MPSC
JE

Previous Year Paper

(Mechanical)

26 Mar, 2022

JR. ENGINEER GRADE-I (MECHANICAL)PHE
YEAR OF ADVT: 2019
DATE OF EXAM: 26-MAR-2022

DO NOT BREAK THE SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TO DO SO

QUESTION BOOKLET

SERIES II

Subjects : General English, Mechanical Engineering

BOOKLET SERIAL NO. 2038

Marks : 300
Time : $2^{1}/_{2}$ hours

Read the following instructions carefully before you begin to answer the questions.

INSTRUCTIONS TO CANDIDATES

1. This booklet contains **150 questions** to be answered in a separate OMR Answer Sheet using Black Ball Pen in following two parts:

   Part-A-General English : 50 questions, Part-B- Mechanical Engineering: 100 questions

2. All Questions are compulsory.
3. You will be supplied the Answer sheet separately by the invigilator. You must complete the details of particulars asked for.
4. Answers must be shown by completely blackening the corresponding circles in the Answer Sheet against the relevant question number by Black Ball Pen. OMR Answer Sheet without marking series/ double series marking shall not be evaluated.

Example :

Supposing the following question is asked :-

The Capital of Meghalaya is-

A. Guwahati
B. Kohima
C. Shillong
D. Delhi

You will have four alternatives in the Answer Sheet for your response corresponding to each question of the Question Booklet as below :-

Ⓐ Ⓑ Ⓒ Ⓓ

In the above illustration, if your chosen response is alternative C i.e. Shillong, then the same should be marked on the Answer Sheet by blackening the relevant circle with a Black Ball Point Pen only as below :-

Ⓐ Ⓑ ● Ⓓ

WHICH IS THE ONLY CORRECT METHOD OF ANSWERING

5. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any one question.
6. There will NOT be any negative marking for wrong answers.
7. The Answer Sheet must be handed over to the invigilator before you leave the Examination Hall.
8. No rough work is to be done on the Answer Sheet. Space for rough work has been provided in the question booklet.

PART - A - GENERAL ENGLISH

Marks :100

Each question carries 2 marks :

Directions : In the following questions, choose a word that is opposite in meaning to the given word from among the given alternatives.

1. Widely
a) spaciously b) succinctly
c) narrowly d) limitedly

2. Development
a) progress b) retardation
c) impunity d) retrogression

3. Modern
a) update b) recent
c) ancient d) present

4. Covering
a) hiding b) protecting
c) avoiding d) exhibiting

5. Divided
a) isolated b) unpleasant
c) united d) separated

Directions : In the following questions, choose a word that is most similar in meaning to the given word from among the given alternatives.

6. Brittle
a) soft b) like iron
c) tough d) fragile

7. Wreck
a) to escape b) to neglect
c) to inflict d) to ignore

8. Meddle
a) overlook b) stay out of
c) facilitate d) interfere

9. Skip
a) introduce b) take on
c) overlook d) stay

10. Keep
a) share b) retain
c) pass on d) give

Directions : In the following questions, a sentence is given in Direct / indirect speech. Out of the four alternatives suggested, choose the one which best expresses the same sentence in Direct / Indirect speech.

11. My friend said, "I am leaving today."
a) my friend said that he is leaving today
b) my friend said that he was leaving today
c) my friend said that he leaves today
d) my friend said that he was leaving that day

12. She said to him, "what a cold day !"
a) she told him that it was a cold day.
b) she exclaimed that it was a cold day.
c) she exclaimed sorrowfully that it was a cold day.
d) she exclaimed that it was a very cold day.

13. The man exclaimed that his wallet was stolen.
a) "My wallet was stolen !" the man said.
b) "Somebody stole my wallet !" exclaimed the man.
c) The man exclaimed, "My wallet was stolen!"
d) The man cried, "My wallet was stolen".

14. Socrates said, "Virtue is its own reward."
a) Socrates said that virtue had its own rewards.
b) Socrates says that virtue is its own rewards.
c) Socrates said that virtue is its own reward.
d) Socrates said that virtue was its own rewards.

