT stands for
Post-conception or Pre-natal Sex determination
Pre-conception or Pre-natal Sex determination
Pre-conception or post-natal Sex determination
Post-conception or Post-natal Sex determination

107 ……has had a significant role to play in families and communities deciding they did not want child
Dowry
Study
Work
Job

108 Government policy of the two child norm has pushed many to plan their families
At least one son and at the at the most only on daughter
Tow sons
Two daughters
At least one daughter and at the at the most only on sun

109 Amniocentesis and chorionic villus sampling are sex selection techniques that became prevalent in developing countries in the
1990's
1980's
1970's
1948's

110 FASDSP
Forum Against Selective De- termination and Sex Pre-Selection
Forum Against Sex De- termination and Sex Pre-Selection
Forum Against Sex De- termination and Sex Post-Selection
Forum Against Sex De- termination and Selective post -Selection

111 The act 88 banned prenatal sex determination.
1995
1996
1999
1994

112 How to decide wheterh a person is male/female
Chromosomes
Genes
Gonads,hormones
All

113 "mosaicism." it's a rare condition that only affects about
1 in 14,000 people

1 in 16,000 people
1 in 15,000 people
1 in 12,000 people

114 …….is one of the most fastest woman sprinters India has ever produced.
Sarojini
Dutee Chand
Savitribai Phule
mary kom

115 She won India’s sprint title in
2013
2014
2015
2016

116 IAAF
Indian Association of Athletics Federations (IAAF)
International Association of Athletics Federations (IAAF)
International Assembly of Athletics Federations (IAAF)
Indian Athletics of Assembly Federations (IAAF)

117 Manabi Bandyopadhyay took charge of…… in West Bengal's Nadia district
Krishnanagar degree College
Krishnanagar Women's College
Krishnanagar junior College
Krishnanagar university

118 manabi is the…….transgender person in the country to be appointed the Principal of a college.
first
second
third
fourth

119 Housework is invisible means something which is not noticed. A good example will be
Morning walking
Wearing clothes
breakfast in the morning
Washing clothes

120 Housework is Physically demanding means something which requires
hard work
Less work
Cleaning
Washing clothes

121 Housework is Time consuming means something which takes a
Short time to be done
Continuously to done
long time to be done
Both b and c

122 The poem “Vantillu” by
Kalamma
Vimala
Sarojini devi

None of the above

123 Abburi Chaya Devi expresses the difference between an academic feminist vision and the material reality for modern women in her famous story
Srimathi Udyogini
srimathi
udyogini
Goda lakshmi

124 Judy Brady's
Become a wife
no wife
I want a wife
Widow

125 Gender pay gap in India refers to the difference in earnings between women and men in the paid employment and labor market.
2013
2015
2018
2016

Signature of the Faculty **Signature of the HOD**

Malla Reddy Engineering College (Autonomous)
II B.Tech II-Sem (MR18 Regulations)I mid Question Bank

Subject:Instrumentation & control systems
Branch:Mechanical Engineering **Name of the faculty: M.V.Varalakshmi**

Module -I

S.No	Question	Bloom Taxonomy
1	Sketch and explain with a block diagram generalized measurement system and its elements with an example.	Apply
	OR	
2	Explain the construction and principle of LVDT with a neat diagram along with its advantages and limitations.	understand
3	Describe the terms used to determine the static characteristics of an instrument.	understand
	OR	
4	Explain the various types of errors in measurement system with an examples	understand
5	Write the working principle of Piezo-electric transducer With a neat sketch?	Apply
	OR	
6	Discuss the various principles in which variation in capacitance principle can be used to construct displacement transducers? Explain with neat sketches	understand
7	Describe the terms used to determine the dynamic characteristics of an instrument.	understand
	OR	
8	Explain variable resistance transducer with an example	understand

Module –II

S.No	Question	Bloom Taxonomy
1.	Explain the working of resistance temperature detector (RTD) with advantages and disadvantages?	understand
	OR	

2.	Interpret the law of thermocouples. How they are useful in construction of thermocouple thermometers?	understand
3.	Discuss about the liquid in glass thermometer with a neat sketch.	understand
	OR	
4.	Explain about the bimetallic thermometer and pressure filled thermometer with a neat sketch.	understand
5.	Discuss the working of total radiation pyrometer with advantages?	understand
	OR	
6.	Discuss the working of optical radiation pyrometer with advantages?	understand
7.	Write the application areas in which low pressures are maintained. List out various indirect methods for measurement of low pressure and explain any two methods	Apply
	OR	
8.	Sketch and Explain Bourdon pressure gauges.	Apply

Module –III

S.No	Question	Bloom Taxonomy
1.	Explain the working principle of ultrasonic flow meter	understand
	OR	
2.	Explain the working of Rota meter with advantages and disadvantages?	understand
3.	Discuss the working of Laser Doppler anemometer (LDA) with advantages and disadvantages?	understand

	OR	
4.	Explain the construction and working principle of turbine flow meter with a neat sketch. State its advantages and limitations	Analyze

Signature of the faculty **HoD,ME**

OBJECTIVE QUESTION BANK

Module-I

1. The degree of closeness of the measured value of a certain quantity with its true value is known as [ ]
   a. Accuracy
   b. Precision
   c. Standard
   d. Sensitivity
2. Error of measurement = [ ]
   a. True value – Measured vale
   b. Precision – True value
   c. Measured value – precision
   d. None
3. The ability by which a measuring device can detect small differences in the quantity being measured by it, is called its [ ]
   a. Damping
   b. Sensitivity
   c. Accuracy
   d. None
4. The following term(s) is (are) associated with measuring devices [ ]
   a. Damping
   b. Sensitivity
   c. Both
   d. None
5. To compare an unknown with a standard through a calibrated system is called [ ]
   a. Direct Comparison
   b. Indirect Comparison
   c. Both
   d. None
6. The following is an internationally recognized and accepted unit system [ ]
   a. MKS
   b. FPS
   c. SI
   d. All of the above
7. The physical quantity which is to be measured is called [ ]
   a. Measurand
   b. Measurement
   c. Measure
   d. None

8. Which deals with the science and technology of measurement of large number of variables embracing the disciplines of engineering and physical sciences [ ]

a. Metrology
b. Instrumentation
c. Both
d. None

9. Which element receives energy from measurand and produces an output which depends on measured quantity [ ]

a. Data transmission element
b. Transducer element
c. Primary sensing element
d. Data processing element

10. Which element modifies the data before it is processed or recorded[ ]

a. Data transmission element
b. Transducer element
c. Primary sensing element
d. Data processing element

11. Which element is necessary to transmit data from one location to another location [ ]

a. Data transmission element
b. Transducer element
c. Primary sensing element
d. Data processing element

12. Which instrument is a balancing device that generates an equivalent but opposite effect to nullify the effect generated by variable to be measured [ ]

a. Deflection
b. Null
c. Active
d. Manual

13. Which instrument does not requires any auxiliary power source to perform its task [ ]

a. Deflection
b. Null
c. Active
d. Manual

14. Ammeter is an example of which type of Instrument [ ]

a. Deflection
b. Null
c. Active
d. Analog

15. Optical pyrometer is an example of which type of Instrument [ ]
    a. Analog
    b. Digital
    c. Non-contact
    d. Contact
16. The process of finding the error of an instrument and correcting the error by comparing the instrument against a known standard is called [ ]
    a. Calibration
    b. Measurement
    c. Standard
    d. None
17. Which is defined as the minimum value of input below which no output can be detected [ ]
    a. Sensitivity
    b. Threshold
    c. Hysteresis
    d. Linearity
18. Which is defined as magnitude of error in output for a given input when the output is achieved in both ascending and descending order? [ ]
    a. Sensitivity
    b. Threshold
    c. Hysteresis
    d. Linearity
19. Which is defined as maximum distance or angle through which any part of instrument moves in one direction without causing any movement in the adjacent part [ ]
    a. Drift
    b. Back lash
    c. Threshold
    d. Hysteresis
20. Which is defined as the variation of output for a given input caused due to change in sensitivity of the instrument to certain interfering inputs like temperature changes
    [ ]
    a. Drift
    b. Back lash
    c. Threshold
    d. Hysteresis
21. Which is defined as degree of closeness with which the system indicates the signal which is impressed upon it [ ]
    a. Over shoot
    b. Dead time

c. Fidelity
d. Dead zone

22. Which is the largest change of the measurand to which instrument does not respond [ ]
a. Over shoot
b. Dead time
c. Fidelity
d. Dead zone

23. Errors due to blunders and mistakes during experiment are called [ ]
a. Illegitimate
b. Loading
c. Calibration
d. systematic

24. Self generating type transducers are _____ transducers. [ ]
a. Active
b. Passive
c. Secondary
d. Inverse

25. The transducers that converts the input signal into the output signal, which is a discrete function of time is known as _____ transducer. [ ]
a. Active
b. Analog
c. Digital
d. Pulse

26. A transducer that converts measurand into the form of pulse is called [ ]
a. Active transducer
b. Analog transducer
c. Digital transducer
d. Pulse transducer

27. Which of the following is a digital transducer? [ ]
a. Strain gauge
b. Encoder
c. Thermistor
d. LVDT

28. Strain gauge, LVDT and thermocouple are examples of [ ]
a. Active transducers
b. Passive transducers
c. Analog transducers
d. Primary transducers

