

MIZORAM PUBLIC SERVICE
COMMISSION

*Technical Competitive Examinations for
Recruitment to the post of
Inspector of Legal Metrology
under Food, Civil Supplies & Consumer
Affairs Department*

Time Allowed : 2 hours
Full Marks : 150

Mechanical Engineering Paper-II

INVIGILATOR

CENTRE SUPERINTENDENT

Date of Exam. : 26/03/2010

Instructions to candidates:

- Enter your Roll No. in the box provided on the front page.
- Attempt all the questions.
- Each question is followed by probable answers. Choose the appropriate answer and mark it by putting '✓' mark on the corresponding box.
- If more than one answer boxes are marked for a question, the answer will be treated as wrong.
- On completion, you are to submit the booklet to the Invigilator.

Code Number :
(For Official Use)

Marks Obtained :

Examiner

Scrutiniser

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1. Hooke's Law holds good upto

- | | | | |
|-------------------------|--------------------------|------------------------------------|--------------------------|
| (a) yield point | <input type="checkbox"/> | (b) limit of proportionality | <input type="checkbox"/> |
| (c) elastic limit | <input type="checkbox"/> | (d) plastic limit | <input type="checkbox"/> |

2. The unit of Young's modulus is

- | | | | |
|----------------------------------|--------------------------|----------------------------------|--------------------------|
| (a) Newton..... | <input type="checkbox"/> | (b) Newton/mm ² | <input type="checkbox"/> |
| (c) Newton/cm ² | <input type="checkbox"/> | (d) Newton-cm ² | <input type="checkbox"/> |

3. The materials having same elastic properties in all directions are called

- | | | | |
|----------------------------|--------------------------|-------------------------------|--------------------------|
| (a) ideal materials | <input type="checkbox"/> | (b) isotropic materials | <input type="checkbox"/> |
| (c) elastic materials..... | <input type="checkbox"/> | (d) uniform materials | <input type="checkbox"/> |

4. Modulus of rigidity is defined as the ratio of

- | | |
|---|--------------------------|
| (a) longitudinal stress and longitudinal strain | <input type="checkbox"/> |
| (b) volumetric stress and volumetric strain | <input type="checkbox"/> |
| (c) lateral stress and lateral strain | <input type="checkbox"/> |
| (d) shear stress and shear strain | <input type="checkbox"/> |

5. The impact strength of a material is an index of its

- | | | | |
|---------------------|--------------------------|----------------------------|--------------------------|
| (a) toughness | <input type="checkbox"/> | (b) tensile strength | <input type="checkbox"/> |
| (c) hardness | <input type="checkbox"/> | (d) fatigue strength | <input type="checkbox"/> |

6. Which of the following has no unit?

- | | | | |
|-------------------------------|--------------------------|---------------------------|--------------------------|
| (a) Kinematic viscosity | <input type="checkbox"/> | (b) Surface tension | <input type="checkbox"/> |
| (c) Strain | <input type="checkbox"/> | (d) Elasticity | <input type="checkbox"/> |

7. The property of a material by virtue of which a body returns to its original shape after removal of the load is called

- | | | | |
|---------------------|--------------------------|------------------------|--------------------------|
| (a) plasticity..... | <input type="checkbox"/> | (b) elasticity | <input type="checkbox"/> |
| (c) ductility | <input type="checkbox"/> | (d) malleability | <input type="checkbox"/> |

8. For which material is the Poisson's ratio more than unity?

- | | | | |
|---------------------|--------------------------|------------------------|--------------------------|
| (a) Steel..... | <input type="checkbox"/> | (b) Copper | <input type="checkbox"/> |
| (c) Cast iron | <input type="checkbox"/> | (d) None of them | <input type="checkbox"/> |

9. The maximum strain energy that can be stored in a body is known as

- | | | | |
|----------------------------|--------------------------|----------------------|--------------------------|
| (a) impact energy | <input type="checkbox"/> | (b) resilience | <input type="checkbox"/> |
| (c) proof resilience | <input type="checkbox"/> | (d) toughness | <input type="checkbox"/> |