15. Mr. Sam asked the boy if he could tell him where the nearest post office was.
a) Where is the nearest post office ? Mr. Sam asked the boy.
b) Mr. Sam asked the boy" Could you tell me where the nearest post office is" ?
c) Mr. Sam asked the boy "where is the nearest post office ?
d) Mr. Sam said to the boy "where is the nearest post office" ?

Directions : In the following questions,

some sentences have errors and some do not. The underlined words are the key words where you can identify whether the sentence is erroneous or not. From the given set of choices, choose the correct alternative for the identified errors. Where there is no error, choose the specified option (d).

16. The film "Titanic" is one of the greatest pictures ever made.
a) was b) had
c) are d) No errors

17. The river flowed smoothly across the bridge.
a) above b) under
c) on d) No errors

18. The train arrived right on schedule.
a) in b) by
c) over d) No errors

19. The notorious thief was finally caught with the police.
a) over b) under
c) by d) No errors

20. The boy trembled in fear of the deadly snake.
a) by b) on
c) with d) No errors

Directions : In the given questions below, there are jumbled up sentence parts. Rearrange these parts, which are labelled A, B, C and D to produce the correct sentence. Choose the correct sequence from the given set of alternatives.

21. the ship / violently / the storm / rocked/
A. the ship
B. violently
C. the storm
D. rocked

a) ABCD b) ABDC
c) ACBD d) CBDA

22. that the burglar / I read / has been caught / in the paper /
A. that the burglar
B. I read
C. has been caught
D. in the paper

a) ACBD b) BDAC
c) BACD d) DCAB

23. a torch / they could / the cave without / not explore /
A. a torch
B. they could
C. the cave without
D. not explore

a) CBAD b) CDBA
c) ADCB d) BDCA

24. masterpiece / the / worked at his / artist carefully /
A. masterpiece
B. the
C. worked at his
D. artist carefully

a) DCAB b) CBAD
c) BDCA d) DCBA

25. the / nightfall / their howling calls at / wolves began /
A. the
B. nightfall
C. their howling calls at
D. wolves began

a) DCAB b) ADCB
c) ABCD d) DCBA

Directions : In the following cloze passage, there are blank spaces which are numbered. Against each number, choose the most appropriate choice in meaning from the set of given alternatives.

It is neither the size nor the length of life which makes man **26** . The growth of the mind and intellect is **27** in proportion to the human body. Man may physically **28** the state of the giant yet he may remain **29** a dwarf. The true worth of man **30** upon his action, deed and thought.

26. a) human b) polite
c) better d) humble

27. a) roughly b) usually
c) ever d) never

28. a) earn b) attain
c) keep d) grow

29. a) morally b) spiritually
c) socially d) intellectually

30. a) depends b) lies
c) revolves d) gathers

Directions : In the following questions, the sentences have blank spaces followed by four alternative answers. Choose the correct alternative from the given choices.

31. The mayor said that it ____ him great pleasure to be there that evening.
a) gives b) gave
c) was giving d) give

32. He said that he ____ go as soon as it was possible.
a) will b) would
c) can d) could

33. The lion told the mouse that he was very weak and that his teeth ____ out.
a) fell b) have fallen
c) had fallen d) will fall

34. The teacher often tells me that if I ____ hard I will fail.
a) didn't work b) hadn't worked
c) can't worked d) don't work

35. Yesterday, it ____ raining so heavily.
a) was b) has
c) is d) had

Directions : Read the following passage and complete the sentences by selecting the answer choice from the alternatives given.