29. An inverse transducer is a device which converts [ ]
a. An electrical quantity into a non electrical quantity
b. Electrical quantity into mechanical quantity
c. Electrical energy into thermal energy

d. Electrical energy into light energy

30. A strain gauge is a passive transducer and is employed for converting [ ]
    a. Mechanical displacement into a change of resistance
    b. Pressure into a change of resistance
    c. Force into a displacement
    d. Pressure into displacement

31. Resolution of a transducer depends on [ ]
    a. Material of wire
    b. Length of wire
    c. Diameter of wire
    d. Excitation voltage

32. Quartz and Rochelle salt belongs to _____ of piezo-electric materials [ ]
    a. Natural group
    b. Synthetic group
    c. Natural or Synthetic group
    d. Fiber group

33. Which of the following are piezo electric substances? [ ]
    a. Barium titanate
    b. Lead titanate
    c. Lead Zirconate
    d. All

34. Piezo-electric transducers are [ ]
    a. Passive transducers
    b. Inverse transducers
    c. Digital transducers
    d. Pulse transducers

35. Piezo – electric transducers work when we apply _____ to it. [ ]
    a. Mechanical force
    b. Vibrations
    c. Illuminations
    d. Heat

36. Piezo electric crystal can produce an emf [ ]
    a. When external mechanical force is applied to i
    b. When radiant energy stimulates the crystal
    c. When external magnetic field is applied
    d. When the junction of two such crystals are heated

37. LVDT windings are wound on [ ]
    a. Steel sheets
    b. Aluminium
    c. Ferrite
    d. Copper

38. The principle of operation of LVDT is based on the variation of [ ]
    a. Self inductance

b. Mutual inductance
c. Reluctance
d. Permanence

39. LVDT is an/a _____ transducer [ ]
a. Magneto-strict ion
b. Inductive
c. Resistive
d. Eddy current

40. Which of the following can be measured with the help of piezo electric crystal? [ ]
a. Force
b. Velocity
c. Sound
d. Pressure

41. S1: Transducer is a device which converts physical into electrical quantity
S2: Transducer is also called as sensor. [ ]
a. S1 is true & S2 is false
b. S2 is true & S1 is false
c. Both S1 & S2 are true
d. d. Both S1 & S2 are false

42. In a LVDT, the two secondary voltages [ ]
a. Are independent of the core position
b. Vary unequally depending on the core position
c. Vary equally depending on the core position
d. Are always in phase quadrature

43. Capacitive transducers are normally employed for_____ measurements[ ]
a. Static
b. Dynamic
c. Transient
d. Both static and dynamic

44.The transducers which requires an external power and their output is a measure of some variation such as resistance, inductance, capacitance etc., are called as [ ]
a. Active transducer
b. Primary sensor
c. Passive transducer
d. Self generating transducer

45. The principle of operation of variable resistance transducer is [ ]
a. Deformation leads to change in resistance
b. Displacement of a contact slider on a resistance
c. Coupling of two coils changes with displacement
d. Movement of magnetic field produces variation in resistance of

material

46. The application of LVDT is [ ]
    a. Joint motion
    b. Finger movement
    c. Limb movement
    d. Heart wall motion

47. Photo conductive cell consists of a thin film of [ ]
    a. Quartz
    b. Lithium sulphate
    c. Barium titanate
    d. Selenium

48. Most commonly used indicator electrode is [ ]
    a. Calomel electrode
    b. Silver electrode
    c. Silver – Silver chloride electrode
    d. Glass electrode

49. _____ is the example of photo emissive cell. [ ]
    a. LDR
    b. Photo diode
    c. Photo transistor
    d. Photo multiplier

50. The detectors used in optical sensors is [ ]
    a. Photodiodes
    b. Phototransistors
    c. Laser
    d. Only (a) and (b)

Module –II

51. Output of a bimetallic element will be _____ [ ]
    a. Strain
    b. Pressure
    c. Displacement
    d. Voltage

52. Which of the following can be used for measuring temperature? [ ]
    a. Metallic diaphragm
    b. Bourdon tube
    c. Fluid expansion system
    d. capsule

53. Which one of these thermometers is portable as well as simple to use?[ ]
    a. Constant-volume gas thermometer
    b. resistance thermometer
    c. Thermocouple
    d. Mercury-in-glass thermometer

54. Absolute zero on Kelvin scale is equal to [ ]
    a. 373 K
    b. 273 K
    c. 0 K
    d. None of the above
55. In a resistance thermometer, a metal wire shows a resistance of 500 Ω at ice point and 550 Ω at steam point. temperature when resistance is 535 Ω would be[ ]
    a. 60 °C
    b. 65 °C
    c. 70 °C
    d. 75 °C
56. The thermocouple circuit which is used to measure temperature works on ____. [ ]
    a. Seebeck effect
    b. Peltier effect
    c. Thomson effect
    d. none of the above
57. A type J thermocouple is made of the following metals [ ]
    a. Al and tungsten
    b. Fe and constantan
    c. Platinum and platinum/Rhodium alloy
    d. Copper and constantan
58. Thermocouple extension wire may be readily distinguished from regular thermocouple-grade wire by: [ ]
    a. Different metal types
    b. Outer sheath colour
    c. Special markings on the wire's insulation
    d. Thickness
59. The most rugged temperature sensing element listed here is a/an [ ]
    a. Thermocouple
    b. Orifice
    c. RTD
    d. Filled bulb
60. The negative lead of a thermocouple is always colored [ ]
    a. Blue
    b. Yellow
    c. Red
    d. White
61. Thermistor is a transducer. Its temperature coefficient is [ ]
    a. Negative
    b. Positive
    c. Zero

d. None of these

62. The linear variable differential transformer transducer is [ ]
    a. Inductive
    b. Non-inductive
    c. Capacitive
    d. Resistive

63. If at one end, the two wires made of different metals are joined together then a voltage will get produced between the two wires due to difference of temp between the two ends of wires. This effect is observed in [ ]
    a. Thermocouples
    b. Thermistors
    c. RTD
    d. Ultrasonics

64. With the increase in the intensity of light, the resistance of a photovoltaic cell[ ]
    a. Increases
    b. Decreases
    c. same
    d. None of these

65. A thermocouple thermometer consists basically of [ ]
    a. 1 wire
    b. 2 wires
    c. 4 wires
    d. 3 wires

66. **Identify the** thermocouple type **with the highest temperature limit from those listed here: [ ]**
    a. Type J
    b. Type K
    c. Type S
    d. Type T

67. **The negative lead of a thermocouple is always colored: [ ]**
    a. Blue
    b. Yellow
    c. Red

68. White

The most rugged temperature sensing element listed here is a/an:[ ]
    a. Thermocouple
    b. Orifice plate
    c. RTD
    d. Filled bulb

69. **Convert a temperature measurement of 250 deg C into Kelvin. [ ]**
    a. 523.2 K
    b. -209.7 K
    c. 709.7 K
    d. -23.2 K
70. **When the reference junction is the same temperature as the measurement junction in a thermocouple circuit, the output voltage (measured by the sensing instrument) is: [ ]**
    a. Zero
    b. Reverse polarity
    c. Noisy
    d. AC instead of DC
71. **Reference junction** compensation **is necessary in thermocouple-based temperature instruments because: [ ]**
    a. Copper extension wire has a tendency to corrode
    b. Thermocouples are inherently nonlinear
    c. The reference junction generates a temperature-dependent voltage
    d. The junction's electrical resistance varies with temperature

72. **Thermocouple extension wire may be readily distinguished from regular thermocouple-grade wire by: [ ]**
    a. Different metal types
    b. Outer sheath color
    c. Special markings on the wire's insulation
    d. Thickness

73. The term which can differentiate thermodynamics from other sciences is ____. [ ]
    a. Pressure
    b. Temperature
    c. Mass
    d. none of the above
74. Which law of thermodynamics is the basis of temperature measurement? [ ]
    a. Zeroth law of thermodynamics
    b. First law of thermodynamics
    c. Second law of thermodynamics
    d. none of the above
75. In electric resistance thermometer, the thermometric property is [ ]
    a. electric current passing through a metal wire

b. resistance of a metal wire
c. voltage between two extreme end points of a metal wire
d. none of the above

76. The most suitable device for measuring very small temperature changes is []
    a. Thermopile
    b. Thermocouple
    c. Thermistor
    d. None
77. When two wires of different metals are twisted together and heat applied to the junction, an e.m.f. is produced. This effect is used in a thermocouple to measure: [ ]
    a. e.m.f.
    b. temperature
    c. Expansion
    d. heat
78. The instruments used for the measurement of pressure is/are [ ]
    a. Bellows
    b. Diaphragms
    c. Fiber optic pressure sensors
    d. All of these
79. Bourdon tube is used for the measurement of gauge pressure of [ ]
    a. Gas
    b. Liquid fluid
    c. Solid
    d. Both (a) and (b)
80. Dead weight gauge is used for the measurement of pressure of [ ]
    a. About 1000 bar
    b. About 2000 bar
    c. About 5000 bar
    d. About 7000 bar
81. The ionization gauge an instrument used for the measurement of[ ]
    a. Very low pressure
    b. Medium pressure
    c. High pressure
    d. Very high pressure
82. When visual indication of pressure level is required then the instrument generally used is [ ]
    a. Monometers
    b. Diaphragm sensors
    c. Bourdon tube
    d. Resonant wire device

