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

QUESTION BOOKLET

SERIES IV

Subjects : General English, General Knowledge & Mechanical Engineering

BOOKLET SERIAL NO. 120052

Marks : 350

Time : $2^1/_2$ hours

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

INSTRUCTIONS TO CANDIDATES

1. This booklet contains **175 questions** to be answered in a separate OMR Answer Sheet using Black Ball Pen in following three parts:

   Part-A-General English : 50 questions, Part-B-General Knowledge : 25 questions,

   Part-C-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 :

A. Choose the most appropriate preposition :

1. The labourer refused to grovel _____ the feet of his master.
a) on b) about
c) upon d) at

2. It is life-threatening to intrude _____ enemy's camp.
a) in b) into
c) on d) through

3. The candidates were tense _____ anticipation
a) with b) in
c) on d) from

4. He had to repent _____ what he had done.
a) from b) over
c) for d) in

5. Your attitude smacks _____ contempt
a) of b) with
c) from d) in

6. I am angry with him _____ his carelessness
a) at b) in
c) of d) for

7. I am ready to say this _____ her face
a) at b) in
c) to d) by

8. The committee turned _____ the proposal without thinking
a) out b) up
c) down d) in

9. You should apologise _____ him for your behaviour
a) to b) at
c) by d) for

10. I am used _____ such hard times
a) to b) at
c) for d) from

B. Pick out the word that is most similar in meaning to the main word given :

11. Solitude
a) Company b) Crowd
c) Aloneness d) Mob

12. Kin
a) Enemy b) Colleague
c) Friend d) Relative

13. Fraud
a) Clown b) Banker
c) Imposter d) Actor

14. Distort
a) Wrong b) Evil
c) Deform d) Harm

15. Pull
a) Stop b) Crush
c) Proud d) Drag

16. Loot
a) Destruction b) Waste
c) Spoils d) Garbage

17. Remote
a) Gadget b) Distant
c) Savage d) Mean

18. Predict
a) Foretell b) Decide
c) Prevent d) Invent

19. Jovial
a) Mercurial b) Merry
c) Revolting d) Dizzy

20. Charisma
a) Ghost b) Force
c) Charm d) Courage

C. From the given options, select the word that is opposite in meaning to the main word:

21. Relentless

a) Merciless b) Incisive
c) Monotonous d) Yielding

22. Myopic
a) Foresighted b) Far-sighted
c) Feeble minded d) Near-sighted

23. Awe
a) Borrow b) Shallow
c) Low d) Contempt

24. Impartial
a) Hostile b) Biased
c) Dislike d) Worried

25. Kindle
a) Smother b) Detest
c) Enemy d) Discourage

26. Expect
a) Attend b) Regret
c) Despair d) Loathe

27. Meagre
a) Kind b) Generous
c) Thoughtful d) Copious

28. Abridge
a) Shorten b) Extend
c) Stress d) Easy

29. Common
a) Strange b) Uneasy
c) Quick d) Fast

30. Luminous
a) Clear b) Dim
c) Brittle d) Bright

D. Four alternatives a, b, c, d are given. You are required to select the most suitable alternative to the given idioms and phrases :