The worst days of any summer are the rainy ones. We spend all year looking forward to nice weather and long, hot days. All of winter, with its dreary gray days and bitter cold, we dream of those endless days at the beach, laying on the sand and soaking in the bright and burning sun. And then, summer comes, and it rains. As a child, I would wake up to rainy summer days and come close to crying. It wasn't fair. We suffered through months of school and miserable weather for those scant ten weeks of freedom and balmy weather. Any day that I could not spend at the beach or playing ball with my friends seemed like a punishment for something I didn't even do. On those rainy summer days, I had nothing fun to do and could only sit inside, staring out at the rain like an orphan. I was an only child, so there was no one else to play with. My father worked from home, so I was not truly alone, but he could not actively play with me since he was technically at work. It was those days that I would resign myself to whatever was on television or any books that I could find lying around. I'd crawl through the day and pray each night that the rain would not be there the next day. As an adult, though, my opinion of summer rain has changed. When you have to work every day, summer is not as eagerly anticipated. Mostly, the days run together, bleeding into each other so that they no longer seem like separate entities and instead feel like continuations of the same long day. Everything seems monotonous and dull, and an ennui or listlessness kicks in. Such a mindset makes you cheer for anything new or different. I spend the winter dreaming of summer and the summer dreaming of winter. When summer comes, I complain about how hot it is. And then I look forward to the rain, because the rain brings with it a cold front, which offers a **reprieve**. Rainy days are still the worst days of the summer, but summer rain today means positively beautiful - and considerably cooler - weather tomorrow

36. According to the passage, summer is different for adults because
a) rain brings with it cold temperatures
b) the weather is much warmer than it is for children
c) they do not get a long time off from work for the season
d) they better know how to occupy their downtime

37. According to the passage, which of the following is a true statement about the narrator as a child ?
a) he or she was often bored on summer days
b) he or she preferred cooler weather
c) he or she liked staying indoors
d) he or she had no siblings

38. Compared to how he or she was as a child, the narrator as an adult is -

a) more realistic b) less excitable
c) more idealistic d) less calm

39. As used in the final paragraph, the word reprieve nearly means
a) a permanent conclusion
b) a short continuation
c) a higher level of pain
d) a temporary break

40. At the end of the passage, the author feels that rainy days represent-
a) the worst kind of weather
b) the most pleasant kind of weather
c) cooler weather in the days to come
d) reason to remain indoors

Directions : For the given underlined idioms, choose the best alternative which expresses the closest meaning of the idiom.

41. I do not see eye to eye with you in this matter.
a) to have the same eyesight
b) to give the correct decision
c) to have the same opinion
d) to obtain suitable punishment

42. Despite the doctor's advice, he still eats like a horse .
a) eats a lot of food
b) eats slowly
c) does not like to eat
d) swallows his food

43. Meban is said to be the black sheep of the family.
a) one who always cooperate
b) one who has a bad reputation
c) one who is ashamed
d) one who has dark coloured skin

44. His argument does not hold water .
a) to influence
b) to have effect
c) have sound logical fact
d) to check the flow of water

45. Our school is within a stone's throw away from the bus station.
a) very far off
b) within a certain radius
c) within a definite distance
d) at a short distance

Directions : In the following questions, substitute each sentence with a single word from among the given alternatives.

46. A disease which spreads by contact
a) curable b) infectious
c) fatal d) contagious

47. A man who rarely speaks the truth
a) crook b) liar
c) scoundrel d) hypocrite

48. One who studies insect life
a) Geologist b) Zoologist
c) Entomologist d) Botanist

49. A lady who remains unmarried
a) spinster b) artist
c) bachelor d) misanthrope

50. Animal that feeds on plants
a) carnivorous b) herbivorous
c) insectivorous d) graminivorous

PART - B -MECHANICAL ENGINEERING

Marks : 200

Each question carries 2 marks :

51. The law of the machine is given by
a) W=mP+C b) P=mW+C
c) C=W+mP d) C=mW+P

where, P = effort applied,
W = load lifted,
M = constant and equal to the slope of the line and
C = another constant.