10. A beam is loaded as cantilever. If the load at the end is increased, the failure will occur
- (a) in the middle (b) at the tip below the load
(c) at the support (d) none of them
11. Moment of inertia of an area will be least with respect to
- (a) horizontal axis (b) vertical axis
(c) central axis (d) bottom most axis
12. Twisting couple in a shaft introduces in it
- (a) bending moment (b) deflection
(c) shear stress (d) shean strain
13. A cylindrical section having no joint is known as
- (a) homogeneous section (b) perfect section
(c) seamless section (d) none of them
14. Pressure vessels are not made of rectangular shape because it is
- (a) difficult to fabricate (b) not economical
(c) not pleasing in apprearance (d) none of them
15. A cylindrical ban of L metre length deforms by l cm. The strain in the bar is
- (a) $\frac{l}{L}$ (b) $\frac{0.1l}{L}$
(c) $\frac{0.01l}{L}$ (d) $\frac{10l}{L}$
16. A structural member subjected to an axial compressive force is called
- (a) beam (b) column
(c) strut (d) none of them
17. The point of contra-flexure occurs only in
- (a) cantilever beams (b) overhanging beams
(c) simply supported beams (d) none of them
18. In a laminated spring the strips are provided in different lengths for
- (a) equal distribution of stress (b) light weight
(c) ease in installing (d) none of them

19. In a thick cylinder along the thickness of the cylinder

- (a) both hoop and longitudinal stresses vary considerably
- (b) longitudinal stress is constant and hoop stress varies considerably
- (c) hoop stress is constant and longitudinal stress varies considerably
- (d) hoop and longitudinal stress are constant

20. The design of thin cylindrical shells is based on

- (a) hoop stress
- (b) longitudinal stress
- (c) volumetric stress
- (d) none of them

21. Stress in a beam and the second modulus are

- (a) directly proportional
- (b) inversely proportional
- (c) curvilinearly related
- (d) none of them

22. On the planes having maximum or minimum principal stresses, the tangential stress will be

- (a) minimum
- (b) maximum
- (c) zero
- (d) infinity

23. The planes of minimum shear stress with reference to principal planes are located at

- (a) 0°
- (b) $22\frac{1}{2}^\circ$
- (c) 45°
- (d) 90°

24. The ratio of hoop stress to longitudinal stress in thin walled cylinders is

- (a) 1
- (b) 2
- (c) $\frac{1}{2}$
- (d) $\frac{1}{4}$

25. The value of shear stress induced in a shaft due to applied torque is

- (a) uniform throughout
- (b) zero at circumference and maximum at centre
- (c) zero at centre and maximum at circumference
- (d) none of them

26. The value of moment of inertia for a solid shaft of diameter d is equal to

- (a) $\frac{\pi d^4}{32}$
- (b) $\frac{\pi d^4}{64}$
- (c) $\frac{\pi d^4}{16}$
- (d) $\frac{\pi d^4}{48}$

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

- | | | | |
|------------------------|--------------------------|------------------------|--------------------------|
| (a) higher pair | <input type="checkbox"/> | (b) lower pair | <input type="checkbox"/> |
| (c) surface pair | <input type="checkbox"/> | (d) rolling pair | <input type="checkbox"/> |

28. Pulley in a belt drive acts as

- | | | | |
|----------------------------|--------------------------|------------------------|--------------------------|
| (a) cylindrical pair | <input type="checkbox"/> | (b) rolling pair | <input type="checkbox"/> |
| (c) sliding pair | <input type="checkbox"/> | (d) surface pair | <input type="checkbox"/> |

29. Any point on a link connecting double slider crank chain will trace a

- | | | | |
|-------------------------|--------------------------|--------------------|--------------------------|
| (a) straight line | <input type="checkbox"/> | (b) circle | <input type="checkbox"/> |
| (c) ellipse | <input type="checkbox"/> | (d) parabola | <input type="checkbox"/> |

30. Rectilinear motion of piston is converted into rotary motion by

- | | | | |
|--------------------------|--------------------------|------------------------------------|--------------------------|
| (a) cross head | <input type="checkbox"/> | (b) slider crank | <input type="checkbox"/> |
| (c) connecting rod | <input type="checkbox"/> | (d) four bar chain mechanism | <input type="checkbox"/> |