31. Ad hoc
a) For a special purpose
b) Arranged systematically
c) Arranged in order
d) None of the above

32. Pros and cons
a) Good and evil
b) Former and latter
c) Foul and fair
d) For and against a thing

33. A pipe dream
a) A bad dream
b) A pleasant dream
c) An impracticable plan
d) A foolish idea

34. Much ado about nothing
a) To make a noise
b) To make a fuss over small matters
c) A play
d) Talk about nothing

35. On the wane
a) On the heights
b) Stand still
c) Verge of eruption
d) Gradually declining

36. A bolt from the blue
a) Struck by thunder
b) A piece of bad luck
c) A flash of lightning
d) A complete surprise

37. To cry wolf
a) To listen eagerly
b) To give false alarm
c) To turn pale
d) To keep off starvation

38. Die hard
a) Unwilling to change
b) Ready to change
c) Egoist
d) Arrogant

39. Bury the hatchet
a) To keep a secret
b) To make peace
c) To fool someone
d) To bury the wealth

40. To get wind
a) To forget
b) Come to know
c) To tell
d) To fly

E. Choose the appropriate one word substitute based on the context:

41. My uncle is a _____ . He never consumes alcohol.
a) Teetotaller b) Altruist
c) Critic d) Mercenary

42. A _____ is where one man murders his brother
a) Homicide b) Regicide
c) Fratricide d) Suicide

43. A _____ is a medicine which cures all diseases.
a) Panacea b) Chloroform
c) Stoic d) Steroid

44. _____ is a condition where one walks in one's sleep.
a) Daydream b) Reverie
c) Nightmare d) Somnambulism

45. A _____ is someone who can speak many languages
a) Polyglot b) Linguist
c) Bilingual d) Monolingual

46. Hater of mankind-
a) Philanthropist b) Misanthropist
c) Anthropologist d) Misogynist

47. A place where weapons and ammunitions are stored-
a) Weaponry b) Arsenal
c) Godown d) Store

48. A study of election trends-
a) Numerology b) Psephology
c) Electology d) Balletology

49. Someone who is new to a profession-
a) Amateur b) Novice
c) Accomplice d) Specialist

50. A study of the derivation of words-
a) Philology b) Dictionary
c) Etymology d) None of the above

PART - B - GENERAL KNOWLEDGE

Marks : 50

Each question carries 2 marks :

51. Who is the author of the book 'Nineteen Eighty Four' ?
a) Thomas Hardy
b) Emile Zola
c) George Orwell
d) Walter Scott

52. Namdapha National Park is located in which state in India ?
a) Meghalaya
b) Arunachal Pradesh
c) Himachal Pradesh
d) Jammu & Kashmir

53. The Largest source of power generation in India is through
a) Thermal
b) Hydro
c) Nuclear
d) Non-conventional forms

54. Which is known as the 'City of Seven Islands' ?
a) Port Blair (Andaman & Nicobar)
b) Tokyo (Japan)
c) Mumbai (Maharashtra)
d) Helsinki (Finland)

55. Moradabad in Uttar Pradesh is known for which industry ?
a) Brass Utensils
b) Cotton Textile
c) Sugarcane industry
d) Locomotive industry

56. The disease *filariasis* is caused by
a) Bacteria b) Protozoa
c) Mosquitoes d) Virus

57. Who won the Noble Peace Prize in 2018 ?
a) Malala Yousafzai
b) Juan Manuel Santos
c) Kailash Satyarthi
d) Denis Mukwege & Nadia Murad

58. With which bordering country does India have the longest border ?
a) China
b) Bangladesh
c) Nepal
d) Pakistan

59. The world's tallest Statue of Unity is dedicated to which personality ?
a) Gautama Buddha
b) Sardar Vallabhbhai Patel
c) Mahatma Gandhi
d) Jawaharlal Nehru

60. Who is the present Chief Justice of India ?
a) Rajan Gogoi
b) Dipak Misra
c) Madan Thakur
d) J. Chelameswar

61. Hima Das, who won gold medal in the world U20 Championship recently, ran which race ?
a) 100 meters
b) 200 meters
c) 400 meters
d) 800 meters

62. Entomology is the science that studies
a) Behavior of human beings
b) Insects
c) Formation of rocks
d) Space

63. '*Chiraw*' is a dance form of which state in the North East ?
a) Nagaland
b) Arunachal Pradesh
c) Mizoram
d) Assam

64. The concept of differential heating was primarily given to explain which of the following geographical phenomena in India ?
a) Monsoon
b) Jet Streams
c) Cyclones
d) Desert Storms

