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Dated the Kolkata 3rd February, 2026

NOTIFICATION

DISPLAY OF PROVISIONAL ANSWER KEYS TO THE QUESTIONS FOR WRITTEN EXAMINATION FOR RECRUITMENT TO THE POST OF ASSISTANT ENGINEER (MECHANICAL) (ADVT. NO. 14 OF 2025) UNDER KMC HELD ON 01/02/2026 (SUNDAY). [QUESTION BOOKLET CODE: AEMK (Annexed herewith)]

The provisional Answer Keys to the Questions for written examination for recruitment to the post of **Assistant Engineer (Mechanical)** recruitment examination (Advertisement No. 14 of 2025).

The candidates are requested to visit the website and may upload their claims and objections, if any, on the Answer key- options uploaded as follows, in their opinions with worked out solutions / back up calculations / perfect reasoning in support of such difference of opinion. The candidates are required to submit the correct answers with back up documents, if at variance with the provisional Answer Keys as follows in their opinions, indicating Test/ Question Booklet code, Question Booklet number, Roll No. etc., specific for each particular candidate, along with scanned copies of the front page of Question Booklet and the concerned page(s) of the Question Booklet between 5th February, 2026 and 9th February, 2026 by accessing the link provided at www.mscwb.org. **It is to be noted that no claims for correction of provisional Answer Keys will be considered unless the same is submitted with proper worked out back up documents validating such claims by the respective candidate. No claims for correction of Answer Key will be entertained beyond the specified period as mentioned above.**

The claims and objections will not be entertained through any other medium.

Answer Keys to Booklet Code - AEMK

Q No	Answer						
1	D	26	B	51	C	76	B
2	C	27	A	52	A	77	C
3	C	28	D	53	D	78	B
4	B	29	B	54	B	79	C
5	A	30	B	55	D	80	B
6	C	31	C	56	A	81	D
7	D	32	D	57	D	82	C
8	A	33	B	58	B	83	D
9	B	34	A	59	B	84	C
10	B	35	A	60	C	85	A
11	B	36	A	61	B	86	C
12	B	37	B	62	B	87	C
13	C	38	D	63	C	88	C
14	D	39	A	64	D	89	B
15	B	40	B	65	D	90	C
16	C	41	B	66	B	91	B
17	C	42	C	67	A	92	D
18	A	43	B	68	C	93	A
19	D	44	C	69	D	94	C
20	B	45	D	70	C	95	A
21	D	46	B	71	D	96	B
22	C	47	C	72	A	97	D
23	A	48	A	73	B	98	A
24	A	49	B	74	C	99	B
25	B	50	D	75	C	100	C

Annexure: As mentioned.



Deputy Secretary, WBMSC

Deputy Secretary
West Bengal Municipal Service Commission
149, A.J.C. Bose Road, Kolkata-700014

AEMK

2

1. Which of the following pumps is suitable for low discharge and high head?
 - (A) Centrifugal pump
 - (B) Axial flow pump
 - (C) Mixed flow pump
 - (D) Reciprocating pump

2. The hydraulic diameter (D_h) for a non-circular duct is defined as
 - (A) A/P
 - (B) $4P/A$
 - (C) $4A/P$
 - (D) $A/4P$

3. Bernoulli's equation applies to a
 - (A) viscous and compressible flow.
 - (B) turbulent and rotational flow.
 - (C) steady, incompressible and irrotational flow.
 - (D) None of the above

4. In a pipe flow, the head loss across its length is proportional to
 - (A) flow rate
 - (B) (flow rate)²
 - (C) (flow rate)³
 - (D) (flow rate)^{1/2}

5. In the case of a laminar pipe flow, the friction factor depends on
 - (A) Reynolds number only.
 - (B) pipe roughness only.
 - (C) Both (A) and (B)
 - (D) None of the above

6. The degree of reaction for the Parsons turbine is
 - (A) 0%
 - (B) 25%
 - (C) 50%
 - (D) 100%

7. Heat and work are
 - (A) intensive properties
 - (B) extensive properties
 - (C) state functions
 - (D) path functions