31. Automobile steering gear is an example of a

- | | | | |
|------------------------|--------------------------|-----------------------|--------------------------|
| (a) higher pair | <input type="checkbox"/> | (b) lower pair | <input type="checkbox"/> |
| (c) sliding pair | <input type="checkbox"/> | (d) rotary pair | <input type="checkbox"/> |

32. A mechanism is an assemblage of

- | | | | |
|--|--------------------------|------------------------|--------------------------|
| (a) two links | <input type="checkbox"/> | (b) three links | <input type="checkbox"/> |
| (c) four links or more than four links | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

33. A slider crank chain consists of the following numbers of turning and sliding pairs

- | | | | |
|----------------|--------------------------|----------------|--------------------------|
| (a) 1, 3 | <input type="checkbox"/> | (b) 2, 2 | <input type="checkbox"/> |
| (c) 3, 1 | <input type="checkbox"/> | (d) 4, 1 | <input type="checkbox"/> |

34. The type of coupling used to join two shafts whose axes are neither in same straight line nor parallel but intersect is

- | | | | |
|-----------------------------|--------------------------|------------------------------|--------------------------|
| (a) flexible coupling | <input type="checkbox"/> | (b) universal coupling | <input type="checkbox"/> |
| (c) chain coupling | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

35. The Hooke's joint consists of

- | | | | |
|-----------------------|--------------------------|----------------------|--------------------------|
| (a) two forks | <input type="checkbox"/> | (b) one fork | <input type="checkbox"/> |
| (c) three forks | <input type="checkbox"/> | (d) four forks | <input type="checkbox"/> |

36. Idler pulley is used for

- (a) changing the direction of motion of the belt
- (b) applying tension
- (c) increasing velocity ratio
- (d) none of them

37. Creep in belt drive is due to

- (a) material of pulley
- (b) material of belt
- (c) expansion of belt
- (d) uneven extensions and contractions due to varying tension

38. In a gear drive, module is equal to

- (a) $\frac{1}{\text{diametrical pitch}}$
- (b) $\frac{1}{\text{circular pitch}}$
- (c) $\frac{\pi}{\text{diametrical pitch}}$
- (d) $\frac{\pi}{\text{circular pitch}}$

39. If D_1 and D_2 are the diameters of driver and driven pulleys, then belt speed is proportional to

- (a) $\frac{D_1}{D_2}$
- (b) $\frac{D_2}{D_1}$
- (c) $D_1 \times D_2$
- (d) D_1

40. If the opposite links of a four bar linkage are equal, the links will always form a

- (a) triangle
- (b) rectangle
- (c) parallelogram
- (d) pentagon

41. In its simplest form, a cam mechanism consists of the following number of links

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

42. Which of the following mechanism produces mathematically an exact straight line motion?

- (a) Peaucellier's mechanism
- (b) Grasshopper mechanism
- (c) Watt mechanism
- (d) none of them

43. The following is the inversion of slider crank chain mechanism

- (a) Whitworth quick return mechanism ...
- (b) Hand pump
- (c) Oscillating cylinder engine
- (d) All of them

44. A Kinematic chain requires of least

- (a) 2 links and 3 turning pairs (b) 3 links and 4 turning pairs
(c) 4 links and 4 turning pairs (d) none of them

45. In Simple Harmonic Motion, the velocity vector with respect to displacement vector

- (a) leads by 90° (b) lags by 90°
(c) leads by 180° (d) none of them

46. In a rigid link OA , velocity of A with respect to O will be

- (a) parallel to OA (b) perpendicular to OA
(c) 45° to OA (d) none of them

47. Corioli's component is encountered in

- (a) quick return mechanism of shaper (b) four bar chain mechanism
(c) slider crank mechanism (d) none of them

48. Klein's construction gives a graphical construction for

- (a) slider-crank mechanism (b) velocity polygon
(c) acceleration polygon (d) four bar chain mechanism

49. Cam size depends upon

- (a) base circle (b) pitch circle
(c) prime circle (d) outer circle

50. Rope brake dynamometer uses

- (a) oil as lubricant (b) water as lubricant
(c) grease as lubricant (d) no lubricant required

51. The radius of gyration of a disc type flywheel of diameter D is

- (a) $\frac{D}{4}$ (b) $\frac{D}{2}$
(c) $\frac{D}{3}$ (d) $\frac{D}{6}$

52. In the rim type of flywheel, the major mass is

- (a) concentrated around the periphery (b) concentrated at the centre
(c) balanced by centripetal forces (d) none of them

