



JSSC JE

Mechanical Engineering

Mega Mock Test - 1

(June 18th - June 19th 2022)

Questions & Answer Key

Byju's Exam Prep App

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- 1. An adjustable blade propeller turbine is called as _____
 - A. Banki turbine
 - C. Kaplan turbine

- B. Pelton turbine
- D. Francis-Pelton turbine

Ans. C

2. Match the following

	Types of Mechanisms		Motion Achieved
Ρ.	Scott-Russel Mechanism	1.	Intermittent Motion
Q.	Geneva Mechanism	2.	Quick Return
			Mechanism
R.	Off-set slider-crank	3.	Simple Harmonic
	Mechanism		Motion
s.	Scotch Yoke Mechanism	4.	Straight Line Motion

A. P-2 Q-3 R-1 S-4B. P-3 Q-2 R-4 S-1C. P-4 Q-1 R-2 S-3D. P-4 Q-3 R-1 S-2

Ans. C

3. In modern steam generator, the correct path of gases from boiler furnace to chimney is

- A. Economizer, Air preheater, Superheater and Chimney
- B. Boiler furnace, Superheater, Air preheater, Economizer and Chimney
- C. Boiler furnace, Air preheater, Superheater, Economizer and Chimney
- D. Boiler furnace, Superheater, Economizer, Air preheater and Chimney

Ans. D

4. For an air-conditioned space, RTH = 100 kW, RSHF = 0.75, volume flow rate = 100 m³/min, and indoor design specific humidity is 0.01 kg/kg of dry air. What is the specific humidity of the supply air (in kg/kg of dry air)____?

A. 0.010	B. 0.0075
C. 0.005	D. 0.0025

Ans. C

- 5. Fanno line flow is a flow in a constant area duct
 - A. with friction and heat transfer but in the absence of work
 - B. with friction and heat transfer accompanied by work
 - C. with friction but in the absence of heat transfer or work
 - D. without friction but accompanied by heat transfer and work
- Ans. C
- 6. In Taylor's tool life equation $VT^n = C$, the constants *n* and *C* depend upon
 - 1. Work piece material
 - 2. Tool material
 - 3. cutting condition
 - A. 1, 2, and 3 B. 1 and 2 only
 - C. 2 and 3 only D. 1 and 3 only



Ans. A 7. A stone of mass m at the end of a string of length I is whirled in a vertical circle at a constant speed. The tension in the string will be maximum when the stone is A. At the top of the circle B. Half-way down from the top C. Quarter-was down from the top D. At the bottom of the circle Ans. D 8. The density of air at 10 °C and 1 MPa abs, in SI unit is A. 1.231 B. 12.31 C. 118.4 D. 65.0 Ans. B 9. An axially loaded bar is subjected to a normal stress of 173 MPa. The shear stress in the bar is A. 75 MPa B. 86.5 MPa C. 100 MPa D. 122.3 MPa

Ans. B

10. The cross-section of a bar is subjected to an uniaxial tensile stress 'P'. The tangential stress on a plane inclined at θ to the cross-section the bar would be.

A. $\frac{P\sin 2\theta}{2}$	B. P sin 2θ
C. $\frac{P\cos 2\theta}{2}$	D. Ρ cos 2θ

Ans. A

11. A vessel of volume 1 m³ contains oxygen (molecular weight = 32) at P = 1 bar and T=74°C. The mass of oxygen in the vessel is (take universal gas constant as 8314 J/mol-k)