8. The ratio of momentum diffusivity to thermal diffusivity is called
 - (A) Prandtl number
 - (B) Nusselt number
 - (C) Biot number
 - (D) Lewis number

9. $Nu = C Re^m Pr^n$ is a typical heat transfer relation for
 - (A) free convection
 - (B) forced convection
 - (C) radiation
 - (D) None of the above

10. With an increase in temperature, the thermal conductivity of pure metal
 - (A) increases
 - (B) decreases
 - (C) remains same
 - (D) None of the above

11. The critical radius of insulation for a sphere is

- (A) k/h
- (B) $2k/h$
- (C) $2h/k$
- (D) h/k

12. For the same values of compression ratio and heat rejection, the correct order of efficiency for Otto, Dual and Diesel cycles is

- (A) $\eta_{\text{Otto}} < \eta_{\text{Dual}} < \eta_{\text{Diesel}}$
- (B) $\eta_{\text{Otto}} > \eta_{\text{Dual}} > \eta_{\text{Diesel}}$
- (C) $\eta_{\text{Diesel}} < \eta_{\text{Dual}} > \eta_{\text{Otto}}$
- (D) None of the above

13. Dew point temperature is the temperature at which condensation begins when the air is cooled at constant

- (A) volume
- (B) entropy
- (C) pressure
- (D) enthalpy

14. If the temperature of a solid changes from 27°C to 627°C , then the emissive power changes at what rate?

- (A) 1 : 6
- (B) 1 : 9
- (C) 1 : 27
- (D) 1 : 81

15. Which of the following is a water tube boiler?

- (A) Lancashire boiler
- (B) Babcock-Wilcox boiler
- (C) Cochran boiler
- (D) Cornish boiler

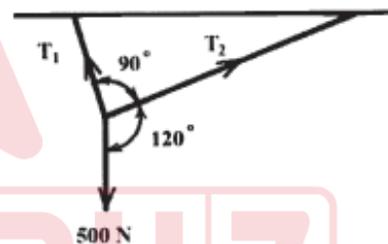
16. The ratio of brake power to the indicated power of the internal combustion engine is

- (A) volumetric efficiency
- (B) thermal efficiency
- (C) mechanical efficiency
- (D) brake efficiency

17. What is the dryness fraction (x) on the saturated vapour line?

- (A) $x = 0$
- (B) $x = 0.5$
- (C) $x = 1$
- (D) None of the above

18. A weight of 500 N is supported by two metallic ropes as shown in the figure. The values of tensions T_1 and T_2 are respectively.



- (A) 433 N and 250 N
- (B) 250 N and 433 N
- (C) 353.5 N and 250 N
- (D) 250 N and 363.5 N

19. A mass m_1 of 100 kg is travelling with a uniform velocity of 5 m/s along a line, which collides with a stationary mass m_2 of 1000 kg. After the collision, both masses travel together with the same velocity. The coefficient of restitution is

- (A) 0.6
- (B) 0.1
- (C) 0.01
- (D) 0

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AEMK

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20. A force applied on a spring, which is a function of spring deformation x (in m) and given by $F = 300x^2$. The energy stored in the spring in case of 0.1 m deformation is

- (A) 0.01 J
- (B) 0.1 J
- (C) 1 J
- (D) 10 J

21. A gas is stored in a cylindrical tank with an inner radius of 7 m and a wall thickness of 50 mm. The gauge pressure of the gas is 2 MPa. The circumferential/hoop stress (in MPa) in the wall is

- (A) 35
- (B) 70
- (C) 140
- (D) 280

22. In a plane stress condition, the components of stress at a point are $\sigma_x = 20$ MPa, $\sigma_y = 80$ MPa, and $\tau_{xy} = 40$ MPa. The maximum shear stress (in MPa) at the point is

- (A) 20
- (B) 25
- (C) 50
- (D) 100

23. A cantilever beam of length L with uniform cross-section and flexural rigidity EI is loaded uniformly by a vertical load w per unit length. The maximum vertical deflection of the beam is given by

(A) $\frac{wL^4}{8EI}$

- (B)
- (C)
- (D)