83. For the measurement of high pressure with high accuracy the device used is[ ]
    a. Manganin wire pressure
    b. Ionization gauge
    c. Dead weight gauge
    d. Bourdon tubes
84. Advantage of passive instrument is [ ]
    a. It does not need power supply
    b. Cheap
    c. Sensitive
    d. Accurate
85. In McLeod gauge, [ ]
    a. A. High pressure fluid is expanded to a low pressure which is read by the monometer technique
    b. Low pressure fluid is compressed to a high pressure which is read by the bourdon technique
    c. High pressure fluid is expanded to a low pressure which is read by the bourdon technique
    d. Low pressure fluid is compressed to a high pressure which is read by the monometer technique
86. Which of the following is detected using manometer devices? [ ]
    a. Pressure difference between manometric and measuring liquid
    b. pH difference between manometric and measuring liquid
    c. Density difference between manometric and measuring liquid
    d. None of the mentioned
87. What is the difference between water and transformer oil as a manometric liquid? [ ]
    a. Water is used for large pressure differential
    b. Transformer oil is used for large pressure differential
    c. Transformer oil has evaporation problems
    d. Water has evaporation problems
88. In which of the following categories be thin plate diaphragm included? [ ]
    a. Primary transducer
    b. Secondary transducer
    c. Voltage measuring devices
    d. Spring balance systems
89. Which of the following applications are suited for thin plate diaphragms? [ ]
    a. Static pressure only
    b. Dynamic pressure only
    c. Both static and dynamic pressure with large frequency
    d. Both static and dynamic pressure with small frequency

90. Which of the following quantities can be measured using bellows?[ ]
    a. Absolute pressure
    b. Gauge pressure
    c. Differential pressure
    d. All of the mentioned
91. Which of the following conversion take place in bourdon tubes?[ ]
    a. Pressure to displacement
    b. Pressure to voltage
    c. Pressure to strain
    d. Pressure to force
92. Which of the following devices convert pressure to displacement?[ ]
    a. Diaphragm
    b. Both diaphragm and capsule
    c. Bellow
    d. Capsule
93. **Which of the following is not a type of pressure sensing element?[ ]**
    a. Bellows
    b. Bourdon tube
    c. Manometer
    d. Orifice plate
94. The most common application of float system is [ ]
    a. To monitor the fuel tank level in motor vehicle
    b.To monitor the flow of solid
    c. To monitor the flow of liquid
    d. All of these
95. Capacitive devices are used for the level measurement of [ ]
    a. Only liquid
    b. Solid in powdered form
    c. Both (a) and (b)
    d. None of these
96. In ultrasonic level gauge, the ultrasonic source is placed at the [ ]
    a. Bottom of the vessel containing the liquid
    b. Top of the vessel containing the liquid
    c. Middle of the vessel containing the liquid
    d. Far from the vessel containing the liquid
97. If the ambient temperature is doubled and pressure fluctuates, then the transmission time of radar through air is [ ]
    a. Almost unaffected and remains same
    b. Increases
    c. Decreases
    d. None of these
98. A vibrating level sensors consists of [ ]

a. One piezoelectric oscillators
b.Two piezoelectric oscillators
c. Three piezoelectric oscillators
d. Four piezoelectric oscillators

99. In radiation methods, the detector system is located at [ ]
a. The top of the liquid filled tank
b. The bottom of liquid filled tank
c. Middle of the liquid filled tank
d. Outside a liquid filled tank

100. Contact devices used for the measurement of level are [ ]
a. Less reliable then devices which does not make contact with the material
b. More reliable then devices which does not make contact with the material
c. Less reliable then devices which makes contact with the material
d. More reliable then devices which makes contact with the material

Module-III

101. In _____ velocity of fluid is constant on every point at a specific time. [ ]
a. Non steady flow
b. None of the mentioned
c. Rotational flow
d. a. Steady flow

102. If all particle of fluid has a path parallel to the wall, it is known as _____ [ ]
a. Stream line flow
a. Laminar flow
b. Viscous flow
c. All of the mentioned

103. Which of the following represents Reynolds number for laminar flow? [ ]
a. Less than 2000
b. Greater than 4000
c. Infinite
d. None of the mentioned

104. _____measures velocity at a point of fluid in a stream.[ ]
a. Venturi meter
b. pH meter
c. Pitot-Static tubes
d.None of the mentioned

105. Which of the following represents obstruction type flow measuring systems? [ ]
a. Centrifugal force type
b. Rotating vane system

c. Flow nozzle device
d. None of the mentioned

106. Which of the following represents the correct relation between flow rate and area of pipe? [ ]
a. Direct proportionality
b. Inverse proportionality
c. Equal
d. None of the mentioned

107. Which of the following converts flow to rotational motion?[ ]
a. Rotatic vane system
b. Rotameter flow system
c. Both rotameter flow system and rotatic vane system
d. None of the mentioned

108. Centrifugal force elements are used for _____ [ ]
a. High flow rate
b. Low flow rate
c. All range of flow rate
d.None of the mentioned

109. The devices used for flow obstruction is/are [ ]
a. Orifice plate
b. Venturi tube
c. Flow nozzle and dall flow tube
d. All of these

110. The device which is used for making temporary measurements of flow is [ ]
a. Venturi
b. Dull flow tube
c. Orifice plate
d. Pitot static tube

111. **A magnetic flowmeter will not properly measure the flow rate of:[ ]**
a. Dirty water
b. Milk
c. Oil
d. Caustic

112. **The purpose for providing ample straight-pipe lengths before and after a flowmeter is to: [ ]**
a. Dampen pipe vibrations generated near elbows
b. Stabilize the flow profile within the flowmeter
c. Amplify the coriolis effect for better rangeability

d. Prevent cavitation

113. **Identify which of the following flowmeters inherently measures mass flow rate:** **[ ]**

a. Thermal
b. Magnetic
c. Flow nozzle
d. Vortex

114. **For accurate operation, orifice plate flowmeters require: [ ]**

a. Laminar flow
b. Fully-developed turbulent flow
c. Swirls and eddies in the flow stream
d. Transitional flow

115. The instrument which is not suitable for the application in automatic control scheme [ ]

a. Rotameters
b. Pitot static tube
c. Rotary piston meter
d. Orifice plate

116. For the measurement of flow the cheapest device is [ ]

a. Venturi
b. Dall flow tube
c. Flow nozzle
d. Pitot static tube

117. Which of the following meter is used for measuring flow of clean fluids only? [ ]

a. Ultrasonic flow meter
b. Turbine Flow meter
c. Laser doppler anemometer
d. Hot wire anemometer

118. The flow meter which is replacing the differential pressure meters in its applications is [ ]

a. Vortex - shedding flow meters
b. Electromagnetic flow meters
c. Ultrasonic flow meters
d. All of these

119. Turbine meters are generally preferred for [ ]

a. Low viscosity and high flow measurements
b. High viscosity and low flow measurements
c. High viscosity and high flow measurements
d. Low viscosity and low flow measurements

120. Example for positive displacement meter is [ ]
a. Variable area flow meter
b. Turbine meters
c. Rotary piston meter
d. Venturi

121. The rate at which fluid flows through a closed pipe can be determined by [ ]
a. Determining the mass flow rate
b. Determining the volume flow rate
c. Either (a) or (b)
d. None of these

122. The head loss of an orifice meter is [ ]
a. less than that of the venturimeter
b. greater than that of the venturimeter
c. less than that of the nozzle flow meter
d. none of the above

123. A rotameter can be used [ ]
a. only for air
b. only in a horizontal orientation
c. only in a vertical orientation
d. in any direction

124. The transducer preferred to measure highly fluctuating velocities is[]
a. Rotameter
b.Turbine flow meter
c. Electromagnetic flow meter
d. Hot wire anemometer

125. Which flow meter is used for measuring the flow rate in an open channel? [ ]
a. Orifice meter
b. Weir
c. Ultrasonic flow meter
d.Rotameter

Signature of the faculty **HoD,ME**

Code: 80B09

MR 18

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

B.Tech IV Semester (MR 18-208-19 Admitted Students)

I Mid Examination Subjective Question Bank

Subject: PROBABILITY&STATISTICS **Branch: ME, CE, MINING**

Name of the faculty: V NAGARAJU

Q.No.	Question	Bloom's Taxonomy Level	C
	Module-I		
1	a) State and prove multiplication theorem	Evaluating	1
	b) State and prove addition theorem.	Evaluating	1
	OR		
2.	State and prove Baye's theorem.	Evaluating	1
3.	In a certain college 25% of boys and 10% of girls are studying Mathematics .The girls constitute 60% of the student body. (i)What is the probability that Mathematics is being studied (ii) If a student is selected at random and is found to be studying Mathematics, find the probability that the student is a girl? (iii) A boy?	Rememberin g	1
	OR		
4.	Three students A, B, C are in running race. A and B have the same probability of winning and each is twice as likely to win as C. Find the probability that B or C wins.	Rememberin g	1
5.	Apply addition theorem, From a city 3 news papers A,B,C, are being published. A is read by 20%,B is read by 16%,C is read by 14% both A and B are read by 8%, both A and C are read by 5% both B and C are read by 4% and all three A,B,C are read by 2%.what is the percentage of the population that read at least one paper.	Applying	1