A. 40 kg	B. 3 kg
C. 1.2 kg	D. 1 kg

Ans. C

12. The crippling load for both ends fixed long column is given by_____.

A.
$$\frac{\pi^2 \text{EI}}{\text{I}^2}$$

B. $\frac{\pi^2 \text{EI}}{4/2}$
C. $\frac{4\pi^2 \text{EI}}{/^2}$
D. $\frac{2\pi^2 \text{EI}}{/^2}$

Ans. C

- 13. Stream A of moist air has specific humidity of 0.005 Kg/ Kg of dry air and dry bulb temperature of 25°C. Stream B of moist air has specific humidity of 0.005 Kg/Kg of dry air and dry bulb temperature of 35°C. Then _____.
 - A. Stream A has lower relative humidity and lower dew point temperature
 - B. Stream A has same relative humidity and lower dew point temperature
 - C. Stream A has higher relative humidity and same dew point temperature
 - D. Stream A has lower relative humidity and same dew point temperature



	EXAM
С	
When the workpiece has fine grain structure, tool life will (when compared to	
workpiece having comparatively larger grains).	
A. increase	B. remain the same
C. decrease	D. none of these
C	
Consider the following systems:	
1) An electric heater	
2) A gas turbine	
3) A reciprocating compressor	
The steady flow energy equation can be a	applied to which of the above systems?
A. 1 and 2 only	B. 1 and 3 only
C. 1, 2 and 3	D. 2 and 3 only
C	
In a Morse test on a 2-cylinder, 2-stroke	SI engine, the brake power is 9 kW and the \ensuremath{BHP}
of individual cylinders with spark cutof	f are 4.25 kW and 3.75 kW, respectively. The
mechanical efficiency of the engine is	
A. 90%	B. 80%
C. 52.5%	D. 45.5%
A	
Two links have angular velocity of 20 rad	/s and 15 rad/s both in opposite directions. If the
radius of the pin at O is 10mm, O is poi	nt where two links are connected, determine the
rubbing velocity at the joint?	
A. 0.35 m/s	B. 0.30 m/s
C. 0.20 m/s	D. 0.05 m/s
A	
Cryogenics refers to	
A. refrigeration at low temperature	
B. thermodynamic analysis at low temperature C. engineering field concerned with equipment in the range of -180 $^{\circ}$ c to absolute zero	
C	
In all reversible process, entropy of the s	ystem
A. Increases	B. Decreases
C. zero	D. can be zero, positive or negative
D	
The compression members always tend t	o buckle in the direction of
A. Axis load	B. Perpendicular to the axis of load
C. Minimum cross-section	D. Least radius of gyration
	C When the workpiece has fine grain str workpiece having comparatively larger gr A. increase C. decrease C Consider the following systems: 1) An electric heater 2) A gas turbine 3) A reciprocating compressor The steady flow energy equation can be at A. 1 and 2 only C. 1, 2 and 3 C In a Morse test on a 2-cylinder, 2-stroke of individual cylinders with spark cutof mechanical efficiency of the engine is A. 90% C. 52.5% A Two links have angular velocity of 20 rad radius of the pin at O is 10mm, O is poir rubbing velocity at the joint? A. 0.35 m/s C. 0.20 m/s A Cryogenics refers to A. refrigeration at low temperature B. thermodynamic analysis at low temperature C. engineering field concerned with equip D. Refrigeration under vacuum conditions C In all reversible process, entropy of the s A. Increases C. zero D The compression members always tend t A. Axis load C. Minimum cross-section

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Ans. D

21. Which of the following statement(s) is/are correct?

A. The 2nd Law of Thermodynamics states that there exists no engine with 100% efficiency.

B. The free expansion of gas is reversible process.

C. There exists a process whose sole result is absorption of heat from a reservoir and the complete conversion of the heat into work.

D. None of these.

Ans. A

- 22. For a fixed beam, how many reactions are there at the fixed end?
 - A. 0 B. 1
 - C. 2 D. 3

Ans. D

23. What will be the efficiency of the Carnot's engine that draws 1500 J of heat energy from a reservoir at 420 K and rejects 1000 J of heat during each cycle?