24. A steel bar of 40 mm \times 40 mm square cross-section is subjected to an axial compressive load of 200 kN. If the length of the bar is 2 m and $E = 200$ GPa, then the elongation of the bar will be

- (A) 1.25 mm
- (B) 2.70 mm
- (C) 4.05 mm
- (D) 5.40 mm

25. Two identical ball bearings, P and Q, are operating at loads of 30 kN and 45 kN, respectively. The ratio of the life of bearing P to the life of bearing Q is

- (A) 81 : 16
- (B) 27 : 8
- (C) 9 : 4
- (D) 3 : 2

26. A circular solid disc of uniform thickness 20 mm, radius 1 m and mass 10 kg, is used as a flywheel. If it rotates at 210 rpm, the kinetic energy of the flywheel, in Joules, is

- (A) 560
- (B) 1210
- (C) 1580
- (D) 3160

27. A particle follows a simple harmonic motion; the acceleration at its mean position is

- (A) zero
- (B) minimum
- (C) maximum
- (D) None of the above

28. The strain energy stored in a body of volume V , when the load is gradually applied, is (σ : stress and E : Modulus of elasticity)

- (A) $\sigma E/V$
- (B) $\sigma V/E$
- (C) $\sigma^2 E/2V$
- (D) $\sigma^2 V/2E$

29. The point of contraflexure is a point where
 (A) shear force changes sign.
 (B) bending moment changes sign.
 (C) shear force is maximum.
 (D) bending moment is maximum.
30. If α denotes lead angle and θ denotes angle of friction, then the efficiency of a screw jack is given by
 (A) $\tan(\alpha + \theta)/\tan \alpha$
 (B) $\tan \alpha/\tan(\alpha + \theta)$
 (C) $\tan(\alpha - \theta)/\tan \alpha$
 (D) $\tan \alpha/\tan(\alpha - \theta)$
31. If a gear has a module of 4 mm, what is its circular pitch?
 (A) 4 mm
 (B) π mm
 (C) 4π mm
 (D) $4/\pi$ mm
32. Which of the following is a spring control governor?
 (A) Harnell governor
 (B) Hartung governor
 (C) Pickering governor
 (D) All of the above
33. When is a brake considered self-energizing?
 (A) When friction opposes the applied force
 (B) When friction helps the applied force to apply the brake
 (C) When no force is needed
 (D) When wear causes locking
34. The equation of free vibration of a system is

$$\frac{d^2x}{dt^2} + 36\pi^2 x = 0$$
 Its natural frequency is
 (A) 3 Hz
 (B) 3π Hz
 (C) 6 Hz
 (D) 6π Hz
35. What does '50' represent in 50 H8/g7?
 (A) Basic size
 (B) Actual size
 (C) Maximum limit of size
 (D) Minimum limit of size
36. A circular shaft is subjected to a bending moment of 600 N-m and a torque of 800 N-m. Its equivalent bending moment is
 (A) 800 N-m
 (B) 1000 N-m
 (C) 1200 N-m
 (D) 1400 N-m
37. A long helical spring having a spring stiffness of 12 kN/m with 20 turns. Break it into two parts, each of 10 turns, to connect them in series. The stiffness of the resulting spring is
 (A) 6 kN/m
 (B) 12 kN/m
 (C) 24 kN/m
 (D) 30 kN/m
38. Which of the following is used to convert a rotational motion into a translation motion?
 (A) Bevel gears
 (B) Double helical gears
 (C) Worm gears
 (D) Rack and pinion gears