	OR		
6.	Suppose a problem in statistics is given to three students A,B and C.Their probabilities of solving the same independently are 1/2,1/3 and ¼ respectly,What is the probability that exactly one of them will solve the problem?	Applying	1
	OR		
7.	Of the three men, the chances that a politician, a business man or an academician will be appointed as a vice-chancellor (V.C) of a University are 0.5,0.3,0.2 respectively. Probability that research is promoted by these persons if they are appointed as a V.C are 0.3,0.7,0.8 respectively . (i)Determine the probability that research is promoted (ii)If research is promoted, what is the probability that V.C is an academician?	Applying	1
	OR		
8.	Two dice are thrown. Let A be the event that the sum of the points on the faces is 9.let B be the event that at least one number is 6. Find (i) P (A∩B) (ii) P (AUB) (iii) P ($A^C UB^C$)	Applying	1
	Module-II		
1.	A Random variable X has the following Probability function X: 0 1 2 3 4 5 6 7 P(x): 0 K 2k 2k 3k K^2 $2k^2$ $7k^2+k$ Determine (i)k (ii)Evaluate p(x<6),p(x≥6),p(0<x<5) and p(0≤x≤4) (iii)If p(x≤k)>0.5,find the minimum value of k (iv)Determine the distribution function of x (v)mean	Evaluating	

	(vi)variance		
	OR		
2.	A continuous random variable has the probability density function f(x)= $\begin{cases} kxe^{-\lambda x}, for\ x \geq 0, \lambda > 0 \\ 0\ , otherwise \end{cases}$ Determine (i) k (ii)mean (iii)variance	Evaluating	
3.	Out of 800 families with 5 children each ,how many would you expect to have(a) 3 boys (b) 5 girls (c) either 2 or 3 boys (d) at least one boy? Assume equal probabilities for boys and girls.	Evaluating	
	OR		
4.	In a Normal Distribution, 31% of items are under 45 and 8% are over 64. Determine the mean and variance of the distribution?	Evaluating	
5.	Justify (Fit) a Poisson distribution to the following frequency distribution	Evaluating	

X	0	1	2	3	4	5	6
f	13	25	52	58	32	16	4

	OR		
6	a)Ten coins are tossed simultaneously. Determine the probability of getting at least (i)seven heads (ii)six heads	Evaluating	
	b)Determine the Mean and Variance of a Binomial distribution?	Evaluating	
	OR		
7.	Prove that the mean, median and mode of the Normal distribution are coincide	Evaluating	2
	OR		
8.	If x is a continuous random variable and k is a constant, then prove that (i) Var(X+k)=Var(X) (ii) Var(KX)=K^2Var(X)	Evaluating	2

	Module-III		
1.	Samples of size 2 are taken from the population 4,8,12,16,20,24 without replacement. Determine a. Mean of the population b. The standard deviation of the population . c. Mean of the sampling distribution of the means. d. The standard deviation of the sampling distribution of means	Evaluating	3
	OR		
2.	Samples of size 2 are taken from the population 2,3,6,8and11with replacement. Determine a. Mean of the population b. The standard deviation of the population . c. Mean of the sampling distribution of the means.	Evaluating	3
3.	Explain Different methods of Sampling	Understanding	3
	OR		
4.	The mean height of students in a college is 155cms and standard deviation is 15.Show that the probability that the mean height of 36 students is less than 157 cms is 0.7881	Understanding	

Signature of the faculty **Signature of HOD/MATHS**

MALLA REDDY ENGINEERING COLLEGE (Autonomous)
Maisammaguda, Dhulapally, Kompally, Secunderabad – 500 100

II B.Tech. II SEMESTER BIT QUESTION BANK

MR-18 REGULATIONS **Subject: Probability and Statistics**

Common to ME,CE,MINING branches

MULTIPLE CHOICE QUESTIONS

1) In drawing 3 balls out of 9 balls in a box there are --------- exhaustive elementary events [ ]

a)$6c_3$ b)$9c_4$ c)$9c_3$ d)$7c_2$

2) Two events A and B are said to be mutually exclusive events if ---------- [ ]

a)$A \cap B = \varphi$ b) $AUB = \varphi$ c) $A^I = \varphi$ d) None

3) If P(E)=1 then the event E is called ---------- [ ]

a)Certain event b) Impossible event c) Sure event d) A&C both

4) If P(E)=0 then the event E is called ---------- [ ]

a)Certain event b) Impossible event c) Sure event d) A&C both

5) $P(E+E^1)$=---------- [ ]

a)1 b)0 c)2 d)None

6) The set of all possible events in a trail is called a ---------- for the trial. [ ]

a) Sample space b) Sample point c) Exhaustive space d)None

7) Two events E and E' are said to be complementary events if ---------- [ ]

a) $E \cap E' = \varphi$ and $E \cup E' = S$ b) $E \cap E' = S$ and $E \cup E' = \varphi$ c) $E' = S$ d) $E' = \varphi$

8) According to axioms of probability , probability of an event E subset of S Is ---- [ ]

a) $P(E) \leq 0$ b) $P(E) \geq 0$ c) $P(E)=1$ d) $P(E)=0$

9) According to axioms to Probability, Probability of sample space S is --------- [ ]

a) $P(S) \leq 1$ b) $P(S)=0$ c) $P(S)=1$ d) $P(S) \geq 1$

10) What is the probability for a leap year to have 52 Mondays and 53 Sundays [ ]

a)2/7 b)1/7 c)3/7 d)4/7

11) Determine the probability that a non defective bolt will be found if out of 600 bolts already examined 12 were defective [ ]

a)0.58 b)0.68 c)0.98 d)0.88

12) What is the probability that a card drawn at random from the pack of playing cards may be either queen or a king [ ]

a)4/13 b)3/13 c)2/13 d)5/13

13) I f S is a sample space and E_1 and E_2 are any events in S then $P(E_1 \cup E_2)$=-[ ]

a) $P(E_1)+P(E_2)-P(E_1 \cap E_2)$ b) $P(E_1)+P(E_2)+P(E_1 \cap E_2)$

c) $P(E_1)-P(E_2)-P(E_1 \cap E_2)$ d) None

14) If E_1 and E_2 are two mutually exclusive events, then $P(E_1 \cup E_2)$=----[ ]

a) $P(E_1)-P(E_2)$ b) $P(E_1)+P(E_2)$ c) $P(E_1)P(E_2)$ d) None

15) If P(A)=0.25, P(B)=0.50 and P(AUB)=0.59 Then $P(A \cap B)$=-------- [ ]

a)0.25 b)0.36 c)0.26 d)0.16

16) Three students A,B,C are in running race. A and B have the same probability of winning and each is twice as likely to win as C. Find the probability of winning of C.
[ ]

a)2/5 b)1/5 c)3/5 d)4/5

17) *If* E_1 and E_2 are two events in a sample space S and $P(E1) \neq 0$, Then the probability of E_2 after the event E_1 has occurred $P(\frac{E2}{E1}) = \quad -$ [ ]

a) $P(E1 \cap E2)/P(E1)$ b) $P(E1 \cap E2)/P(E2)$

c) $P(E1\ U\ E2)/P(E1)$ d) None

18) In a random experiment if E_1 and E_2 are two events such that $P(E_1) \neq 0$ and $P(E_2) \neq 0$ then $P(E1 \cap E2) = ----$ [ ]

a) $P(E1).P(E2/E1)$ b) $P(E2).P(E1/E2)$

c) $P(E2).P(E2/E1)$ d) A and B

19) $If\ P(A \cap B) = \frac{1}{6}, \quad P(A) = \frac{1}{2}\ Then\ P\left(\frac{B}{A}\right) = -------$ [ ]

a)1/3 b)2/3 c)4/3 d) None

20) If the occurrence of the event E_2 is not effected by the occurrence or non occurrence of the event E_1 then the event E_2 is said to be ------of E_1[ ]

a) dependent b) independent c) exclusive d) None

21 $If\ \ E1\ and\ E2\ are\ independent\ events\ then\ p(E1 \cap E2) = --$[ ]

a)$P(E_1).P(E_2)$ b) $P(E_1)+P(E_2)$ c) $P(E_1)/P(E_2)$ d) None

22 If E_1 and E_2 are independent events $P\left(\frac{E2}{E1}\right) = ----$ [ ]

a)$P(E_1)$ b) $P(E_2)$ c) φ d) None

23 $If\ A\ and\ B\ are\ two\ events\ such\ that\ P(A) = \frac{1}{3}, P(B) = \frac{1}{4},$

$P(AUB) = \frac{1}{2},\ Then\ P(A \cap B) = ----$ [ ]

a)$\frac{1}{12}$ b)$\frac{2}{12}$ c)$\frac{3}{12}$ d)$\frac{4}{12}$

24 $If\ P(B) = \frac{1}{3}\ then\ P(B') = -------$[ ]

a)$\frac{1}{4}$ b)$\frac{3}{4}$ c)$\frac{2}{3}$ d)None

25 $If\ p(A) = \frac{1}{3}, P(A \cap B) = \frac{1}{12}\ then\ P(A \cap B^C) = ------$ [ ]

$a)\frac{3}{4}$ b)$\frac{1}{4}$ c)$\frac{1}{3}$ d)None

26 $If \quad P(A \cap BC) = \frac{1}{4}, P(B^C) = \frac{3}{4} \; find \; P\left(\frac{A}{B^C}\right) = ------$ [ ]

$a)\frac{3}{4}$ b)$\frac{1}{4}$ c)$\frac{1}{3}$ d)None

27 Two marbles are drawn in succession from a box containing 10 red,30 white ,20 blue and 15 orange marbles with replacement being made after each draw find the probability that both are white----------[ ]