A. 40%	B. 33%
C. 25%	D. 21%

Ans. B

24. The relation between the number of links (L) and number of pairs (P) forming a kinematic chain having only lower pairs is :

A. $L = 2P - 3$	B. L = 2P - 2	
C. $L = 2P - 4$	D. L = 3 – 2P	

Ans. C

25. Match the following, the % of carbon solubility in various form of iron is given below

	1. δ ferrite	a. 0.025%	
	2. γ austenite	b. 2%	
	3. α ferrite	c. 0.008%	
	4. α ferrite at room temperature	d. 0.1 %	
	A. 1-c,2-b,3-a,4-d	B. 1-a,2-c,3	3-b,4-d
C. 1-d,2-b,3-a,4-c		D. 1-a,2-b,3	3-c,4-d

Ans. C

26. The weight percentage of a in iron-carbon diagram in mixture of pearlite and cementite at 0.8% of carbon and 720 °C is ______. (Assume left intercept of tie line is at 0.008 % C)

A. 75	B. 12
C. 28	D. 88

Ans. D

- 27. If the patterns of stream lines is straight and diverging (with respect to time), then the acceleration present will be
 - A. No acceleration B. Tangential acceleration only
 - C. Tangential convective acceleration D. T
- Ans. D

D. Tangential local acceleration



- 28. A beam uniformly loaded is simply supported at ends. The deflection at the centre of the beam is 7mm. If both of the simple supports are replaced by fixed supports the new deflection of the resultant beam is
 - A. 14.0 mmB. 1.40 mmC. 3.50 mmD. 1.75 mm
- Ans. B
- 29. Misrun refers to _____.
 - A. casting defect
 - B. process of fabrication
 - C. process of heat treatment
 - D. weathering of non-ferrous materials
- Ans. A
- 30. The refrigeration load of domestic refrigerator is of the order of
 - A. Less than 0.25 ton B. Between 0.25 ton to 1 ton
 - C. Between 1 to 5 ton D. More than 5 ton
- Ans. A
- 31. Which of the following is not correct regarding throttling process
 - A. heat exchange does not take place
 - B. no work is done by expanding steam
 - C. there is no change in internal energy of the steam
 - D. entropy decreases

Ans. D

32. The P-V diagram of a system undergoing thermodynamics transformation is shown below. The work done by the system in going from $A \rightarrow B \rightarrow C \rightarrow D$ is 50 J. Heat given to the system is 80 J. Find the change in internal energy between A and E is.



- A. 30 J
- C. 50 J

B. 15 J D. Insufficient Data

- Ans. A
- 33. Two identical ball bearings P and Q are operating at loads of 30kN and 90kN respectively. The ratio of life of bearing P to the life of bearing Q is (Consider dynamic capacity is same for both bearing)

A. 27	B. 30
C. 8	D. None of these



34. Consider the following statements with reference to combustion and performance in a four-stroke petrol engine:

1) The auto-ignition temperature of petrol as a fuel is higher than that of diesel oil as a fuel.

2) The highest compression ratio of petrol engines is constrained by the possibility of detonation.

3) A petrol engine is basically less suitable for supercharging than a diesel engine. Which of the above statements are correct?

A. 1 and 2 only	B. 1 and 3 only
C. 2 and 3 only	D. 1, 2 and 3

Ans. D

35. If the value of volumetric strain is 0, then which of the following condition is possible?

A. Poisson Ratio, $\mu = 0.5$	B. $\sigma_x + \sigma_y + \sigma_z = 0$

C. Either (A. or (b) D. None of these

Ans. C

36. A device which increases intensity of pressure by means of hydraulic energy available from large amount of water at low pressure is _____.