52. Non reversible machine is also called
a) ideal machine b) self-locking machine
c) actual machine d) none of the above

53. Moment of inertia of a rectangular section having b = width and d = depth about x-axis is given by
a) $I_x=bd^3/12$ b) $I_x=b^3d/12$
c) $I_x=b^2d^2/6$ d) none of the above

54. If a body is moving in a circular path, a force comes into play which acts along the radius of circular path and is directed towards the centre of the path. The force is called
a) centrifugal force b) centripetal force
c) shear force d) none of the above

55. The relation between external torque (T) acting on a body and the angular acceleration (α) is given by
a) $T=\frac{I}{\alpha}$ b) $T=\frac{\alpha}{I}$
c) $T=I\alpha$ d) none of the above

56. The C.G. of a triangle lies at the point of concurrence of
a) the right bisectors of the angle of the triangle
b) the medians of the triangle
c) the altitudes from the vertices on the opposite side
d) none of the above

57. In an I.C. engine fuel is
a) burnt outside the cylinder
b) burnt inside the cylinder
c) not burnt anywhere
d) none of the above

58. In a two stroke engine, the working cycle is completed in the number of revolution of the crank shaft equal to
a) one b) two
c) three d) four

59. In petrol engine, suction consists of
a) air only
b) a mixture of air and fuel
c) fuel only
d) none of the above

60. Which one is a compression engine
a) petrol engine b) diesel engine
c) steam engine d) none of the above

61. The process in which the violent sound pulsations within the cylinder of an I.C. engine are produced, is known as
a) supercharging b) scavenging
c) polymerization d) detonation

62. The mechanical efficiency (μ) of an engine is equal to
a) I.H.P./B.H.P. b) B.H.P./I.H.P.
c) B.H.P./F.H.P. d) F.H.P./B.H.P.

63. Air fuel ratio theoretically for a petrol engine is approximately
a) 25:1 b) 20:1
c) 10:1 d) 15:1

64. For a four cylinder in-line internal combustion engine, the most popular firing order is
a) 1-4-3-2 b) 1-3-4-2
c) 1-2-3-4 d) 1-2-4-3

65. To supply a high voltage to the spark plug in a spark ignition engine
a) distributor is used b) ignition coil is used
c) carburetor is used d) none of the above

66. Over engine cylinder of scooter, the fins are provided for
a) higher efficiency
b) higher strength of cylinder
c) better cooling

d) none of the above

67. A spark plug is used in
a) petrol engine b) diesel engine
c) gas engine d) steam engine

68. The size of fly wheel for the diesel engines as compared to petrol engine should be
a) smaller b) bigger
c) same d) none of the above

69. Detonation can be controlled by
a) increasing inlet pressure
b) retarding spark timing
c) reducing speed of engine
d) none of the above

70. For cooling the pistons of diesel engines, the commonly fluid used is
a) air b) water
c) fuel oil d) lubricating oil

71. A boiler is said to be fire-tube boiler if
a) water passes through tubes and hot products of combustion from furnace are around the tubes
b) the hot products of combustion passes through the tubes and water around it
c) forced circulation takes place
d) none of the above

72. Which of the following is a fire-tube boiler?
a) lancashire boiler b) locomotive boiler
c) cochran boiler d) all of the above

73. The fitting mounted on the boiler, whose function is to put off the fire in the furnace, when level of water falls to an unsafe limit is called
a) safety valve b) stop valve
c) fusible plug d) blow off cock

74. The fitting mounted on the boiler, whose function is to regulate the supply of water pumped into the boiler by the feed pump is called
a) water level indicator
b) feed check valve
c) blow off cock
d) stop valve

75. A device, which is used for pumping water into the boiler and also for heating the feed water is called
a) economizer b) feed pump
c) injector d) air preheater

76. A device, which is connected to the steam supply pipe line to maintain constant pressure, is called
a) steam separator b) steam trap
c) pressure reducing valve d) injector

77. The amount of heat lost in a boiler is equal to
a) the sum of heat supplied by fuel and heat utilized in raising steam from feed water
b) difference of heat supplied and heat utilized in raising steam from feed water
c) the ratio of heat supplied by fuel to heat utilized by feed water
d) none of the above

78. The ratio of linear stress to linear strain is known as
a) Poisson's b) bulk modulus
c) modulus of rigidity d) modulus of elasticity

79. A tensile force (p) is acting on a body of length (l) and area of cross-section (A). The change of length would be
a) $\frac{P}{lAE}$ b) $\frac{PE}{lA}$
c) $\frac{Pl}{AE}$ d) $\frac{Al}{PE}$