53. For the same lift of sleeve, range of speed of Proell governor as compared to Porter government is
(a) less (b) more
(c) equal (d) double
54. For a governor running at constant speed, the force acting on the sleeve is
(a) constant (b) minimum
(c) maximum (d) zero
55. Hartnell governor could be classified under the head of
(a) inertia type governor (b) pendulum type governor
(c) centrifugal type governor (d) none of them
56. Which of the following does not change with the conditions of the mating gears?
(a) Pitch circle diameter (b) Base circle
(c) Pressure angle (d) none of them
57. The circle passing through the bottom of the teeth of gear is known as
(a) inner circle (b) prime circle
(c) addendum circle (d) dedendum circle
58. In an involute gear, the normal to the involute is tangent to the
(a) pitch circle (b) base circle
(c) addendum circle (d) dedendum circle
59. The transverse section of a helical gear is identical to
(a) bevel gear (b) spur gear
(c) worm gear (d) none of them
60. Bevel gears are used to transmit rotary motion between two shafts whose axes are
(a) parallel (b) non-intersecting
(c) non-coplanar (d) none of them
61. Guest's theory of failure is applicable for the following type of materials
(a) brittle (b) ductile
(c) elastic (d) plastic
62. Rankine's theory of failure is applicable for the following type of materials
(a) brittle (b) ductile
(c) elastic (d) plastic

63. Brittle coating technique is used for

- (a) determining brittleness (b) protecting metal against corrosion
(c) non-destructive testing of metals (d) experimental stress analysis

64. Which of the following is not the correct procedure to increase the fatigue limit?

- (a) Cold working (b) Surface decarburisation
(c) Shot peening (d) None of them

65. Cold working

- (a) increases the fatigue strength (b) decreases the fatigue strength
(c) fatigue strength remains constant (d) none of them

66. Yield point in fatigue loading as compared to static loading is

- (a) same (b) higher
(c) lower (d) none of them

67. For steel the ultimate strength in shear as compared to ultimate strength in tension is

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

68. The crest diameter of a screw thread is same as

- (a) major diameter (b) minor diameter
(c) pitch diameter (d) core diameter

69. The maximum principal stress theory is applicable for

- (a) ductile material (b) brittle material
(c) elastic material (d) none of them

70. The included angle in Acme threads is

- (a) 60° (b) 35°
(c) 90° (d) 29°

71. Buttress threads are usually found on

- (a) screw cutting lathes (b) feed mechanism
(c) screw Jack (d) railway carriage couplings

72. A key made from a cylindrical disc having segmental cross-section is known as
(a) wood-ruff key (b) feather key
(c) flat saddle key (d) gib head key
73. If threads on a bolt are left hand, threads on nut will be
(a) right hand with same pitch (b) left hand with same pitch
(c) could be left hand or right hand (d) none of them
74. Applications in which stresses are encountered in one direction only uses the following type of threads
(a) metric (b) buttress
(c) square (d) acme
75. The valve rod in a steam engine is connected to an eccentric rod by
(a) cotter joint (b) bolted joint
(c) knuckle joint (d) universal coupling
76. Taper on the cotter and slot is provided on
(a) both sides (b) one side only
(c) any side (d) none of them
77. When a nut is tightened by placing a washer below it, the bolt will be subjected to the following type of loads
(a) compression (b) tension
(c) shear (d) none of them
78. Which of the following pipe joints would be suitable for pipes carrying steam?
(a) flanged (b) threaded
(c) expansion (d) compression
79. When a close coiled helical spring is compressed, its wire is subjected to
(a) tension (b) shear
(c) compression (d) none of them
80. If two spring are in parallel then their overall stiffness will be
(a) half (b) double
(c) same (d) none of them
81. In case of ball bearings, which part is made harder than others?
(a) Ball (b) Outer race
(c) Inner race (d) All are made equally hard

82. Anti friction bearings are

- | | | | |
|--------------------------|--------------------------|--------------------------------|--------------------------|
| (a) sleeve bearing | <input type="checkbox"/> | (b) full journal bearing | <input type="checkbox"/> |
| (c) collar bearing | <input type="checkbox"/> | (d) needle bearing | <input type="checkbox"/> |