- A. Jet pump B. Hydraulic intensifier
- C. Draft tube D. Fluid coupling

Ans. B

- 37. The arc length in arc welding should be equal to
 - A. rod diameter
 - B. 1.5 times of rod diameter
 - C. 3 times of rod diameter
 - D. 4.5 times of rod diameter

Ans. A

38. The float in the carburettor of a petrol engine controls_____.

- A. Flow rate of air
- B. Level of the petrol in the float chamber.
- C. Flow rate of air-fuel mixture
- D. None of these

Ans. B

39. The real gas approaches the ideal gas behavior, when

A. P \rightarrow 0 or T $\rightarrow \infty$	B. P $\rightarrow \infty$ or T $\rightarrow 0$
C. P, T \rightarrow 0	D. P, T $\rightarrow \infty$

- Ans. A
- 40. Angle formed by the flank and a plane at right angles to the drill axis is
 - A. Lip clearance angle B. Rake Angle
 - C. Helix angle D. Point Angle



41. If the velocity of projection is u m/sec and the angle of projection is θ , the maximum height of the projectile on a horizontal plane is

A.
$$\frac{u^{2}\cos^{2}\theta}{2g}$$
B.
$$\frac{u^{2}\sin^{2}\theta}{2g}$$
C.
$$\frac{u^{2}\tan^{2}\theta}{2g}$$
D.
$$\frac{u^{2}\sin^{2}\theta}{g}$$

Ans. B

42. List-1 gives 4 dimensional numbers and List-2 gives types of forces which constitutes this number. match them accordingly:

List-1

- a) Euler Number
- b) Froude number
- c) Mach Number
- d) Weber Number
- List-2
- 1) pressure forces
- 2) Gravity force
- 3) viscous force
- 4) surface tension
- 5) Elastic force
- A. a2-b1-c3-d4 B. a1-b2-c5-d4
- C. a3-b1-c2-d4 D. a2-b3-c4-d1
- Ans. B

43. Find the change in the entropy in the following process 100 gm of ice at 0°C melts when dropped in a bucket of water at 50°C (Assume temperature of water does not change) (Take Latent heat of fusion of water = 80 cal/gm)

A. – 4.5 <i>cal/K</i>	B. + 4.5 <i>cal/K</i>
C. +5.4 <i>cal/K</i>	D. – 5.4 <i>cal/K</i>

Ans. B

44. By what process, maximum hardness is obtained for a component made of steel ?

- A. Cyaniding B. Nitriding
- C. Carburizing D. None of the above
- Ans. B

45. The shear force diagram of a cantilever beam subjected to a bending moment M at the free end will be

A. Straight line along horizontal axis	B. Rectangle
C. Triangle	D. Parabola

- Ans. A
- 46. Degree of freedom for rolling with slipping is?

A. 1	B. 0
C1	D. 2



Ans.	D		
47.	The weight per B.P. of air-cooled engine i	s than that of water-cooled	
	engine.		
	A. greater	B. less	
	C. unpredictable	D. none of the mentioned	
Ans.	В		
48.	Mist lubrication system is used for	stroke cycle engines.	
	A. four	B. two	
	C. unpredictable	D. none of the mentioned	
Ans.	В		
49.	Pitch in bolts is measured		
	A. parallel to the axis of the thread		
	B. perpendicular to the axis of the thread		
	C. along the direction making an angle ed	qual to thread angle	
	D. None of these		
Ans.	А		
50.	A jet propulsion unit with Velocity of jet	: (V _j) 400 m/sec and velocity of vehicle(V ₀) 200	
	m/sec. Find propulsive efficiency?		
	A. 50%	B. 66.66%	
	C. 33.33%	D. None of these	
Ans.	В		
51.	Stirling boiler is an example of which type	e of boiler?	
	A. It is not a boiler	B. Mobile boiler	
	C. Fire tube boiler	D. Water tube boiler	
Ans.	D		
52.	What is the function of Blow down valve of	of a boiler?	
	A. To remove sludge	B. To build sediments	
	C. To remove Flue gas	D. To remove ash	
Ans.	A		
53.	Due to slip of the belt, the velocity ratio of the belt drive		
	A. Decreases	B. Increases	
	C. Does not change	D. None of the above	
Ans.	A		
54.	The velocity ratio for V-belts is up to		
	A. 2:1	B. 4:1	
	C. 7:1	D. 15:1	
Ans.	C		
55.	The following is an automatic clutch which	h is controlled by engine speed	
	A. Cone clutch	B. Centrifugal clutch	
	C. Fluid clutch	D. Dog clutch	