80. The modulus of elasticity (E) and modulus of rigidity (C) are related by
a) $C=\frac{mE}{3(m-2)}$ b) $C=\frac{mE}{2(m+1)}$
c) $C=\frac{3(m-2)}{mE}$ d) $C=\frac{2(m+1)}{mE}$

where, $\frac{1}{m}$ = Poisson's ratio

81. The relation between modulus of elasticity (E), modulus of rigidity (C) and bulk modulus (K) is given by
a) $E=\frac{3KC}{C+9K}$ b) $E=\frac{9KC}{C+3K}$
c) $E=\frac{C+9K}{3KC}$ d) $E=\frac{C+3K}{9KC}$

82. If a beam is supported on more than two

supports, it is called a
a) built-in beam
b) continuous beam
c) simply supported beam
d) encastered beam

83. A simply supported beam of span (I) carries a point load (W) at the centre of the beam. The shear force diagram will be
a) a rectangle
b) a triangle
c) two equal and opposite rectangle
d) two equal and opposite triangles

84. A uniform simply supported beam of span (I) carries a point load (W) at the centre. The downward deflection at the centre will be

a) $\frac{Wl^3}{8EI}$ b) $\frac{Wl^3}{3EI}$

c) $\frac{5Wl^3}{384EI}$ d) $\frac{Wl^3}{48EI}$

85. A column is defined as a
a) member of a structure which carries a tensile load
b) member of a structure which carries an axial compressive load
c) vertical member of a structure which carries a tensile load
d) vertical member of a structure which carries an axial compressive load

86. Which of the followings are the elements of machining ?
a) cutting fluid b) tool
c) work-piece d) all of the above

87. The angle between the face of tool and the line tangent to the machined surface at the cutting point, is known as
a) clearance angle b) rake angle
c) cutting angle d) lip angle

88. If the metals are ductile and cutting speed is high, then
a) continuous chips are formed
b) discontinuous chips are formed
c) continuous chips with built-up edge are formed
d) none of the above

89. In orthogonal cutting system, the chip thickness is
a) minimum at the middle
b) maximum at the middle
c) maximum at the ends
d) none of the above

90. The point angle of a drill for drilling hard steel is
a) 60° b) 90°
c) 135° d) 150°

91. The commonly used value of point angle for a standard twist drill is
a) 12° b) 29°
c) 60° d) 118°

92. In a lathe operation, the machining time is calculated by the relation

a) $T = \frac{Length\ of\ cut}{R.P.M.}$

b) $T = \frac{Length\ of\ cut\ x\ Feed}{R.P.M.}$

c) $T = \frac{Length\ of\ cut}{Feed\ x\ R.P.M.}$

d) $T = \frac{R.P.M.}{Length\ of\ cut\ x\ Feed}$

Where, T = time for one cut.

93. The purpose of jogs and fixture is to
a) facilitate interchangeable manufacture
b) increase production rate
c) increase machining accuracy
d) all of the above

94. The size of a lathe is specified by the
a) maximum job length in mm that may be held between centres
b) the height of centres measured over the lathe bed
c) maximum diameter that can be rotated over the bed ways
d) any one of the above

95. Depth of cut for roughing operation normally varies from
a) 5mm to 10mm b) 1mm to 5mm
c) 0.2mm to 1mm d) 0.1mm to 0.2mm

96. The process of removing metal, by feeding the work past a rotating multipoint cutter, is known as

a) broaching b) sawing
c) milling d) grinding

97. The cutting tool in milling machine is held in position by
a) arbor b) spindle
c) column d) knee

98. The process of rotating the job correct to the fraction on minutes between the two successive cuts is known as
a) milling b) indexing
c) broaching d) sawing

99. Which one of the following statements about cutting fluid is wrong ?
a) a cutting fluid permits the use of higher cutting speeds
b) a cutting fluid improves the tool life
c) a cutting fluid provide lubrication and washes away the chips
d) a cutting fluid increases the kinetic co-efficient of lubrication and keeps down the cutting forces