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39. A 20° full-depth involute profiled 19-tooth pinion and a 37-tooth gear are in mesh. If the module is 5 mm, then the centre distance between the gear pair is
- (A) 140 mm
(B) 150 mm
(C) 280 mm
(D) 300 mm
40. A 60 mm long and $5\sqrt{2}$ mm maximum thick fillet weld (a corner joint) carries a steady load of 15 kN. The shear strength of the weld material is equal to 200 MPa. The factor of safety is
- (A) 3.5
(B) 4
(C) 4.5
(D) 5
41. The increase in hardness due to cold working, is called
- (A) age hardening
(B) work-hardening
(C) induction hardening
(D) flame hardening
42. Thermit, used in thermit welding, is a mixture of
- (A) charcoal and iron oxide.
(B) charcoal and aluminium.
(C) iron oxide and aluminium.
(D) charcoal, iron oxide and aluminium.
43. In American Standard Association (A-S-A) system, if the tool nomenclature is 8-6-5-5-10-15-2 mm, then the side rake angle will be
- (A) 5°
(B) 6°
(C) 8°
(D) 10°
44. The ratio of the tensile stress developed in the wall of a boiler in the circumferential direction to the tensile stress in the axial direction, is
- (A) 4
(B) 3
(C) 2
(D) 1
45. A bending moment may be defined as
- (A) arithmetic sum of the moments of all the forces on either side of the section.
(B) arithmetic sum of the forces on either side of the section.
(C) arithmetic sum of the forces in a perpendicular section.
(D) algebraic sum of the moments of all the forces on either side of the section.
46. The shape of the bending moment diagram over the length of a beam, carrying a uniformly distributed load is always
- (A) linear
(B) parabolic
(C) cubical
(D) circular
47. A member which is subjected to reversible tensile or compressive stress may fail at a stress lower than the ultimate stress of the material. This property of material is called
- (A) plasticity of the material.
(B) elasticity of the material.
(C) fatigue of the material.
(D) workability of the material.
48. A universal joint is an example of
- (A) Lower pair
(B) Higher pair
(C) Rolling pair
(D) Sliding pair

49. The number of links in pantograph mechanism is equal to
- (A) 5
 - (B) 4
 - (C) 3
 - (D) 2
50. For a governor running at constant speed, the force acting on the sleeve is
- (A) Constant
 - (B) Minimum
 - (C) Maximum
 - (D) Zero
51. Which of the following clutches is positive type?
- (A) Cone
 - (B) Disc
 - (C) Jaw
 - (D) Centrifugal
52. The circle passing through the bottom of the teeth of gear is known as
- (A) Dedendum circle
 - (B) Inner circle
 - (C) Addendum circle
 - (D) Base circle
53. The unit of temperature in S.I. units is
- (A) Centigrade
 - (B) Celsius
 - (C) Fahrenheit
 - (D) Kelvin
54. Which law states that the internal energy of a gas is a function of temperature?
- (A) Charles's law
 - (B) Joule's law
 - (C) Renault's law
 - (D) Boyle's law
55. The more effective way of increasing efficiency of Carnot engine is to
- (A) increase higher temperature.
 - (B) decrease higher temperature.
 - (C) increase lower temperature.
 - (D) decrease lower temperature.
56. For reversible adiabatic process, change in entropy is
- (A) Zero
 - (B) Minimum
 - (C) Maximum
 - (D) Unpredictable
57. Change in enthalpy in a closed system is equal to heat transferred if the reversible process takes place at constant
- (A) Internal energy
 - (B) Volume
 - (C) Temperature
 - (D) Pressure
58. The first law of thermodynamics is the law of
- (A) Conservation of Mass.
 - (B) Conservation of Energy.
 - (C) Conservation of Momentum.
 - (D) Conservation of Heat.