Ans.	В		
56.	Which of the following welding method uses a pool of molten metal?		
	A. Carbon arc welding	B. Submerged arc welding	
	C. TIG arc welding	D. MIG arc welding	
Ans.	В		
57.	Which is not a part of petrol engine?		
	A. Valve mechanism	B. Fuel injector	
	C. Induction coil	D. Air filter	
Ans.	В		
58.	Delta iron exists in the temperature range	e of	
	A. 0°C to 768°C	B. 768°C to 900°C	
	C. 900°C to 1400°C	D. 1400°C to 1530°C	
Ans.	D		
59.	Double block brake is a type of		
	A. Band brake		
	B. Internal expanding shoe brake C. Shoe brake		
	D. None of the above		
Ans.	С		
60.	Closed feedwater heaters are	heat exchangers.	
	A. parallel flow	B. shell-and-tube	
	C. counter flow	D. cross- flow	
Ans.	В		
61.	Which type of compressor is commonly used in a gas turbine plant?		
	A. Reciprocating compressor	B. Screw compressor	
	C. Multistage axial flow compressor	D. Either (A) & (B)	
Ans.	C		
62.	Which Theory of Failure is represented by the following figure?		
	t		



- A. Maximum Principal Stress Theory
- B. Maximum Principal Strain Theory
- C. Maximum Shear Stress Theory
- D. Maximum Strain Energy Theory

Ans. C



63. In velocity compounding, steam is passed through ______. A. fixed nozzle-moving blades-fixed blades-moving blades B. fixed nozzle-moving blades-fixed nozzles-moving blades C. moving blades-fixed nozzles- fixed blades-moving blades D. fixed blades-moving blades-fixed nozzles- moving blades Ans. A 64. For minimum work in a reciprocating compressor, the compression process should be A. adiabatic B. isothermal C. isochoric D. isobar Ans. B 65. For a four-bar linkage in toggle position, the mechanical advantage is _____. A. 0.0 B. 0.5 C. 1.0 D. ∞ Ans. D 66. Octane number of Natural gas is _____ B. 80 A. 110 C. 95 D. 40 Ans. A 67. For circular section, ratio of the maximum to the average shear stress is . A. 1.5 B. 1 C. 2 D. 4/3 Ans. D 68. NPSH is the difference between _____ A. Suction pressure and vapour pressure B. Vapour pressure and suction pressure C. Suction pressure and heat D. Shaft and head Ans. A 69. Centrifugal pumps transport fluids by converting ____ A. Rotational kinetic energy to hydrodynamic energy B. Hydrodynamic energy to kinetic energy C. Mechanical energy to kinetic energy D. Potential energy to Hydrodynamic energy Ans. A 70. In a reaction turbine, the draft tube is used to _____ A. To increase the head of water by an amount that is equal to the height of the runner outlet above the tail race

B. To prevent air to enter the turbine

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- C. To increase pressure energy of water
- D. To transport water to downstream

- 71. Maximum Number of jets, generally, employed in an impulse turbine without jet interference can be?
 - A. 2 B. 3
 - C. 4 D. 6

Ans. D

- 72. Among the following which turbine has least efficiency?
 - A. Pelton turbine B. Kaplan turbine
 - C. Francis turbine D. Propeller turbine

Ans. A

73. To obtain maximum hydraulic efficiency of pelton turbine, blade velocity should be ______ Times the inlet velocity of jet.