83. The backlash required for spur gears depends on

- | | | | |
|-------------------------|--------------------------|---|--------------------------|
| (a) module | <input type="checkbox"/> | (b) pitch line velocity | <input type="checkbox"/> |
| (c) tooth profile | <input type="checkbox"/> | (d) both module and pitch line velocity ... | <input type="checkbox"/> |

84. Zero axial thrust is experienced in

- | | | | |
|-------------------------|--------------------------|-----------------------------|--------------------------|
| (a) helical gears | <input type="checkbox"/> | (b) bevel gears | <input type="checkbox"/> |
| (c) worm gears | <input type="checkbox"/> | (d) herringbone gears | <input type="checkbox"/> |

85. In an involute gear, the base circle must be

- | | | | |
|-----------------------------|--------------------------|-----------------------------|--------------------------|
| (a) at root circle | <input type="checkbox"/> | (b) under root circle | <input type="checkbox"/> |
| (c) above root circle | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

86. The ability of a material to resist softening at high temperature is known as

- | | | | |
|------------------------|--------------------------|-------------------------|--------------------------|
| (a) creep | <input type="checkbox"/> | (b) hot tempering | <input type="checkbox"/> |
| (c) hot handness | <input type="checkbox"/> | (d) fatigue | <input type="checkbox"/> |

87. The elastic stress strain behaviour of rubber is

- | | | | |
|-------------------|--------------------------|------------------------|--------------------------|
| (a) linear | <input type="checkbox"/> | (b) non linear | <input type="checkbox"/> |
| (c) plastic | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

88. Delta iron occurs

- | | | | |
|-------------------------------------|--------------------------|-------------------------------|--------------------------|
| (a) at room temperature | <input type="checkbox"/> | (b) above melting point | <input type="checkbox"/> |
| (c) between 1400°C and 1539°C | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

89. The crystal of alpha iron is

- | | | | |
|----------------------------------|--------------------------|------------------------------|--------------------------|
| (a) body centred cubic | <input type="checkbox"/> | (b) face centred cubic | <input type="checkbox"/> |
| (c) hexagonal close packed | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

90. The crystal structure of gamma iron is

- | | | | |
|----------------------------------|--------------------------|------------------------------|--------------------------|
| (a) body centred cubic | <input type="checkbox"/> | (b) face centred cubic | <input type="checkbox"/> |
| (c) hexagonal close packed | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

91. In grey cast iron, carbon is present in the form of

- | | | | |
|---------------------|--------------------------|-----------------------|--------------------------|
| (a) cementite | <input type="checkbox"/> | (b) free carbon | <input type="checkbox"/> |
| (c) flakes | <input type="checkbox"/> | (d) spheroids | <input type="checkbox"/> |

92. In nodular iron, graphite is in the form of

- | | | | |
|---------------------|--------------------------|-----------------------|--------------------------|
| (a) cementite | <input type="checkbox"/> | (b) free carbon | <input type="checkbox"/> |
| (c) flakes | <input type="checkbox"/> | (d) spheroids | <input type="checkbox"/> |

93. In malleable iron, carbon is present in the form of

- | | | | |
|---------------------|--------------------------|--|--------------------------|
| (a) cementite | <input type="checkbox"/> | (b) free carbon | <input type="checkbox"/> |
| (c) flakes | <input type="checkbox"/> | (d) nodular aggregates of graphite | <input type="checkbox"/> |

94. Sulphur in pig iron tends to make it

- | | | | |
|-------------------|--------------------------|---------------------|--------------------------|
| (a) hard | <input type="checkbox"/> | (b) soft | <input type="checkbox"/> |
| (c) ductile | <input type="checkbox"/> | (d) malleable | <input type="checkbox"/> |

95. Iron is

- | | | | |
|-------------------------|--------------------------|-------------------------|--------------------------|
| (a) paramagnetic | <input type="checkbox"/> | (b) ferromagnetic | <input type="checkbox"/> |
| (c) ferroelectric | <input type="checkbox"/> | (d) dielectric | <input type="checkbox"/> |