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59. A feeler gauge is used to check
- (A) Radius
 - (B) Thickness of clearance
 - (C) Surface roughness
 - (D) Unsymmetrical shape
60. The least count of a metric vernier caliper having 25 divisions on vernier scale, matching with 24 divisions of main scale (1 main scale division = 0.5 mm) is
- (A) 0.05 mm
 - (B) 0.01 mm
 - (C) 0.02 mm
 - (D) 0.001 mm
61. The square of the standard deviation is also called
- (A) Skewness
 - (B) Variance
 - (C) Medium
 - (D) Mode
62. The material used for coating the electrode is called
- (A) Protective layer
 - (B) Flux
 - (C) Slag
 - (D) Deoxidiser
63. In sand moulding the bottom most part of the flask is called
- (A) Cope
 - (B) Check
 - (C) Drag
 - (D) Flask bottom
64. Hot tear refers to
- (A) weathering of non-ferrous materials.
 - (B) process of heat treatment.
 - (C) process of fabrication.
 - (D) casting defect.
65. The fatigue strength of metal is improved by setting up compressive stresses in the surface by a process known as
- (A) Lancing
 - (B) Spinning
 - (C) Hemming
 - (D) Shot-peening
66. A right hand tool on lathe cuts most efficiently when tool travels
- (A) from left to right end of lathe bed.
 - (B) from right to left end of lathe bed.
 - (C) across bed.
 - (D) at angular position.
67. In spark erosion machining process, the gap between tool and workpiece is filled with
- (A) a liquid dielectric.
 - (B) a photo etchant.
 - (C) brine solution.
 - (D) acid solution.
68. The machining process in which the metal of a workpiece is dissolved into an electrolyte solution is called
- (A) Electro-discharge machining
 - (B) Ultrasonic machining
 - (C) Electro-chemical machining
 - (D) Chemical machining

69. Chips with built up edge can be expected when machining

- (A) Hard material
- (B) Brittle material
- (C) Tough material
- (D) Ductile material

70. Which of the following tool materials has highest cutting speed?

- (A) High Carbon Steel
- (B) High Speed Steel
- (C) Cemented Carbide
- (D) Cast Alloy

71. Turning Tool signatures comprise

- (A) 4 elements
- (B) 5 elements
- (C) 6 elements
- (D) 7 elements

72. A grinding wheel gets glazed due to

- (A) wear of abrasive grains.
- (B) wear of bond.
- (C) breaking of abrasives.
- (D) cracks in wheel.

73. If the intake air temperature of I.C. engine increases, its efficiency will

- (A) increase
- (B) decrease
- (C) remain same
- (D) unpredictable

74. The ratio of absolute viscosity to mass density is known as

- (A) Specific viscosity
- (B) Viscosity index
- (C) Kinematic viscosity
- (D) Coefficient of viscosity

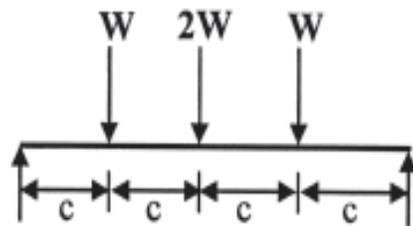
75. A body of weight W is required to move up on rough inclined plane whose angle of inclination with the horizontal is α . The minimum effort applied to the plane is given by

- (A) $P = W \tan \alpha$
- (B) $P = W (\sin \alpha - \mu \cos \alpha)$
- (C) $P = W (\sin \alpha + \mu \cos \alpha)$
- (D) $P = W (\cos \alpha + \mu \sin \alpha)$

76. The deformation of a bar under its own weight as compared to that when subjected to a direct axial load equal to its own weight will be

- (A) the same
- (B) half
- (C) double
- (D) one-fourth

77. A simply supported beam is loaded as shown in the figure. The maximum shear force in the beam will be



- (A) zero
- (B) W
- (C) $2W$
- (D) $4W$

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78. A small sphere of outer area 0.6 m^2 is totally enclosed in a large cubical hall. The shape factor of the hall with respect to sphere is 0.004. The measure of the internal size of the hall is

- (A) 4 m
- (B) 5 m
- (C) 6 m
- (D) 10 m

79. A Carnot engine receiving heat at 400 K has an efficiency of 25%. The COP of a Carnot refrigerator, working between the same temperature limits is

- (A) 1
- (B) 2
- (C) 3
- (D) 4

80. Which of the following welding methods uses a pool of molten metal?

- (A) Carbon arc welding
- (B) Submerged arc welding
- (C) TIG welding
- (D) MIG welding

81. Critical pressure ratio for a convergent-divergent nozzle (symbols having usual meanings) is expressed as

- (A)
- (B)
- (C)
- (D)

82. In a reaction turbine stage enthalpy drop in the stator blades is 4.62 kJ/kg and that in the rotor blades is 2.38 kJ/kg . The degree of reaction of the stage is