D. Thrice

- A. Half B. One quarter
 - C. Twice

Ans. A

- 74. Flow separation is caused by _____.
 - A. Reduction of pressure to vapour pressure
 - B. Reduction of pressure gradient to zero
 - C. An adverse pressure gradient
 - D. The boundary layer thickness reducing to zero

Ans. C

- 75. Which type of lathe is also known as centre lathe_____?
 - A. engine lathe B. bench lathe
 - C. room lathe D. capstan lathe

Ans. A

- 76. Discontinuous chips are formed during machining of ______.
 - A. brittle metals B. ductile metals
 - C. hard metals D. soft metals
- Ans. A
- 77. In the grinding wheel of 60 A 36 G 7 B 23, A stands for _____.
 - A. Type of abrasive B. Grit Size
 - C. Bond type D. Structure
- Ans. A
- 78. Which of the following is the type of pendulum governor?
 - A. Hartnell governor B. Proell governor
 - C. Porter governor D. Watt governor
- Ans. D



79. Which term defines the fluctuation of speed of a flywheel in terms of angular speeds?

A.
$$\frac{2(\omega_1 - \omega_2)}{\omega_1 + \omega_2}$$
B.
$$\frac{2(\omega_1 + \omega_2)}{\omega_1 - \omega_2}$$
C.
$$\frac{\omega_1 + \omega_2}{2(\omega_1 - \omega_2)}$$
D.
$$\frac{\omega_1 - \omega_2}{2(\omega_1 + \omega_2)}$$

Ans. A

80. In powder metallurgy, the sintering of a component is done. Which of the following statements is true regarding sintering?

- A. Increases ductility and density
- B. Increases density and reduces ductility
- C. Decreases density and porosity
- D. Increases density and reduces porosity

Ans. D

- 81. In the expression of dynamic load capacity $P=XVF_r + YF_a$, V stands for ?
 - A. Race rotation factor B. Radial factor
 - C. Thrust factor D. None of the listed

Ans. A

- 82. Permeability is _____.
 - A. the capability of permitting the gas evolved during the molding process
 - B. the property to withstand expansion or contraction of the molten mental
 - C. the capability of molding sand to withstand its own weight.
 - D. the capability to withstand against self-weight and pressure of molten metal.

Ans. A

- 83. The point of contraflexure in case of beams is:-
 - A. The point, where shear force is zero
 - B. The point, where shear force changes its sign
 - C. The point, where bending moment is zero and changes its sign
 - D. The point, where no load acts on the beam.

Ans. C

84. The distance measured along the circumference of the pitch circle from a point on one tooth to the same point on the adjacent tooth is called ______

- A. backlashB. circular pitchC. tooth thicknessD. tooth space
- Ans. B
- 85. What will be the thermal stress developed in a rod having a diameter of 4 cm and length of 2 m. If experiences heating from temperature 50°C to 200°C. The coefficient of thermal expansion is $a = 10 \times 10^{-6}$ /°C and young's modulus is 250 GPa?
 - A. 300 B. 325
 - C. 350 D. 375
- Ans. D



- 86. In Edge dislocation, Burgers vector is _____.
 - A. Perpendicular to the dislocation line
 - B. Parallel to dislocation line
 - C. May be bar or may be parallel depending upon the extent of edge dislocation.
 - D. None of these
- Ans. A
- 87. The resultant upward pressure of the fluid on an immersed body is called
 - A. total force B. buoyancy
 - C. centre of pressure D. None of these
- Ans. B
- 88. Which of the following is the CORRECT bending moment diagram for the cantilever beam carrying uniformly varying load from zero at free and w/unit length at the fixed end?



Ans. D

90. What is the range of efficiency of Rankine cycle in a good steam power station?

A. 15% - 20%	B. 35% - 40%
C. 50% - 60%	D. 90% - 95%

Ans. B

91. The instantaneous centre of rotation of a sliding block on a horizontal surface is located at

- A. The point of contact
- B. centre of gravity of sliding block
- C. Any point along the line of sliding
- D. None of the above

Ans. D



- 92. If velocity potential function exists in a fluid flow, then_____
 - A. Flow may or may not be rotational B. Flow is always irrotational
 - C. Can't say about rotationality D. Flow is always discontinuous