96. White cast iron contains carbon in the form of

- | | | | |
|-----------------------|--------------------------|------------------------|--------------------------|
| (a) free carbon | <input type="checkbox"/> | (b) graphite | <input type="checkbox"/> |
| (c) cementite | <input type="checkbox"/> | (d) white carbon | <input type="checkbox"/> |

97. Annealing of white cast iron results in production of

- | | | | |
|---------------------------|--------------------------|------------------------|--------------------------|
| (a) malleable iron | <input type="checkbox"/> | (b) nodular iron | <input type="checkbox"/> |
| (c) spheroidal iron | <input type="checkbox"/> | (d) grey iron | <input type="checkbox"/> |

98. Corrosion resistance of steel is increased by addition of

- | | | | |
|----------------------------------|--------------------------|--|--------------------------|
| (a) chromium and nickel | <input type="checkbox"/> | (b) sulphur, phosphorus and lead | <input type="checkbox"/> |
| (c) vanadium and aluminium | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

99. Basic constituents of monel metal are

- | | | | |
|------------------------------|--------------------------|---------------------------------|--------------------------|
| (a) nickel and copper | <input type="checkbox"/> | (b) nickel and molybdenum | <input type="checkbox"/> |
| (c) zinc, tin and lead | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

100. German silver is an alloy of

- | | | | |
|--------------------------------------|--------------------------|-----------------------------|--------------------------|
| (a) silver and some impurities | <input type="checkbox"/> | (b) refined silver | <input type="checkbox"/> |
| (c) nickel, copper and zinc | <input type="checkbox"/> | (d) nickel and copper | <input type="checkbox"/> |

101. Weld decay is the phenomenon found with

- | | | | |
|------------------------|--------------------------|---------------------------|--------------------------|
| (a) cast iron | <input type="checkbox"/> | (b) mild steel | <input type="checkbox"/> |
| (c) wrought iron | <input type="checkbox"/> | (d) stainless steel | <input type="checkbox"/> |

102. Carbon in iron is an example of

- (a) substitutional solution (b) interstitial solid solution
(c) intermetallic compounds (d) none of them

103. Which of the following is the binding material in cemented carbides

- (a) cobalt (b) nickel
(c) vanadium (d) carbon

104. Manganese in steel increases its

- (a) tensile strength (b) hardness
(c) ductility (d) malleability

105. Tungsten in high speed steel provides

- (a) hot hardness (b) toughness
(c) wear resistance (d) cold hardness

106. Blast furnace produces the following by reduction of iron ore

- (a) cast iron (b) pig iron
(c) wrought iron (d) white iron

107. Pipes for bicycle frames are made of

- (a) cold rolled steel (b) hot rolled steel
(c) forged steel (d) cast steel

108. Which of the following is used for bearing liner?

- (a) Gun metal (b) Bronze
(c) Bell metal (d) Babbit metal

109. Bronze contains

- (a) 70% copper and 30% zinc (b) 90% copper and 10% tin
(c) 30% copper and 70% zinc (d) 10% zinc and 90% copper

110. Which of the following alloys does not have copper as one of the constituents?

- (a) Delta metal (b) Monel metal
(c) Nichrome (d) Silicon bronze

111. In arc welding, arc is created between the electrode and work by

- (a) flow of current (b) voltage
(c) contact resistance (d) electrical energy

112. The material used for coating the electrode is called

- | | | | |
|----------------------------|--------------------------|------------------|--------------------------|
| (a) protective layer | <input type="checkbox"/> | (b) binder | <input type="checkbox"/> |
| (c) slag | <input type="checkbox"/> | (d) flux | <input type="checkbox"/> |

113. Projection welding is

- | | | | |
|--------------------------------------|--------------------------|---|--------------------------|
| (a) multi-spot welding process | <input type="checkbox"/> | (b) continuous spot welding process | <input type="checkbox"/> |
| (c) used to form mesh | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

114. Grey cast iron is best welded by

- | | | | |
|---------------|--------------------------|-------------------------|--------------------------|
| (a) T/G | <input type="checkbox"/> | (b) M/G | <input type="checkbox"/> |
| (c) ARC | <input type="checkbox"/> | (d) oxy-acetylene | <input type="checkbox"/> |