100. Which of the following process is used for making cold chisels ?
a) rolling b) forging
c) piercing d) drawing

101. Which of the following parameter is used for specifying a hacksaw ?
a) length b) width
c) material d) number of teeth

102. Which of the following is a ceramic material ?
a) zinc b) iron
c) silicon carbide d) wood

103. Which of the following is a ferrous material ?
a) zinc b) iron
c) silicon carbide d) wood

104. The ability of a material to sustain loads without failure is known as
a) mechanical strength b) stiffness
c) toughness d) ductility

105. The property of a material resist penetration by another material is known as
a) toughness b) hardness
c) stiffness d) resilience

106. The melting point of mild steel is approximately
a) 600° C b) 800° C
c) 1000° C d) 1500° C

107. Heat treatment is done to
a) change grain size
b) soften the metal
c) improve electrical and magnetic properties
d) all of the above

108. The process involving the heating of steel above upper critical temperature and then quenching in a medium, such as brine, water or oil, is known as
a) annealing b) normalising
c) tempering d) hardening

109. Which of the followings are example s polymers ?
a) starch b) nylon
c) resin d) all of the above

110. Piston and cylinder of a reciprocating steam engine forms a
a) turning pair b) rolling pair
c) sliding pair d) spherical pair

111. Surface tension has the units of
a) force per unit area
b) force per unit length
c) force per unit volume
d) none of the above

112. The meta-centric height of a floating body is
a) the distance between meta-centre and centre of buoyancy
b) the distance between the centre of buoyancy and centre of gravity
c) the distance between meta-centre and centre of gravity
d) none of the above

113. The co-efficient of discharge (C_d) in terms of C_v and C_c is
a) $C_d = \frac{C_v}{C_c}$ b) $C_d = C_v \times C_c$
c) $C_d = \frac{C_c}{C_v}$ d) none of the above

114. A flow is said to be laminar when
a) the fluid particles move in a zig-zag way
b) the Reynold number is high
c) the fluid particles move in layers parallel to the boundary
d) none of the above

115. A turbine is called impulse if at the inlet of the turbine
a) total energy is only kinetic energy
b) total energy is only pressure energy
c) total energy is the sum of kinetic energy and pressure energy
d) none of the above

116. Draft tube is used for discharging water from the exit of
a) an impulse turbine b) a Francis turbine
c) a Kaplan turbine d) a Pelton wheel

117. Governing of a turbine means
a) the head is kept constant under all condition of working
b) the speed is kept constant under all conditions
c) the discharge is kept constant under all conditions
d) none of the above

118. Hydraulic ram is a device used for
a) storing energy of water in the form of pressure energy
b) increasing pressure intensity of water
c) lifting small quantity of water to a greater height means of large quantity of water falling through small height
d) none of the above

119. A perfect gas obeys
a) Boyle's law only
b) Charle's law only
c) Boyle's and Charle's law both
d) none of the above

120. Characteristic equation of a gas is given by
a) $pv = RT$ b) $pv = mRT$
c) $mpv = RT$ d) none of the above

Where, p = absolute pressure, v = volume of gas, T = absolute temperature, m = mass of the gas and R = constant of the gas.

121. The first law of thermodynamics states
a) if two bodies are each equal in temperature to a temperature of the third body, they are equal in temperature to each other
b) that in a closed system undergoing through a cycle the net work delivered to the surroundings is proportional to the net heat taken from the surroundings
c) heat cannot flow from lower temperature to higher temperature without the aid of an external agency
d) that the net work can be produced during a cycle without some supply of heat.