65. Which of the following is a correct definition of "Isohyets" ?
a) Lines on a map showing equal rainfall

b) Lines on a map having same mean temperature
c) Lines on a map having same barometric pressure
d) Lines on a map having equal height above mean sea level

66. Who is the present Chief Election Commissioner of India ?
a) H.S.Brahma
b) Achal kumar Jyoti
c) J.M. Lyngdoh
d) Om Prakash Rawat

67. The name of the Laccadive, Minicoy and Amindivi islands was changed to Lakshadweep by an Act of Parliament in
a) 1970 b) 1971
c) 1972 d) 1973

68. The members of Lok Sabha hold office for a term of
a) 3 years b) 4 years
c) 5 years d) 6 years

69. The members of the Rajya Sabha are
a) directly elected by the people on the basis of universal adult franchise
b) elected by the members of the state legislative assemblies
c) elected by the members of the state legislative councils
d) elected by the members of the state legislative councils and state legislative assemblies

70. The objective of the Morley-Minto Reforms was
a) extension of provincial assemblies
b) to give more powers to local government
c) to abolish the post of secretary of the state for India
d) to establish diarchy in provinces

71. The weekly *Commonweal* was founded by
a) Annie Besant
b) Bipan Chandra Pal
c) Bal Gangadhar Tilak
d) Sarojini Naidu

72. The Uprising of 1857 was described as the first Indian war of Independence by
a) S.N. Sen
b) R. C. Mazumdar
c) B. G. Tilak
d) V. D. Savarkar

73. Fiscal deficit in the Union Budget means
a) the difference between current expenditure and current revenue
b) net increase in Union Governments borrowings from the Reserve Bank of India
c) the sum of budgetary deficit and net increase in internal and external borrowings
d) the sum of monetized deficit and budgetary deficit

74. Foreign Direct Investment ceilings in the telecom sector have been raised from 74 percent to
a) 80 percent
b) 85 percent
c) 90 percent
d) 100 percent

75. The name of Pierre Cardin is associated with which of the following fields ?
a) Painting
b) Films
c) Pop Music
d) Fashion Designing

PART - C -MECHANICAL ENGINEERING

Marks :200

Each question carries 2 marks :

76. The Clausius-Clapeyron equation gives the slope of curve on
a) p - v plot
b) p - H plot
c) p - T plot
d) T - s plot

77. Availability is a property which is obtained in a process in equilibrium condition with surrounding and it basically refers to
a) Pressure
b) Work
c) Volume
d) Efficiency

78. In irreversibility of the process, the actual work done is _____ the idealized reversible work. Choose correct answer for the blank :
a) Proportional to
b) Greater than
c) Equal to
d) Less than

79. Pick the wrong answer in the following with regard to the statement on kinematic link-
a) A kinematic link is a machine part which moves relative to some other part
b) A kinematic link may consist of several parts which are rigidly fastened together
c) A kinematic link must be rigid and resistant body
d) A link is capable of transmitting forces with negligible deformation

80. Identify the incorrect combination with regard to ideal kinematic pair -
a) Cross head and guides - sliding pair
b) A bolt and nut - turning pair
c) A ball and socket joint - spherical pair
d) Ball bearing and roller bearing - rolling pair

81. Consider a point on a link connecting double slider crank chain. It would trace :
a) A straight path
b) A circular path
c) An elliptical path
d) A parabolic path

82. Cam size depends upon
a) Root circle
b) Base circle
c) Prime circle
d) Pitch circle

83. Two parallel and coplanar shafts are connected by-
a) Spur gears
b) Spiral gears
c) Bevel gears
d) Helical gears

84. The working surface above the pitch surface of the gear tooth is termed as
a) Addendum
b) Dedendum
c) Flank
d) Face

85. Module of a gear is
a) The ratio between the pitch circle diameter and the number of teeth
b) The ratio between the number of teeth and the pitch circle diameter
c) The product of the pitch circle diameter and the number of teeth
d) The reciprocal of the pitch circle diameter