$\frac{4}{25}$ b) $\frac{2}{25}$ c) $\frac{3}{25}$ d) $\frac{1}{25}$

28 Two cards are drawn from a well shuffled pack of 52 cards. Then the probability that they are both aces if the first card is replaced is----------[ ]

$a)\frac{2}{169}$ b) $\frac{3}{169}$ c) $\frac{1}{169}$ d) $\frac{4}{169}$

29 Two cards are drawn from a well shuffled pack of 52 cards. Then the probability that they are both aces if the first card is not replaced is----------[ ]

$a)\frac{2}{221}$ b) $\frac{3}{221}$ c) $\frac{4}{221}$ d) $\frac{1}{221}$

30 Two dice are tossed then the probability of getting sum

of the numbers 12 is –---------- [ ]

$a)\frac{2}{36}$ b)$\frac{1}{36}$ c)$\frac{3}{36}$ d)$\frac{5}{36}$

31 One card is selected at random from 50 cards numbered 1 to 50 then the probability that the number on the card is divisible by 5 [ ]

$a)\frac{1}{5}$ b) $\frac{2}{6}$ c) $\frac{3}{5}$ d) $\frac{4}{5}$

32 One card is selected at random from 50 cards numbered 1 to 50 then the probability that the number on the card is a prime number is ---------- [ ]

$a)\frac{1}{10}$ $b)\frac{2}{10}$ $c)\frac{3}{10}$ $d)None$

33 One card is selected at random from 50 cards numbered 1 to 50 then the probability that the number on the card ends in digit 2 is ---------- [ ]

$a)\frac{1}{10}$ $b)\frac{2}{10}$ $c)\frac{3}{10}$ $d)none$

34 A, B *are two events such that* $P(AUB) = \frac{7}{8}$, $P(A \cap B) = \frac{1}{4}$, $P(A^c) = \frac{5}{8}$ *then* $P(B) = - - - \ - - - - - - - - -$ [ ]

a)$\frac{1}{8}$ $b)\frac{2}{8}$ $c)\frac{6}{8}$ $d)\frac{3}{8}$

35 A, B *are two events such that* $P(A \cap B) = \frac{1}{4}$, $P(B) = \frac{3}{4}$ *then* $P(A^c \cap B) = - - -$ [ ]

$a)\frac{1}{2}$ $b)\frac{2}{8}$ $c)\frac{2}{8}$ $d)\frac{1}{8}$

36 A lot contains 10 good articles ,4 with minor defects and 2 major defects . 2 articles are chosen from the lot at random without replacement then the probability that both are good is ---------- [ ]

$a)\frac{1}{2}$ $b)\frac{2}{8}$ $c)\frac{2}{8}$ $d)\frac{3}{8}$

37 A lot contains 10 good articles ,4 with minor defects and 2 major defects . 2 articles are chosen from the lot at random without replacement then the probability that exactly one is good ---------- [ ]

$a)\frac{1}{2}$ $b)\frac{2}{8}$ $c)\frac{1}{4}$ $d)\frac{3}{8}$

38 The probability of getting equal numbers when two dice are rolled is -------[ ]

$a)\frac{2}{36}$ $b)\frac{3}{36}$ $c)\frac{6}{36}$ d)None

39 One number is selected at random from 1 to 100 then the probability that it is a perfect square [ ]

$a)\frac{1}{10}$ $b)\frac{2}{5}$ $c)\frac{3}{10}$ d)None

40 If a coin is tossed 'n' number of times then the total number of outcomes(exhaustive events) are ---------- [ ]

a)2^{n+1} b)2^{n} c) 2^{n+2} d) None

41 If 'n' dice are rolled at a time then the total number of outcomes(exhaustive events) are ---------- [ ]

a)6^{n} b) 6^{n+1} c) 6^{n+2} d)None

42 The probability that sum 8 appears in a single toss of pair of fair dice is --------- [ ]

a)2/36 b)3/36 c)6/36 d)None

43 The probability that at least one head appears in a four tosses of a fair coin is -------[ ]

a) 15/16 b) 5/16 c) 6/16 d) 3/16

44 The Probability of getting all tails in a 3 tosses of a fair coin is --------- [ ]

a)2/8 b) 3/8 c) 1/8 d) 5/8

45 A class has 10 boys and 5 girls.Three students are selected at random,one after the other Then the probability that first two are boys and third is girl. [ ]

a) 15/91 b) 5/91 c) 6/91 d) 3/91

46 From 25 tickets marked 1 to 25 inclusive one is drawn at random. Find the probability that it is a multiple of 5 or 7 [ ]

a) 5/25 b) 5/15 c) 8/25 d) 11/25

47 In a certain college 25% of boys and 10% of girls are studying Mathematics. the girls constitute 60% of students body. The probability that mathematics is being studied is ---- -- [ ]

a) 4/25 b) 5/25 c) 3/25 d) 6/25

48 Of the three men, the chances that a politician, a businessman and an academician will be appointed as a vice-chancellor of a university are 0.50, 0.30 and 0.20

respetively Probability that research is promoted by these people if they are appointed as V.C are 0.3, 0.7, 0.8 respectively then the probability that research is promoted in the university is ----- [ ]

a)0.52 b) 0.8 c) 0.9 d) 0.65

49 If A and B are mutually exclusive events then P(AUB)=--------- [ ]

a)P(A)+P(B) b) P(A)-P(B) c) P(A)*P(B) d)None

50 Probability is a number lying between ---------- [ ]

a)1 to ∞ b) -∞ to 0 c) 0 and 1 d)None

51 If X is the probability distribution function given by

X	-1	0	1	2	3
f	0.3	0.1	0.1	0.3	0.2

then E(X) is [ ]

a)1 b)0.1 c)0.2 d)1.5

52 Discreate random variables is denoted by [ ]

a)P(x) b)F(x) c)P(x)and f(x) d)M(x)

53 How many types of random variables [ ]

a)1 b)3 c)2 d)4

54 If X is a random variable and K is a constant ,then E(X+K) [ ]

a)E(X) b) E(X)+K c)E(X)-K d)E(X)/K

55 The limiting case of Binomial distribution is [ ]

a)Poisson b)Binomial c)Normal d)none

56 The Mean of the Geometric distribution is [ ]

a)p b)q c)p/q d)None

57 The Mean of the Geometric distribution is [ ]

a)p b)q c)p/q d)None

58 The Mean of the Binomial distribution is [ ]

a)n b)np c)npq d)nq

59 The Variance of the Binomial distribution is [ ]

a)n b)np c)npq d)nq

60 The Standard deviation of the Binomial distribution is [ ]

a)n b)np c)npq d)none

61 $If\ mean\ = 5\ , variance\ = \frac{10}{3}\ of\ a\ binomial\ distribution\ then\ n =$ [ ]

a)0 b)3 c)5 d)7

62 Mean of binomial distribution is 4 and variance is 2 then p= [ ]

a)1/3 b)0.5 c)0.25 d)None

63 If a is the constant then V(a)= [ ]

a)a b) a^2 c) $\sqrt{a}$ d)None

64 Var(X+k)= [ ]

a)Var(X)+k b)Var(X) c)Var(k) d)None

65 Mean and Variance of the binomial distribution are 3,2, then the value of n [ ]

a)1 b)3 c)9 d)None

66 The Distribution in which mean and variance are same [ ]

a)Binomial b)Poisson c)Normal d)None

67 If the variance of a Poisson distribution is 2 then p(x=0)= [ ]

a)0.32 b)0.135 c)0.45 d)None

68 $X\ is\ a\ poisson\ variate\ such\ that\ \frac{5}{6}p(x=4)=p(x=6)\ then\ \mu=$ [ ]

a)1 b)3 c)5 d)7

69 $X\ is\ a\ poisson\ variate\ such\ that\ p(x=3)=p(x=5)\ then\ \mu=$ [ ]

a)$\sqrt{12}$ b)$\sqrt{15}$ c)$\sqrt{24}$ d)None

70

The Variance of the Poisson distribution is [ ]

a)n b)np c)λ d)None

71 The Mean of the poisons distribution is [ ]

a)n b)np c) λ d)None

72 The Poisson distribution follows how many parameters [ ]

a)One b)Two c)Three d)None

74 If the mean of a Poisson distribution is 8,then its variance is [ ]

a)2 b)4 c)8 d)9

75 $X\ is\ a\ Poisson\ variate\ such\ that\ p(x=1)=2\ and\ p(x=2)=1\ then\ \mu=$ [ ]