115. Which of the following is not a casting process?

- | | | | |
|-------------------------|--------------------------|----------------------------------|--------------------------|
| (a) Extrusion | <input type="checkbox"/> | (b) Semi-centrifuge method | <input type="checkbox"/> |
| (c) Slush process | <input type="checkbox"/> | (d) Shell moulding | <input type="checkbox"/> |

116. In centrifugal casting, cores are made of

- | | | | |
|---------------------|--------------------------|------------------------|--------------------------|
| (a) steel | <input type="checkbox"/> | (b) cast iron | <input type="checkbox"/> |
| (c) hard sand | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

117. Ferrous alloys are usually cast by

- | | | | |
|-------------------------------|--------------------------|--------------------------------|--------------------------|
| (a) hot chamber machine | <input type="checkbox"/> | (b) cold chamber machine | <input type="checkbox"/> |
| (c) die casting machine | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

118. Slag inclusion in casting is a

- | | | | |
|--------------------------|--------------------------|---------------------------|--------------------------|
| (a) surface defect | <input type="checkbox"/> | (b) internal defect | <input type="checkbox"/> |
| (c) crack | <input type="checkbox"/> | (d) notch | <input type="checkbox"/> |

119. Laser is produced by

- | | | | |
|--------------------|--------------------------|---------------------|--------------------------|
| (a) graphite | <input type="checkbox"/> | (b) ruby | <input type="checkbox"/> |
| (c) diamond | <input type="checkbox"/> | (d) aluminium | <input type="checkbox"/> |

120. Long wires are made by

- | | | | |
|---------------------|--------------------------|-------------------|--------------------------|
| (a) extrusion | <input type="checkbox"/> | (b) rolling | <input type="checkbox"/> |
| (c) piercing | <input type="checkbox"/> | (d) drawing | <input type="checkbox"/> |

121. In the electro-discharge machining process, the workpiece and the electrode are submerged in

- | | | | |
|------------------------------|--------------------------|------------------------------------|--------------------------|
| (a) a dielectric fluid | <input type="checkbox"/> | (b) an abrasive slurry | <input type="checkbox"/> |
| (c) a vacuum | <input type="checkbox"/> | (d) an electrolytic solution | <input type="checkbox"/> |

122. Tool in the case of ultrasonic machining is made of

- | | | | |
|------------------------|--------------------------|---------------------------|--------------------------|
| (a) HSS | <input type="checkbox"/> | (b) diamond | <input type="checkbox"/> |
| (c) plain carbon | <input type="checkbox"/> | (d) brass or copper | <input type="checkbox"/> |

123. Crater wear takes place in a single point cutting tool at

- | | | | |
|-----------------|--------------------------|---------------------|--------------------------|
| (a) flank | <input type="checkbox"/> | (b) side rake | <input type="checkbox"/> |
| (c) face | <input type="checkbox"/> | (d) tip | <input type="checkbox"/> |

124. Which of the following is not the part of a shaper?

- | | | | |
|-----------------------|--------------------------|---------------------|--------------------------|
| (a) Lapper box | <input type="checkbox"/> | (b) Ram | <input type="checkbox"/> |
| (c) Cross slide | <input type="checkbox"/> | (d) Tool head | <input type="checkbox"/> |

125. Size of a planer is specified by

- | | |
|---|--------------------------|
| (a) size of table | <input type="checkbox"/> |
| (b) stroke length | <input type="checkbox"/> |
| (c) size of table and height of cross rail | <input type="checkbox"/> |
| (d) number of tools which operate at a time | <input type="checkbox"/> |

126. For drilling operation, the cylindrical job should always be clamped on a

- | | | | |
|-------------------|--------------------------|-------------------|--------------------------|
| (a) collect | <input type="checkbox"/> | (b) socket | <input type="checkbox"/> |
| (c) jaw | <input type="checkbox"/> | (d) V-block | <input type="checkbox"/> |

127. Which of the following is the example of oblique cutting?

- | | | | |
|-------------------------|--------------------------|------------------------|--------------------------|
| (a) Slotting | <input type="checkbox"/> | (b) Broaching | <input type="checkbox"/> |
| (c) Knife turning | <input type="checkbox"/> | (d) None of them | <input type="checkbox"/> |