- (A) 0.52
- (B) 0.43
- (C) 0.34
- (D) 0.26

83. If G is the centre of gravity, B is the centre of buoyancy and M is the metacentre of a floating body, then the body to be in stable equilibrium

- (A) $MG = 0$
- (B) $BG = 0$
- (C) M is below G
- (D) M is above G

84. Which of the following processes removes maximum amount of material out of a work piece?

- (A) Honing
- (B) Lapping
- (C) Grinding
- (D) Superfinishing

85. Which of the following welding processes uses consumable electrodes?

- (A) MIG
- (B) TIG
- (C) Laser welding
- (D) Thermit welding

86. A refrigerator working on a reversed Carnot cycles has a C.O.P. of 4. If it works as a heat pump and consumes 1 kW, the heating will be

- (A) 1 kW
- (B) 4 kW
- (C) 5 kW
- (D) 6 kW

87. A centrifugal pump gives maximum efficiency when its blades are
- (A) straight
 - (B) bend forward
 - (C) bend backward
 - (D) wave-shaped
88. ABC analysis is used in
- (A) job analysis
 - (B) production schedule
 - (C) inventory control
 - (D) simulation
89. A thermally transparent surface of transmissivity 0.15 receives 2000 kJ/min of radiant heat and reflects back 800 kJ/min out of it. The emissivity of the surface is
- (A) 0.15
 - (B) 0.45
 - (C) 0.55
 - (D) 0.65
90. If the thermal efficiency of Carnot engine is $\frac{1}{5}$, the COP of the corresponding Carnot refrigerator is
- (A) 0.8
 - (B) 2
 - (C) 4
 - (D) 5
91. The relation between the vapour pressure and the enthalpy of vapourization is given by
- (A) Maxwell's equation
 - (B) Clausius Clapeyron equation
 - (C) Energy equation
 - (D) van der Waals' equation
92. If the speed of the engine varies between 390 rpm and 410 rpm in a cycle of operation, the coefficient of fluctuation of speed will be
- (A) 0.01
 - (B) 0.02
 - (C) 0.04
 - (D) 0.05
93. The process of taking away the burnt gases from the combustion chamber in case of an internal combustion engine is known as
- (A) scavenging
 - (B) detonation
 - (C) supercharging
 - (D) polymerization
94. For constant velocity ratio, positive drive with large distance between drive and driven shaft, one should use
- (A) flat belt drive
 - (B) V-belt drive
 - (C) chain drive
 - (D) gear drive
95. For transmitting power, a simple gear train consisting of 9 gears is used. Then the driver and driven shafts will rotate in
- (A) the same direction.
 - (B) opposite direction.
 - (C) same or opposite direction.
 - (D) None of the above
96. The dimensional formula of kinematic viscosity of a fluid is
- (A) LT^{-2}
 - (B) L^2T^{-1}
 - (C) $ML^{-1}T^{-1}$
 - (D) $ML^{-2}T^{-2}$

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AEMK

12

97. An open tank contains 60 cm of water covered with 30 cm of oil of specific gravity 0.8. The pressure intensity at the bottom of the tank is nearly

- (A) 2350 N/m²
- (B) 3530 N/m²
- (C) 5880 N/m²
- (D) 8240 N/m²

98. For a shaft transmitting power P at speed N , the diameter is proportional to

- (A)
- (B)
- (C) $\left(\frac{P}{N}\right)^{\frac{2}{3}}$
- (D) $\left(\frac{P}{N}\right)^3$

99. Which of the following sections will be best in torsion?

- (A) Solid circular
- (B) Hollow circular
- (C) Triangular
- (D) Rectangular

100. Hoop stress set up in a thin cylinder subjected to internal fluid pressure is

- (A) one-fourth of the longitudinal stress.
- (B) half of the longitudinal stress.
- (C) twice the longitudinal stress.
- (D) four times the longitudinal stress.

$$\left(\frac{P}{N}\right)^{\frac{1}{3}}$$

Space for Rough Work



AEMK

14

Space for Rough Work



Space for Rough Work



AEMK

16

Space for Rough Work