a)1 b)2 c)3 d)4

76 If probability of defective bolt is 0.1 out of 400 bolts then Variance of the distribution is [ ]

a)40 b)20 c)6 d)None

77 The frequency function of a random variable X is given by $f(x)=cx(2-x), 0\leq x\leq 2$ then c= [ ]

a)1/2 b)1/4 c)3/4 d)None

78 If X has the p.d.f $f(x)= K(1-x^2)$ for $0< x<1$ then the value of K is [ ]

a)2/3 b)1/3 c)3/2 d)None

79 If X is a continuous random variable and y=ax+b then the expected valued of y= [ ]

a)aE(X) b)aE(X)+E(b) c)aE(X)+b d)None

80 The Distribution in which mean , median and mode same [ ]

a)Normal b)Binomial c)Poisson d)None

81 Var(X+k)= [ ]

a)Var(X)+k b)Var(X) c)Var(k) d)None

82 If μ = 5 and σ = 2 and x = 10 then the standard Normal variate is [ ]

a)3 b)0.3 c)2 d)2.5

83 The Standard normal curve area between z = -1 and z = 1 is nearly [ ]

a)0.5 b)0.69 c)0.95 d)None

84 The shape of the normal curve is _____ [ ]

a)Bell Shaped b)Binomial c)Poisson d)None

85 In Normal distribution curve total area value is_____ [ ]

a) 0 b) 1 c) 2 d) 4

86 If X has the p.d.f f(x)= K (1-x^2) for 0< x<1 then the value of K is___ [ ]

a) 2/3 b) 2/3 c) 1/3 d) 3/2

87 A (1.73) + A(0.81) [ ]

a) 0.7492 b) 0.596 c) 0.234 d) 1.235

88 A continuous function X has the probability density function given by $f(x) = cx^2, 0 \leq x \leq 1$ then the value of c is [ ]

a) 1 b) 2 c) 3 d) 4

89 If k is a constant, then Var(K) [ ]

a) 0 b) 1 c) k d) None

90 The mean of Uniform Distribution is_____ [ ]

a) $\frac{1}{b-a}$ b) $\frac{1}{ba}$ c) $\frac{b+a}{2}$ d) None

91 The variance of Uniform Distribution is [ ]

a) $\frac{1}{b-a}$ b) $\frac{1}{ba}$ c) $\frac{b+a}{2}$ d) None

92 The standard deviation of Uniform Distribution is [ ]

$\frac{1}{b-a}$ b) $\frac{1}{ba}$ c) $\frac{b+a}{2}$ d) None

93 If X is a random variable V(X)=2 then V(2X+3)=____ [ ]

a) 2 b) 4 c) 8 d) None

94 The graph of the Normal distribution is symmetric with respect to the line [ ]

a) X=μ b) 0 c) X d) None

95 The mean of Exponential distribution [ ]

a) $\frac{1}{\theta}$ b) $\frac{1}{\theta^2}$ c) θ d) None

96 The variance of Exponential distribution [ ]

a) $\frac{1}{\theta}$ b) $\frac{1}{\theta^2}$ c) θ d) None

97 The standard deviation of Exponential distribution [ ]

a) $\frac{1}{\theta}$ b) $\frac{1}{\theta^2}$ c) θ d) None

98 The mean of the Gamma distribution [ ]

a) 1 b) λ c) λ^2 d) None

99 The variance of the Gamma distribution [ ]

a) 1 b) λ c) λ^2 d) None

100 If X is a normal variate with mean 30 and standard deviation 5 .Find the probabilities that X≥45 is [ ]

a) 0.00135 b) 0.0135 c) 0.135 d) None

102 The totality of the observation is called ----- [ ]

a) Population b) Sample c) Parameter d) None

103 The statistical constants of the population are called ---------- [ ]

a) Statistic b) Parameter c) Sample statistic d) None

104 The probability distribution of a statistic is called ------- [ ]

a) Normal distribution b) Sampling distribution c) Binomial distribution d) None

105 The number of possible samples of size n out of N population units without replacement is---- [ ]

a)N_{C_n} b) N^n c) $\frac{1}{N_{C_n}}$ d) None

106 The number of possible samples of size n out of N population units with replacement is---- [ ]

a)N_{C_n} b) N^n c) $\frac{1}{N_{C_n}}$ d) None

107) The finite population correction factor is ------- [ ]

a) $\frac{N-n}{N-1}$ b) $\frac{N-n}{n-1}$ c) $\frac{N-n}{N+1}$ d) None

108) A population consisting of all real numbers is an example of [ ]

a)an infinite population b) A finite population

c)Population d) None

109) The standard error of the statistic of the sample mean is ------- [ ]

a)$\frac{1}{\sqrt{n}}$ b)$\frac{\sigma}{\sqrt{n}}$ c) $\frac{\sigma^2}{\sqrt{n}}$ d)$\frac{\sigma}{n}$

110) If $\bar{x}$=157,μ=155,$\sigma = 15$ and $n = 36$ then Z is $----$ [ ]

a)0.8 b)0.6 c)0.08 d) None

111) The sample of size 4 has values 25,28,26,25 then variance of the sample is-[ ]

a)2 b) 2.5 c)4.2 d) None

112) The marks of five students in one subject are 45,47,49,61,48 and mean of the population is 52 then t=------ [ ]

a)0.5 b)0.6 c)0.7 d) None

113) If the size of the sample is 5 and size bof the population is 2000. The correction factor is ---- [ ]

a)9.99 b)0.999 c)99.9 d) None

114) Find the value of the finite population correction factor for n=10 and N=100-[ ]

a)9.99 b)0.991 c)99.9 d) None

115) How many different samples of size 2 can be chosen, from a finite population of size 25 ---- [ ]

a)320 b)310 c)300 d)330

116) How many different samples of size 2 can be choosen,from an infinite population of size 5 ---- [ ]

a)25 b)32 c)20 d)10

117) If n= 400 and σ = 2.06 the maximum error with 99% confidence is [ ]

a)0.7377 b)0.8387 c)0.6387 d)0.536

118) If n= 400 and σ = 2.06 the maximum error with 99% confidence is [ ]

a)0.7377 b)0.8387 c)0.6387 d)0.536

119) If n= 25 maximum error is 0.1 then σ is [ ]

a)2.55 b)2.12 c)0.255 d)0.025

120) If n = 81, σ = 4.5, $\overline{x}$ = 32 then 99% confidence interval for mean is [ ]

a) (30.71, 33.29) b) (30.83, 33.16) c) (31.02, 32.98) d) None

121) In a sample of 500 people 300 are rice eaters maximum error with 99% confidence is [ ]

a)0.05 b)0.04 c)0.06 d)0.07

122) A sample of size 64 is taken from a population whose variance is 2 with probability 0.99. then the maximum error is [ ]

a)0.456 b)0.35 c)0.24 d)0.58

123) If the maximum error with probability 0.95 is 1.2 and standard deviation of population is 10, then sample size is [ ]

a)26 b)266 c)267 d) 269

124) If the maximum error with 99% confidence is 0.86 and size of the sample is 144,then the variance of the population is [ ]

a)2 b)4 c)8 d)16

125) A random sample of size 169 was taken from a population whose variance is 25 and mean is 50. Then 99%confidence interval is [ ]

a) (49,51) b) (49,25,50,75) c) (48,50) d) None

126) If we can assert with 95% that the maximum error is 0.5 and p=0.2, then the sample size is [ ]

a)122 b)244 c)256 d)269

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

II-B.Tech– II-SEM (MR 18 Admitted Students)
I MID Examination Subjective Question Bank

Subject: THERMAL ENGINEERING –I (80318)
Name of the faculty: K.BHARRADWAJA

Instructions:

1. All the questions carry equal marks

2. Solve all the questions

Q.No.	Question	Bloom's Taxonomy Level	CO
	MODULE - I		
1.	Explain the working principle of Simple carburetor with neat sketch diagram (understanding)	Understand	**1**
	OR		
2.	Explain the working of a four stroke CI engine and indicate the processes on PV and TS plots (understanding)	Understand	**1**
3.	Differentiate between the SI engine and CI Engine.(Analyzing)	Analyze	**1**
	OR		
4.	Differentiate between the 4-stroke engine and 2-stroke engine. (Analyzing)	Analyze	**1**

	.		
5.	For a petrol engine explain the fuel system with a line diagram..How does it help to control the load variation? (understanding)	Understand	**1**
	OR		
6.	a) What are the assumption in the analysis of Air standard cycles?(Understanding) b) What is a cycle? What is the difference between an ideal and actual cycle? ..	Understand	**1**
7.	Explain about Heat loss factor, Time loss factor, & Exhaust Blow down ? (understanding)	Understanding	**1**
	OR		
8.	What is lubrication, Purpose of lubrication and what are the types of lubrication system and explain any one type of lubrication system with neat sketch diagram. (understanding)	Understanding	**1**
	MODULE - II		
1.	Explain the Normal and Abnormal combustion with neat sketch diagram. (Understanding)	Understanding	**2**
	OR		
2.	Explain the combustion stages of SI engine with help of neat sketch diagram. (understanding	Understanding	**2**

3.	Why is flame speed important? Discuss the factors that affect the flame speed. (Understanding)	Understanding	**2**
OR			
4.	What are the various types of combustion chambers used in SI engines? Explain them briefly. (Understanding)	Understanding	**2**
5.	Explain the effect of various engine variables on SI engine knock. (understanding)	Understanding	**2**
OR			
6.	Explain different stages of combustion in CI Engines with neat sketch diagram. (understanding)	Understanding	**2**
7.	Explain in detail about. (Understanding) a. Pre-ignition b. Auto-ignition c. Detonation	Understanding	**2**
OR			
8.	a))Explain the factors effecting the Detonation (understanding) b) b. Explain the rating SI Engine fuel .	Understanding	**2**