86. At a particular rotational speed, the unbalanced force due to revolving mass
a) Varies both in magnitude and direction
b) Is constant both in magnitude and direction
c) Varies in magnitude but constant in direction
d) Is constant in magnitude but varies in direction

87. Which of the following in-line **I.C.** engines working on a four stroke cycle is completely balanced inherently ?
a) 2-cylinder engine
b) 3-cylinder engine
c) 4-cylinder engine
d) 6-cylinder engine

88. The power transmitted by a belt is maximum when the maximum tension in the belt is _____ of the centrifugal tension.
a) 3 times
b) 2 times
c) Two-third

d) One-third

89. Toughness of a material signifies
a) Brittleness b) Ductility
c) Strength d) Softening

90. Stress represents the
a) External force acting on the body
b) Resistance per unit area to deformation by internal forces
c) Pressure setup within the material
d) Force by which the material opposes the deformation

91. Hook's law is valid within the limit of proportionality and this limit depends upon
a) Type of loading
b) Geometry of test piece
c) Material of test specimen
d) Cross-sectional area of test piece

92. Which of the following mechanical properties is provided by the notched bar test ?
a) Impact strength
b) Resilience
c) Hardness
d) Fatigue strength

93. Which of the following materials is expected to have the least value of Young's modulus of elasticity ?
a) Steel b) Copper
c) Aluminium d) Wood

94. If a cylindrical rod of length 'l' and diameter 'd' is rigidly fixed at its upper end and hangs vertically, then the elongation due to its weight 'W' is

a) $\frac{Wl}{AE}$ b) $\frac{2Wl}{AE}$

c) $\frac{Wl}{2AE}$ d) $\frac{AE}{Wl}$

95. A structural member subjected to an axial compressive force is called
a) Beam b) Column
c) Strut d) Frame

96. Mohr's circle construction is valid for both stress as well as the area of moment of inertia because they
a) Are tensors of first order
b) Are tensors of second order
c) Are axial vectors
d) Occur under plane stress condition

97. If a beam simply supported at equal distance from its ends carries equal loads at each end, then
a) Bending moment is minimum at the mid-span
b) Bending moment is minimum at the supports
c) Bending moment varies gradually between the supports
d) Bending moment is uniform between the supports

98. A thin cylindrical shell of diameter 'd' and wall thickness 't' has been subjected to internal fluid pressure 'p'. Then the circumferential hoop stress set up in the shell is

a) $\frac{pd}{4t}$ b) $\frac{pd}{2t}$

c) $\frac{pd}{t}$ d) $\frac{2pd}{t}$

99. In the iron-carbon diagram, the abscissa represents
a) Time
b) Percentage of carbon
c) Temperature
d) Grain size

100. In which of the following material lattice structure there are atoms at each corner of the cube and one atom in the centre of the cube ?
a) b.c.c.
b) c.p.h.
c) f.c.c.
d) None of the above

101. Which of the following is not an allotropic form of iron crystal at different temperatures ?
a) Alpha iron
b) Beta iron
c) Gamma iron
d) Delta iron

102. Identify the softest material out of the following
a) Austenite b) Ferrite
c) Cementite d) Pearlite

103. Identify the kind of defect where dislocation of material occurs
a) Angular defect
b) Point defect
c) Line defect
d) Volumetric defect

104. Machinability can be calculated and predicted by the following factor
a) Tensile strength
b) Shear angle
c) Brinell hardness
d) All of the above

105. In an NC machining operation, the tool initially at (5, 4) has to move from point (5, 4) to point (7, 2) along a circular path with centre (5, 2). The correct G and N codes for the operation are
a) N010 G03 X7.0 Y2.0 15.0 J2.0
b) N010 G01 X7.0 Y2.0 15.0 J2.0
c) N010 G02 X7.0 Y2.0 15.0 J2.0
d) N010 G00 X7.0 Y2.0 15.0 J2.0