128. No cutting fluid is normally used while machining

- | | | | |
|----------------------|--------------------------|------------------------|--------------------------|
| (a) mild steel | <input type="checkbox"/> | (b) carbon steel | <input type="checkbox"/> |
| (c) cast iron | <input type="checkbox"/> | (d) aluminium | <input type="checkbox"/> |

129. The cutting tool in a milling machine is mounted on

- | | | | |
|-----------------------|--------------------------|------------------|--------------------------|
| (a) tool holder | <input type="checkbox"/> | (b) arbor | <input type="checkbox"/> |
| (c) spindle | <input type="checkbox"/> | (d) column | <input type="checkbox"/> |

130. In tool signature, nose radius is indicated

- | | | | |
|----------------------------|--------------------------|------------------------|--------------------------|
| (a) in the beginning | <input type="checkbox"/> | (b) at the end | <input type="checkbox"/> |
| (c) in the middle | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

131. Break-even analysis shows profit when

- (a) sales revenue > total cost (b) sales revenue = total cost
(c) sales revenue < total cost (d) none of them

132. PERT has

- (a) one time estimate (b) two time estimate
(c) three time estimate (d) four time estimate

133. The simplex method is the basic method for

- (a) value analysis (b) operation research
(c) linear programming (d) none of them

134. CPM is

- (a) time oriented technique (b) event oriented technique
(c) activity oriented technique (d) tangent oriented technique

135. The difference between the time available to do the job and the time required to do the job is known as

- (a) event (b) float
(c) duration (d) constraint

136. Positive slack on a PERT indicates that project is

- (a) ahead of schedule (b) beyond schedule
(c) as per schedule (d) none of them

137. In A-B-C control policy, maximum attention is to

- (a) those items which consume more money
(b) those items which are not readily available
(c) those items which are in more demand
(d) none of them

138. Graphical method, simplex method and transportation method are connected with

- (a) break-even analysis (b) value analysis
(c) linear programming (d) queueing theory

139. Inventory control in production, planning and control aims at

- (a) achieving optimization
- (b) acceptable customer service at low capital investment in inventory
- (c) discounts allowed in bulk purchase
- (d) regulating supply and demand

140. Father of Industrial Engineering is

- (a) Newton
- (b) Gnatt
- (c) Taylor
- (d) Jeck Gilberth

141. Product layout is employed for

- (a) batch production
- (b) continuous production
- (c) effective utilization of machine
- (d) none of them

142. Routing prescribes the

- (a) flow of material in the plant
- (b) proper utilization of manpower
- (c) proper utilization of machines
- (d) inspection of final product

143. Which of the following is independent of sales forecast?

- (a) Productivity
- (b) Inventory control
- (c) Production planning
- (d) Production control

144. Gnatt charts provide information about

- (a) determining selling price
- (b) production schedule
- (c) material handling layout
- (d) none of them

145. The word 'value' for value engineering and analysis purposes is defined as

- (a) function/cost
- (b) purchase value
- (c) saleable value
- (d) none of them

146. A string of binary digits treated as a unit is called a

- (a) byte
- (b) bit
- (c) word
- (d) character

147. Memory is divided into many numerically addressed

- (a) addresses
- (b) codes
- (c) locations
- (d) cells

148. The term 'software' refers to which of the following?

- | | | | |
|----------------------------|--------------------------|-------------------------|--------------------------|
| (a) Basic machine | <input type="checkbox"/> | (b) Programming | <input type="checkbox"/> |
| (c) A thin soft wire | <input type="checkbox"/> | (d) none of these | <input type="checkbox"/> |

149. Which of the following is temporary memory?

- | | | | |
|------------------------|--------------------------|------------------------|--------------------------|
| (a) ROM | <input type="checkbox"/> | (b) RAM | <input type="checkbox"/> |
| (c) both of them | <input type="checkbox"/> | (d) none of them | <input type="checkbox"/> |

150. A device that works in conjunction with a computer but not as a part of it is called

- | | | | |
|--------------------------|--------------------------|-----------------------------|--------------------------|
| (a) microprocessor | <input type="checkbox"/> | (b) peripheral device | <input type="checkbox"/> |
| (c) hardware | <input type="checkbox"/> | (d) memory | <input type="checkbox"/> |

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