	MODULE – III		
1.	The air flow into a four cylinder, four-stroke oil engine is measured by means of a 5cm diameter orifice having a coefficient of discharge of 0.6. During the test on the engine the following data were recorded. Bore=10cm, stroke=12cm, speed=1200rpm, brake torque= 120Nm, fuel consumption=5 kg/h, calorific value of fuel= 42MJ/kg, pressure drop across orifice is 4.6 cm of water, ambient temperature and pressure are 17^0c and 1 bar respectively. Calculate i) The thermal efficiency on brake power basis ii) Brake mean effective pressure iii) Volumetric efficiency based on free air condition. (Applying) /s.	Apply	**3**
	OR		
2.	A six-cylinder, four-stroke engine gasoline engine having a bore of 90 mm and stroke of 100 mm has a compression ratio 8. The relative efficiency is 60%. When the indicated specific fuel consumption is 3009 g/kWh. Estimate (i) The calorific value of the fuel and (ii) Corresponding fuel consumption given that imep is 8.5 bar and speed is 2500 rpm. (Applying)	Apply	**3**
3.	A 4-cylinder, 4-stroke cycle engine having cylinder diameter 100 mm and stroke 120 mm was tested at 1600 rpm and the following readings were obtained. Fuel consumption = 0.27 litres/minute, Specific gravity fuel = 0.74, B.P. = 31.4 kW, Mechanical efficiency = 80%, Calorific value of fuel = 44000 kJ/kg. Determine : (i) bsfc, (ii) imep, and (iii) Brake thermal efficiency. (Applying)	Apply	**3**
	OR		

4.	Find the air-fuel ratio of a four-stroke, single-cylinder, air-cooled engine with fuel consumption time for 10cc is 20.4sec and air consumption time for $0.1m^3$ is 16.3sec. The load is 17kg at the speed of 3000 rpm. Find also the brake specific fuel consumption in g/KW-hr and brake thermal efficiency. Assume the density of the air as 1.175 kg/m^3 and specific gravity of the	Analyze	**3**

Signature of Faculty Member **Signature of HOD**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
II B.Tech, II-SEM (MR18) 2019-20
MID – I Question Bank

Subject: Thermal Engineering-1
Branch: Mechanical Engineering
Name of the Faculty: Mr.K.Bharadwaja

MULTIPLE CHOICE QUESTIONS

MODULE-I

1 The stroke of an engine is
- A. Volume of cylinder
- B. Length of connecting rod
- C. Internal diameter of cylinder
- D. Distance between dead centers

2 In Otto cycle compression ratio is in the order of
- A. 1-3
- B. 6-9
- C. 12-22
- D. 0

3 The efficiency of Otto cycle depends on
- A. Cut of ratio
- B. Clearance ration
- C. Compression ratio
- D. None of the above

4 The main cause for the irreversibility is
- A. mechanical and fluid friction
- B. unrestricted expansion
- C. heat transfer with a finite temperature difference
- D. All of the above

5 S I Engine Thermal efficiency…….. (nearly)
- A. 25%
- B. 35%
- C. 15%
- D. 55%

6 Scooter engine operates on
- A. 4 stroke Otto cycle
- B. 2 stroke Otto cycle
- C. 4 stroke diesel cycle
- D. 2 stoke diesel cycle

7 For the same power a two stroke engine roughly weighs in compression to a 4 stroke engine
- A. Half
- B. Twice
- C. Same
- D. Thrice

8 Combustion takes place partly at constant volume and partly at constant pressure in
   A. Dual cycle
   B. Otto cycle
   C. Diesel cycle
   D. Carnot cycle
9 Mechanical efficiency of an IC engine is a measure of
   A. Fuel losses
   B. Friction losses
   C. Cooling losses
   D. Exhaust losses
10 For same compression ratio and heat input, the cycle which has maxi um efficiency may be
   A. Diesel cycle
   B. Dual cycle
   C. Otto cycle
   D. None of the above
11 A two stroke engine may be identified by
   A. Oil filter
   B. Size of flywheel
   C. Absence of fuel pump
   D. Absence of valves
12 In diesel engine the air fuel mixture is ignited by
   A. Spark plug
   B. Heat of combustion
   C. High temperature of cylinder walls
   D. High temperature of compressed air
13 In Petrol engine mixing of fuel and air occurs in
   A. Carburetor
   B. Fuel injector
   C. Engine cylinder
   D. None of these
14 An engine in which the combustion of fuel takes place inside the working cylinder is called an internal combustion engine
   A. Diesel engine
   B. Petrol engine
   C. Gasoline engine
   D. All the above
15 Engine cylinder made of
   A. Steel
   B. Cast iron
   C. Aluminum
   D. Nitride alloy steel
16 The volume swept by the piston from T D C to B D C is called
   A. Stroke
   B. Swept volume
   C. Cylinder volume
   D. None
17 Which of these Connects the piston to the small end of the connection rod
   A. Clutch
   B. Gearbox
   C. Gudgeon pin
   D. None of these

18 In diesel engine mixing of fuel and air occur in
   A. Carburetor
   B. Fuel injector
   C. Inlet manifold
   D. Engine cylinder
19 As compression ratio increases, the efficiency of diesel engine
   A. Increases
   B. Decreases
   C. Constant
   D. All the above
20 In Otto cycle heat is rejected at
   A. Const volume
   B. Constant pressure
   C. Adiabatic process
   D. None of these
21 Air standard efficiency of Otto cycle is function of
   A. Suction
   B. Expansion ratio
   C. Compression ratio
   D. Exhaust.
22 Carburetor is used in _ engine to provide air-fuel mixture
   A. S I Engine
   B. CI Engine
   C. Steam engine
   D. Steam turbine
23 Fuel injector is used in _____engine
   A. S I Engine
   B. CI Engine
   C. Steam engine
   D. All the above
24 For system the internal energy plus the product of pressure and volume is called
   A. Work done
   B. Energy
   C. Enthalpy
   D. Mass
25 Connecting rod material
   A. Medium carbon steel
   B. Gray cast iron
   C. Forged steel
   D. Mild steel
26 The constant volume cycle is also called as
   A. Otto cycle
   B. Diesel cycle
   C. Dual cycle
   D. Aitkin cycle
27 The constant pressure cycle is also called as
   A. Otto cycle
   B. Diesel cycle
   C. Dual cycle
   D. At kin cycle
28 Increasing the cut-off ratio in Diesel cycle_____ the efficiency
   A. Increases

B. Constant
C. Decreases
D. None of these

29 More wear and tear, & more noisy in following engine
A. 2 stroke
B. 3 stroke
C. 5 stroke
D. 4 stroke

30 Which of the following cycle has maximum efficiency
A. Carnot cycle
B. Erosion cycle
C. Sterling cycle
D. Rankin cycle

31 Does not requires valves and only ports are opened and closed by piston
A. 3 stroke
B. 5 stroke
C. 4 stroke
D. 2 stroke

32 Area under pressure (P) and volume (v) curve represents.
A. Work transfer
B. Heat transfer
C. Enthalpy
D. Entropy

33 Four strokes of the piston _____ revolution of the crankshaft
A. 1
B. 2
C. 3
D. 8

34 Two strokes of the piston _____ revolution of the crankshaft
A. 1
B. 2
C. 3
D. 8

35 The distance between BDC to TDC is called
A. Length
B. Volume
C. Stroke
D. Clearance

36 More frictional losses the following engine
A. 3 stroke
B. 5 stroke
C. 4 stroke
D. 2 stroke

37 Generally employed in heavy duty vehicles
A. 3 stroke
B. 5 stroke
C. 4 stroke
D. 2 stroke

38 Crank shaft function is
A. Operating the valves
B. House of the engine
C. Transmits power developed

D. None of these

39 A 78 CC engine has following parameter as 78 cc

A. Fuel tank capacity
B. Cylinder volume
C. Stroke volume
D. Area of engine

40 Initial cost is less for following engine

A. SI Engine
B. CI Engine
C. Diesel engine
D. All the above

41 Consumes more lubricating oil with the following engine

A. 3 stroke
B. 5 stroke
C. 4 stroke
D. 2 stroke

42 Inlet valve opens and Exhaust valves closes with the following stroke

A. Power
B. Compression
C. Suction
D. Exhaust

43 Battery ignition system develop source of energy nearly

A. 6 or 12 V
B. 18 V
C. 24 V
D. None of the above

44 Fuel injector is used in _____ engine

A. SI Engine
B. EC Engine
C. Diesel engine
D. All the above

45 Engine cylinder made of

A. Steel
B. Cast iron
C. Aluminum
D. Nitride alloy steel

46 Volumetric efficiency is low in the following type engine

A. 3 stroke
B. 5 stroke
C. 4 stroke
D. 2 stroke

47 The ratio between network done to the heat supplied is called

A. Air standard efficiency
B. Volumetric efficiency
C. Relative efficiency
D. All of the above

48 Standard firing order of a 4 cylinder petrol engine is

A. 1-2-3-4
B. 1-4-3-2
C. 1-3-2-4
D. 1-3-4-2

49 Motor cycles generally have

A. Air cooling
B. Water cooling
C. Liquid cooling
D. Ice cooling

50 Antiknock for diesel engine is
A. Hexadecane
B. Aromatics
C. amyl nitrate
D. None of these

MODULE-II

1 The spark gap is
A. 0.1 to 0.9 mm
B. 0.6 to 1.0 mm
C. 0.3 to 0.7 mm
D. None of these

2 The knocking tendency in SI engine reduces with increasing
A. Compression
B. Wall temperature
C. Engine speed
D. All the above

3 Gas turbine is _____Engine
A. IC
B. EC
C. Neither IC or EC
D. None of these

4 Specific heat of air at constant pressure is _____ KJ/Kg k
A. .717
B. .212
C. 1.005
D. 20.2

5 Absolute zero pressure will occur
A. At sea level
B. At the centre of the earth
C. Under vacuum conditions
D. When the molecular momentum of the system becomes zero