106. In which of the following machining, manual part programming is done ?
a) DNC b) FMS
c) CNC d) NC

107. Which type of motor is not used in axis or spindle drives of CNC machine tools ?
a) Induction motor
b) DC servo-motor
c) Stepper motor
d) Linear servo-motor

108. Closed jigs are normally used where work or machining is to be done on
a) One side of the work
b) More than one side of the work
c) One side of the tool
d) More than one side of the tool

109. In production planning and control, which of the following comes under planning phase ?
a) Forecasting
b) Dispatching
c) Corrective action
d) All of the above

110. Break-even analysis consists of
a) Fixed costs
b) Variable costs
c) Fixed and variable costs
d) Operation costs

111. Which of the following is the main factor for applying the technique of PERT ?
a) Time b) Target
c) Activity d) Event

112. While segregating the inventory to perform ABC analysis, the items having highest value are grouped in
a) A-class
b) B-class
c) C-class
d) None of the above

113. In inventory control procedure, the EOQ is the
a) Maximum lot size
b) Optimum lot size
c) Average lot size
d) Minimum lot size

114. Which of the following is not a work measurement technique ?
a) Time study
b) Work sampling
c) PMTS
d) Simulation

115. By sampling technique and use of charts in quality control system, basically which one of the following can be determined
a) Number of products
b) Cost of the item
c) Number of defects
d) Number of skilled workers necessary

116. A thermodynamic system refers to
a) Any defined region in space
b) A specified mass in fluid space
c) A specified region of constant volume
d) A prescribed and identifiable quantity of matter

117. With usual notations, general gas equation is expressed as
a) $PV = mRT$
b) $PV = nRT$
c) $PV^n = mRT$
d) $PV^n = C$

118. Which law states that the internal energy

of a gas is function of temperature ?
a) Joule's law
b) Charle's law
c) Boyle's law
d) Gay Lussac law

119. Change of enthalpy of a system is the heat supplied at
a) Constant temperature
b) Constant pressure
c) Constant volume
d) Constant entropy

120. First law of thermodynamics furnishes the relationship between
a) Heat and work
b) Various properties of system
c) Heat, work and properties of system
d) Heat and internal energy

121. Second law of thermodynamics defines
a) Entropy
b) Enthalpy
c) Internal energy
d) Efficiency

122. In a Carnot cycle, heat is transferred at
a) Constant pressure
b) Constant temperature
c) Constant volume
d) All of the above

123. Which of the following relationship is correct ?
a) $Tds = dH + Vdp$
b) $Tds = dH + Pdv$
c) $Tds = dH - Vdp$
d) $Tds = dH - Pdv$

124. In compression ignition engine, the fuel is ignited by
a) Heat from compression of air
b) Injected fuel
c) Spark
d) Ignitor

125. Which of the following is not an internal combustion engine ?
a) 2-stroke petrol engine
b) Gas turbine
c) Diesel engine
d) Steam engine

126. What is the main shaft of an I.C. engine that controls the movement of the piston ?
a) Axle
b) Drive shaft
c) Camshaft
d) Crankshaft

127. A stroke of an I.C. engine is equal to
a) Four times the crank radius
b) Twice the crank radius
c) The crank radius
d) Half the crank radius

128. The theoretical air-fuel ratio for petrol engine is in the ratio
a) 10 : 1
b) 12 : 1
c) 15 : 1
d) 20 : 1

129. A four stroke petrol engine theoretically operates on
a) Otto cycle
b) Joule cycle
c) Brayton cycle
d) Bell Coleman cycle

130. Assuming the perfect valve timing, the power developed by a diesel engine cannot be increased by
a) Higher compression ratio
b) Excess supply of air
c) Fine atomization of fuel
d) Pressurized supply of air

131. Morse test is conducted only on
a) Low power engines
b) Variable speed engines
c) Single-cylinder engines
d) Multi-cylinder engines