Ans. B

- 93. If poisons ratio of a material is 0.15 then, which of the following relations is true?
 - A. E = 1.2K B. G = 0.913K
 - C. K = 0.838G D. E = 3.20G
- Ans. B

94. The state of stress during deep drawing forming operation of a cup is

A. In the flange of blank, uni-axial compression and in wall of cup, bi-axial tension and compression

B. In the flange of the blank, uni-axial tension and in wall of cup, bi-axial tension and compression

C. In the flange of the blank, bi-axial tension and compression and in the wall of cup, simple uni-axial tension

D. Both flange and wall of the cup will have bi-axial compression and tension

- Ans. C
- 95. The equation of motion of a spring-mass-damper system is given by $\frac{d^2x}{dt^2} + 3\frac{dx}{dt} + 9x = 10\sin(5t)$. The damping factor for the system is A. 0.5 B. 2 C. 0.25 D. 3
- Ans. A
- 96. A liquid flow through a horizontal circular pipe of 2 cm diameter at 4 m/s under laminar condition. The pressure drop across the pipe was observed to be 5 kPa. The Pumping power (in W) required to maintain the flow is given by _____.

A. $\frac{\pi}{2}$	В. п
С. 2п	D. 4п

Ans. C

97. When liquid passes through the divergent portion of venturi-meter then pressure of liquid

A. Increases	B. Decreases
C. Constant	D. Can't determined

Ans. A

98. A Rolling process is done using two roller of diameter 400 mm. The coefficient of friction is0.3. The maximum draft possible (in mm) is

A. 8	B. 4

- C. 18 D. 14
- Ans. C



- 99. The operation in a lathe used for producing a serrated surface is known as _
 - A. Facing B. Parting
 - C. Knurling D. Laping
- Ans. C
- 100. A cantilever beam of length L is loaded as shown in the figure below. What is the total deflection at point B?



Ans. C

101. The enthalpies at various points in a VCRS cycle are given below.

Inlet to	compressor:	100	kJ/kg

Inlet to evaporator: 60 kJ/kg

Exit of compressor: 120 kJ/kg

Calculate the Cop of this cycle.

A. 0.5	B. 1
C. 2	D. 1.5

- Ans. C
- 102. The velocity component in the x and y direction are given by $u = p.xy^2 x^2y$ and $v = xy^2 - \frac{2}{3}y^3$. The value of p for a possible flow field involving an incompressible fluid
 - is _____. A. 2 B. 1
 - C. 3 D. -1
- Ans. A

103. For a root blower which of the following statement is incorrect_____?

A. It has two rotor arranged in parallel axis.

- B. Both rotor rotate opposite to each other.
- C. Lobes of the rotor are of involute profile.
- D. None of the above.

Ans. D

- 104. Which of the following statement is incorrect about reaction steam turbine_____?
 - A. Pressure drop takes place in moving blade only.
 - B. Blade cross section passage is converging type.



- C. All round admission of steam through blade.
- D. More efficient compared to impulse steam turbine.

- 105. What is the kinetic energy of the flywheel after 10 sec, if its mass = 400 kg. radius of gyration = 200 mm and is subjected to a constant torque of 600 N-m.
 - A. 524.8 kJ B. 586.3 kJ
 - C. 642.86 kJ D. 626.27 kJ