122. Heat transfer takes place by the process of
a) conduction b) convection
c) radiation d) all of the above

123. The process of heat transfer, from one particle of the body to another without actual motion of the particles, is called
a) radiation b) convection
c) conduction d) none of the above

124. If the relative humidity is high, the rate of evaporation of water will be
a) high b) low
c) zero d) none of the above

125. The property by virtue of which a metal can be beaten into plate is called
a) ductility b) malleability
c) resilience d) plasticity

126. The ratio of lateral strain to longitudinal strain is called
a) Poisson's ratio b) bulk modulus
c) modulus of rigidity d) modulus of elasticity

127. If a body is moving in a circular path, the motion of the body is called
a) rectilinear b) rotational
c) curvilinear d) none of the above

128. The co-efficient friction (μ) in terms of angle of friction (θ) is given by
a) $\theta = \tan\mu$ b) $\mu = \sin\theta$
c) $\mu = \tan\theta$ d) $\mu = 1/\tan\theta$

129. In an actual machine, the amount of fric-

tion present may be expressed in terms of effort. Additional effort is required to overcome this friction. The value of additional effort required is equal to

a) $\frac{W}{V.R} - P$ b) $P - \frac{W}{V.R}$

c) $P + \frac{W}{V.R}$ d) $P + \frac{V.R}{W}$

130. The ratio of shear stress to shear strain is called
a) Poisson's ratio
b) bulk modulus
c) modulus of rigidity
d) modulus of elasticity

131. If a beam is fixed at both its ends, it is called a
a) fixed beam b) built-in beam
c) encastered beam d) any one of the above

132. A simply supported beam of span (I) carries a uniformly distributed load over the whole span. The shear force diagram will be
a) a rectangle
b) a triangle
c) two equal and opposite rectangles
d) two equal and opposite triangles

133. Within elastic limit in a loaded material, stress is
a) inversely proportional to strain
b) directly proportional to strain
c) equal to strain
d) none of the above

134. Gauge pressure at a point is equal to
a) absolute pressure plus atmospheric pressure
b) absolute pressure minus atmospheric pressure
c) vacuum pressure plus absolute pressure
d) none of the above

135. Manometer is a device used for measuring
a) velocity at a point in a fluid
b) pressure at a point in a fluid
c) discharge of fluid
d) none of the above

136. The point, through which the buoyant force is acting, is called
a) centre of gravity
b) centre of pressure
c) centre of buoyancy
d) none of the above

137. Triangle law of forces states that if two forces acting at a point are represented in magnitude and direction by the two sides of the triangle taken in order, then their resultant is given by the
a) third side of the triangle taken in the same order
b) third side of the triangle taken in the opposite order
c) sum of the two forces acting
d) none of the above

138. The force which do not meet at a point are called
a) non-coplaner forces
b) coplaner forces
c) non-concurrent forces
d) concurrent forces

139. The forces whose lines of action do not lie in the same plane are called
a) non-coplaner forces
b) coplaner forces
c) non-concurrent forces
d) none of the above

140. The forces which meet at a point are known as
a) collinear forces b) coplaner forces
c) concurrent forces d) none of the above

141. Rate of change displacement of a body is called
a) acceleration b) velocity
c) momentum d) none of the above

142. A body will be in equilibrium when
a) the algebraic sum of vertical components of all forces is zero
b) the algebraic sum of horizontal components of all forces is zero
c) the algebraic sum of moments of all forces about a point is zero
d) all the above

143. The product of mass and velocity of a body is called
a) acceleration b) velocity

c) momentum d) none of the above

144. If body is moving in a straight line, the motion of the body is called
a) rectilinear b) rotational
c) curvilinear d) none of the above

145. Joule is the unit of
a) velocity b) force
c) work d) acceleration

146. Limiting force of friction is defined as the frictional force which exists when a body is
a) moving with maximum velocity
b) stationary
c) just begins to slide over the surface
d) none of the above

147. Co-efficient of friction is the ratio of
a) force of friction to reaction between two bodies
b) force of friction to normal reaction between two bodies
c) force of limiting friction to reaction between two bodies
d) force of limiting friction to normal reaction between two bodies

148. Watt is unit of
a) force b) velocity
c) work d) power

149. If 'P' is the effort required to lift a load 'W', then mechanical advantage (M.A) is given by

a) $\frac{P}{W}$ b) pxw

c) $\frac{W}{P}$ d) $\frac{1}{WxP}$

150. A reversible machine is one which has efficiency
a) 100% b) less than 50%
c) more than 50% d) none of the above

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