NHPC Mechanical Engineering Placement Paper for Trainee Engineer

1. The chronological order of strokes in a four stroke petrol engine is:

1) Suction stroke, working stroke, compression stroke and exhaust stroke.

2) Suction stroke, compression stroke, working stroke and exhaust stroke.

3) Compression stroke, working stroke, suction stroke and exhaust stroke.

4) Compression stroke, suction stroke, working stroke and exhaust stroke.

2. The enthalpy of steam is defined as:

1) Difference of internal energy and product of pressure and volume.

2) Product of internal energy and pressure.

3) Sum of internal energy and product of pressure and volume.

4) Amount of heat change divided by the absolute temperature.

3. Which of the following operations can be performed using a drilling machine?

A. Reaming

B. Countersinking

C. Spot Facing

D. Thread tapping

1] Only A, B and D

2] Only B, C and D

3] Only A, B and C

4] All of these

4. Which of the following are the advantages of impulse turbine over reaction turbines?

A. Occupies less space per unit power.

B. Compounding is not necessary for speed reduction as the rotor speeds are usually

low.

C. Suitable for high power generation.

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1] B and C only

2] A only

3] C only

4] A and C only

5. In PERT analysis a critical activity has

A) maximum Float

B) zero Float

C) maximum Cost

D) minimum Cost

Answer : (B)

6. Environment friendly refrigerant R134a is used in the new generation domestic refrigerators. Its chemical formula is

A) CH C1 F2

B) C2 C13 F3

C) C2 C12 F4

D) C2 H2 F4

Answer : (D)

7. The S-N curve for steel becomes asymptotic nearly at

A) 103 cycles

B) 104 cycles

C) 106 cycles

D) 109 cycles

Answer : (C)

8. In a rolling process, sheet of 25 mm thickness is rolled to 20 mm thickness. Roll is of diameter 600 mm and it rotates at 100 rpm. The roll strip contact length will be

A) 5 mm

B) 39 mm

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C) 78mm

D) 120mm

Answer : (A)

9. Stokes theorem connects

A) a line integral and a surface integral

B) a surface integral and a volume integral

C) a line integral and a volume integral

D) gradient of a function and its surface integral

Answer : (A)

10. When the temperature of a solid metal increases,

A) strength of the metal decreaes but ductility increases

B) both strength and ductility of the metal decrease

C) both strength and ductility of the metal increase

D) strength of the metal increases but ductility decreases

Answer : (A)

11. In a machining operation, doubling the cutting speed reduces the tool life to 1/8 of the original value. The exponent n in Taylor

A) 1/8

B) 1/4

C) 1/3

D) 1/2

Answer : (C)

12. In a rolling process, sheet of 25 mm thickness is rolled to 20 mm thickness. Roll is of diameter 600 mm and it rotates at 100 rpm. The roll strip contact length will be

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D) 120 mm

Answer : (A)

13. Which of the following statements is INCORRECT?

(A) Grashof's rule states that for a planar crank-rocker four bar mechanism, the sum of the shortest and longest link lengths cannot be less than the sum of the remaining two link lengths.

(B) Inversions of a mechanism are created by fixing different links one at a time.

(C) Geneva mechanism is an intermittent motion device

(D) Gruebler's criterion assumes mobility of a planar mechanism to be one.

14. Tooth interference in an external involute spur gear pair can be reduced by

(A) decreasing center distance between gear pair

(B) decreasing module

(C) decreasing pressure angle

(D) increasing number of gear teeth

15. One kilogram of water at room temperature is brought into contact with a high temperature thermal reservoir. The entropy change of the universe is

(A) equal to entropy change of the reservoir

(B) equal to entropy change of water

(C) equal to zero

(D) always positive

16. Little's law is relationship between

(A) stock level and lead time in an inventory system

(B) waiting time and length of the queue in a queuing system

(C) number of machines and job due dates in a scheduling problem

(D) uncertainty in the activity time and project completion time

17. Simplex method of solving linear programming problem uses

(A) all the points in the feasible region

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(B) only the corner points of the feasible region

(C) intermediate points within the infeasible region

(D) only the interior points in the feasible region.

18. During the execution of a CNC part program block NO20 GO2 X45.0 Y25.0 R5.0 the type of tool motion will be

A) circular Interpolation — clockwise

B) circular Interpolation — counterclockwise

C) linear Interpolation

D) rapid feed

Answer : (A)

19. A cycle consisting of one constant pressure, one constant volume and two isentropic processes is known as

A. Carnot cycle

B. Stirling cycle

C. Otto cycle

D. Diesel cycle

20. The efficiency and work ratio of a simple gas turbine cycle are

A. low

B. very low

C. high

D. very high

21. The amount of heat required to raise the temperature of the unit mass of gas through one degree at constant volume, is called

A. specific heat at constant volume

B. specific heat at constant pressure

C. kilo Joule

D. none of these

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22. Segmental chips are formed during machining

A. mild steel

B. cast iron

C. high speed steel

D. high carbon steel

23. If the diameter of the hole is subject to considerable variation, then for locating in jigs and fixtures, the pressure type of locator used is

A. conical locator

B. cylindrical locator

C. diamond pin locator

D. vee locator

24. Internal gears can be made by

A. hobbing

B. shaping with pinion cutter

C. shaping with rack cutter

D. milling

25. The value of bulk modulus of a fluid is required to determine

A. Reynold's number

B. Froude's number

C. Mach number

D. Euler's number

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