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Ans. C
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- 106. Viscosity of a fluid is function of ______.
 - A. cohesion force only
 - B. Molecular momentum transfer only
 - C. Both Adhesion and molecular momentum transfer
 - D. Both cohesion and molecular momentum transfer
- Ans. D
- 107. As per the ASA tool signature, the fourth tool angle is _____.
 - A. Side rake angleB. Side relief angle
 - C. End cutting edge angle D. Side cutting edge angle
- Ans. B
- 108. Which of the following are the advantages of solid fuel injection systems:
 - 1) Simple in construction.
 - 2) Lighter in weight.
 - 3) Lower fuel consumption.
 - 4) Lower initial cost.
 - A. 1, 2 and 3 only B. 2, 3 and 4 only
 - C. 3 and 4 only D. 1, 2, 3 and 4
- Ans. D
- 109. If the efficiency of an air washer 93% and actual drop in DBT is 25°C, then the difference between ideal drop in DBT and actual drop in DBT is ______?
 - A. 1.9°C B. 1.7°C
 - C. 2°C D. 1.5°C
- Ans. A
- 110. The vapour pressure of air at a dry bulb temperature of 27°C is 340 Pa. The atmospheric pressure is 100 KPa. Find the specific humidity.
 - A. 2.12 g vap./kg da B. 2.5 kg vap./kg d.a.
 - C. 3.12 g vap./kg da D. 2.12 kg vap./kg d.a.

Ans. A

- 111. Consider the following statements:
 - 1. The BPF of coil increase as the velocity of air through the coil increases.
 - 2. The BPF of coil decreases as the number of rows in flow direction increases.



- 3. As the bypass factor of cooling coil increase, temperature between air at outlet of coil and coil ADP decreases.
- 4. The BPF of coil increases as the fin pitch increases.
- Which of the above statements are NOT correct _____?
- A. 1, 2 and 3 onlyB. 3 onlyC. 2 and 3 onlyD. 1, 2, 3 and 4
- C. 2 and 3 only D. 1, 2, 3 and 4
- Ans. B

112. An oil of specific gravity 0.9 is contained in a vessel. At a point the height of oil is 40 m. Find the corresponding height of water at that point _____.

A. 46 m	B. 52 m
C. 36 m	D. 42 m

- Ans. C
- 113. If ΔE is energy stored in flywheel and C is coefficient of steadiness, then fluctuation of energy of a flywheel is

Α. C.ΔΕ	B. $\frac{\Delta E}{C}$
C. 2CΔE	D. $\frac{2\Delta E}{C}$

Ans. D

- 114. Consider the following methods regarding preventing interference between gears:
 - 1). Circular pitch should be decreased
 - 2). Number of teeth in gears should be increased
 - 3). Pressure angle should be increased
 - 4). Decreasing the addendum of gear and increasing the same for pinion.

Which of the above methods are correct for preventing interference?

A. 2, 3 and 4	B. 1, 2, 3 and 4

- C. 2 and 3 D. 1, 2 and 4
- Ans. A

115. For a body in equilibrium, the virtual work for externally applied forces should be

- A. Maximum B. Minimum
- C. Zero D. Between zero & one

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Ans. C
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116. A disc of mass 'm' and radius '2R' rolls on a flat surface without slipping. If the velocity of the center of mass of the disc is v, the kinetic energy of the disc is

A. 3/4 mv² B. 1/2 mv²

C. mv ²	D. 5/2mv ²
C. mv ²	D. 5/2mv

Ans. A

117. The dimension of 'a' & 'b' for force expression 'F = at + $bt^{3'}$ is

A. MLT ⁻³ , MLT ⁻⁵	B. MLT ³ , ML ² LT ⁵
C. MLT ⁻¹ , MLT ⁰	D. MLT ⁻³ , MLT ⁻⁴



118. A plane truss ABC is shown in the figure.



The force in the member AB and BC respectively are _____.

A. 100 kN (Tension) & 100 kN (compression)

B. 100 kN (Compression) & 100 kN (Tension)

C. $100\sqrt{2kN}$ (Tension) & 100 kN (Compression)

D. 100kN (Tension) & 100√2kN (Compression)

Ans. B

- 119. In a non-inertial frame of reference, a body is
 - A. accelerated
 - B. decelerated
 - C. moves with uniform velocity
 - D. either accelerated or decelerated

Ans. D

120. A rigid uniform rod AB of mass m and length 3a is hinged at C as shown in the figure. It is supported by springs of springs constant K at the ends. Natural frequency of the system is given by



Ans. D