6 Work done in a free expansion process is
A. Positive
B. Negative
C. Zero
D. Maximum

7 Detonation in SI engine can be prevented by
A. Decreasing flame speed
B. Using fuel having short ignition lag
C. Using fuel with lower octane number
D. Reducing the flame travel distance

8 Which of the following is the property of a system
A. Pressure and temperature
B. Internal energy
C. Volume

D. All the above

9 The best possible location for spark plug is

A. Near the inlet valve
B. Near the exhaust valve
C. At the center of cylinder head
D. At float chamber

10 Self ignition of the charge by hot spot in the combustion chamber is

A. Auto ignition
B. Normal ignition
C. Pre ignition
D. None of these

11 Heavy Automobile engines commonly use

A. Water cooling
B. Indirect air cooling
C. Direct air cooling
D. Evaporative cooing

12 Pre ignition in an engine may be detected by

A. Sudden loss of power
B. Increase in speed
C. Typical sound
D. Exhaust temperature

13 Change of the enthalpy of a system is the heat supplied at

A. Constant volume
B. Constant pressure
C. Isothermal process
D. Adiabatic process

14 Ignition lag is large with the fuel having _____self ignition temperature

A. Small
B. Medium
C. Large
D. All the above

15 The knocking tendency of a fuel in SI engine is expressed by _____number

A. Octane
B. Cetane
C. Structural
D. all of the above

16 Large sized engines are generally operated at ___ speed

A. High
B. Medium
C. Low
D. none of these

17 The following has zero cetane number

A. Normal heptanes
B. Alpha methylnaphthalene
C. Cetane
D. Iso-octane

18 Carnot cycle has maximum efficiency for

A. Irreversible engine
B. New engine
C. Petrol engine

D. Reversible engine

19 The rating of C I engine fuel is given by

A. Octane
B. Cetane
C. Structural
D. all of the above

20 By reducing the compression ratio, the knocking tendency in compression ignition engine will

A. Increase
B. Decrease
C. Not take place
D. None of the above

21 In Otto cycle heat is supplied at

A. Constant volume
B. Constant pressure
C. Isothermal process
D. Adiabatic process

22 In Otto cycle heat is rejected at

A. Constant volume
B. Constant pressure
C. Isothermal process
D. Adiabatic process

23 The self ignition temperature of diesel compared to petrol is

A. Higher
B. Lower
C. Same
D. none of the above

24 In an isothermal process

A. There is no change in temperature
B. There is no change in enthalpy
C. There is no change in internal energy
D. All of these

25 Lubrication provided in scooter engines

A. Splash lubrication
B. Forced lubrication
C. Petrol lubrication
D. Ring lubrication

26 The constant volume cycle is also called as

A. Otto cycle
B. Diesel cycle
C. Dual cycle
D. Aitkin cycle

27 The constant pressure cycle is also called as

A. Otto cycle
B. Diesel cycle
C. Dual cycle
D. At kin cycle

28 Diesel cycle efficiency is maximum when the cut off is

A. Increased
B. Decreased
C. Maximum
D. Zero

29 In C I engine, the knocking tendency will reduce when the self ignition temperature of fuel is
A. Low
B. High
C. Not effected
D. None of these
30 Which of the following cycle has maximum efficiency
A. Carnot cycle
B. Erosion cycle
C. Sterling cycle
D. Rankin cycle
31 In CI engine knocking occurs at _____ of combustion
A. Ending
B. Middle
C. Beginning
D. Any where
32 Area under temperature (T) and entropy (s) curve represents.
A. Work transfer
B. Heat transfer
C. Enthalpy
D. Entropy
33 In Four stroke engine cycle completes in _____ revolution of the crankshaft
A. 1
B. 2
C. 3
D. 8
34 In Two stroke engine cycle completes in _____ revolution of the crankshaft
A. 1
B. 2
C. 3
D. 8
35 A 2 stroke diesel engine has
A. 2 valves
B. 3 ports
C. 3 valves
D. No valves
36 In CI engine high combustion chamber wall temperature_____ knocking tendency
A. Ending
B. Reducing
C. Increasing
D. None of these
37 Which of the following is the lightest and most volatile liquid fuel
A. Diesel
B. Kerosene
C. Fuel oil
D. Gasoline
38 A Heat engine utilize the
A. Calorific value of oil
B. Low heat of oil
C. High heat of oil
D. All the above
39 Ignition lag is divided into _____parts

A. One
B. Five
C. Four
D. Two

40 Adding small quantity of ethyl nitrate to diesel fuel will _____delay period
A. Reduces
B. Increases
C. Constant
D. All of the above

41 Detonation or diesel knock in CI engine is caused due to _____delay period
A. Short
B. Very short
C. Medium
D. Long

42 Which part of a carburetor shuts off the air supply to aid cold starting
A. Throttle
B. Strangler
C. Float
D. Needle valve

43 The quantity of petrol air mixture that enter the engine cylinder is regulated by
A. Throttle
B. Strangler
C. Float
D. Needle valve

44 Chemically correct air fuel ratio at normal speed for a petrol engine is
A. 1:12
B. 12:1
C. 15:1
D. 1:15

45 Inlet valve is made of
A. Cast iron
B. Steel
C. Ni-Cr steel
D. Any of them

46 Valves are actuated by
A. Valve rods
B. Crank shaft
C. Crank
D. Cam shaft

47 Fuel air ratio for maximum power of S I engines should be
A. Rich
B. Lean
C. Chemically correct
D. 1 or 2

48 In SI engine required firing order is obtained by installing
A. Carburetor
B. Battery
C. Distributor
D. Ignition coil

49 Method of governing employed in diesel engine
A. Quantity governing
B. Quality governing
C. Hit and miss governing

D. None of the above

50 For petrol engines the method of governing employed is

A. Quantity governing
B. Quality governing
C. Hit and miss governing
D. None of the above

MODULE-III

1 Detonation

A. Occurs in diesel engines
B. Occurs in jet engines
C. Reduced by doping
D. None of these

2 In Diesel cycle compression ratio is in the order of

A. 1-3
B. 6-9
C. 12-22
D. None of these

3 The inlet valve in a 4 stroke IC engine opens

A. After TDc
B. After BDC
C. Before TDC
D. Before BDC

4 A spark plug is used in a

A. Gas engine
B. Steam engine
C. Diesel engine
D. Petrol engine

5 Purpose of injector in a diesel engine is

A. Increasing the supply of fuel
B. Controlling the fuel
C. Atomizing the fuel
D. Cool the fuel pump

6 Bus engine operates on

A. 4 stroke Otto cycle
B. 2 stroke Otto cycle
C. 4 stroke diesel cycle
D. 2 stoke diesel cycle

7 The average piston speed of an IC engine is

A. LN
B. 2LN
C. LN/2
D. LN/4

8 In a six cylinder 4 stroke petrol engine running at 2000 rpm ,The cam shaft runs at

A. 2000 rpm
B. 1000 rpm
C. 500 rpm
D. 0 rpm

9 Thermal efficiency of an IC engine is a measure of

A. Fuel losses

B. Friction losses
C. Cooling losses
D. Exhaust losses

10 Torque is measured by using
A. Rope brake dynamo meter
B. Energy meter
C. Vibration meter
D. None of these

11 A four stroke engine may be identified by
A. Valves
B. Ports
C. 1 or 2
D. None

12 The ratio between break power to indicated power is called
A. Mechanical efficiency
B. Volumetric efficiency
C. Relative efficiency
D. All the above

13 Morse test is used to measure_____ of multi cylinder engine
A. Indicated power
B. Mechanical efficiency
C. Above 1 & 2
D. None of these

14 The ratio BMEP TO IMEP gives
A. Mechanical efficiency
B. Volumetric efficiency
C. Relative efficiency
D. All the above

15 The ratio between fuel consumption per unit time to the indicated power is called
A. Specific fuel consumption
B. Heat supplied
C. Thermal efficiency
D. All the above

16 Morse test is used for multi cylinder S I engine to determine
A. Thermal efficiency
B. Mechanical efficiency
C. Volumetric efficiency
D. Relative efficiency

17 The thermal efficiency of high speed diesel engine is in the order of
A. 20%
B. 35%
C. 50%
D. 70%

18 The difference between Indicated power and Brake Power is known as
A. Friction Power
B. Fuel Power
C. Mechanical Power
D. None of the above

19 Specific fuel consumption is expressed in
A. Kg
B. Kg/kw

C. Kg/kwh
D. Kg/h

20 The units of Brake Power is
A. KW
B. Kg
C. KN
D. None of the above

21 IP is also written as
A. IHP
B. BHP
C. FHP
D. All the above

22 Pre ignition occurs due to
A. Overheated spark plug points
B. Cylinder walls being too hot
C. Red not carbon deposits on the cylinder wall
D. All the above

23 The function of a lubricant in an IC engine is
A. To reduce frictional losses
B. To cool the cylinder and bearings
C. To provide gas tight seal
D. All the above

24 In SI engines, smoke is expected during
A. Start or idling
B. High load working
C. High speed working
D. All the above

25 The most preferred type of carburetor in the car engine is
A. Horizontal type
B. Downward draught type
C. Upward draught type
D. Vertical type

Signature of the HOD **Signature of the faculty**