132. The thermal efficiency of a well designed and properly maintained diesel engine usually lies in the range of
a) 10% to 15%
b) 20% to 30%
c) 35% to 40%
d) 45% to 65%

133. In a petrol engine, the tendency of detonation increases with
a) Supercharging
b) Retarded spark timings

c) Increasing the cooling rate
d) Running the engine at high speeds

134. In spark ignition engines, knocking can be reduced by
a) Increasing the compression ratio
b) Retarding the spark advance
c) Increasing the coolant temperature
d) Increasing the inlet air temperature

135. The phenomenon of pre-ignition
a) Always occurs in diesel engines
b) Always occurs in petrol engines
c) Never occurs in diesel engines
d) Increases the power output of an engine

136. Higher octane rating of SI fuel means that the fuel has
a) Longer ignition delay
b) Higher ignition delay
c) Higher flash point
d) Lower flash point

137. The automobile exhaust will have maximum of hydrocarbons when the vehicle is
a) Idling
b) Accelerating
c) Decelerating
d) Cruising

138. A stoichiometric air-fuel ratio is
a) Rich mixture for idling
b) Rich mixture for overloads
c) Chemically correct mixture
d) Lean mixture

139. Heat transfer in liquids and gases is essentially due to
a) Conduction
b) Convection
c) Radiation
d) Conduction and radiation

140. In which of the following materials, the heat energy propagation due to conduction, heat transfer will be minimum ?
a) Lead b) Water
c) Copper d) Air

141. Heat is transferred by all three modes, namely, conduction, convection and radiation in
a) Electric heater
b) Boiler
c) Steam condenser
d) Refrigerator condenser coils

142. The relation $\nabla^2 t = 0$ is referred to as
a) Laplace equation
b) Fourier conduction equation
c) Poisson's equation
d) Lumped parameter solution

143. The unit of thermal diffusivity is
a) m^2 / hr °C
b) kcal / hr °C
c) m^2 / hr
d) kcal / hr

144. Cold worked components are generally subjected to the following process to relieve stresses
a) Age hardening b) Cyaniding
c) Annealing d) Tempering

145. Cast steel crankshaft surface is hardened by
a) Carburising
b) Normalising
c) Nitriding
d) Induction heating

146. In Taylor's tool life equation $VT^n = C$, the index 'n' is closely related to
a) Workpiece material
b) Cutting tool material
c) Working condition
d) Temperature at chip tool interface

147. Fins are made as thin as possible to
a) Reduce the total weight
b) Help in easy cleaning
c) Improve flow of coolant
d) Accommodate more number of fins

148. Which of the following heat flow situations pertains to free or natural convection ?
a) Cooling of I.C. engines
b) Cooling of billets in atmosphere
c) Flow of water inside condenser tubes
d) Air conditioning installations

149. Forced convection in a liquid bath is caused by
a) Intense stirring by an external agency
b) Flow of electrons in a random fashion

c) Density difference brought about by temperature gradients
d) Molecular energy interaction

150. Prandtl Number is
a) A measure of temperature gradient on the surface
b) Ratio of conduction to convection resistance
c) Ratio of molecular momentum diffusivity to thermal diffusivity
d) Ratio of mass diffused to momentum diffused

151. The ratio of total emissive power of body to the total emissive power of a black body at the same temperature is called
a) Absorptivity b) Transmissivity
c) Reflectivity d) Emissivity

152. Emissivity of a white polished body in comparison to a black body is
a) Higher
b) Lower
c) Same
d) Depends on the shape

153. In heat exchangers, degree of approach is defined as the difference between temperatures of
a) Cold water inlet and outlet
b) Hot medium inlet and outlet
c) Hot medium outlet and cold water inlet
d) Hot medium outlet and cold water outlet

154. Multi-pass heat exchangers are used to
a) Reduce the pressure drop
b) Get a compact unit
c) Obtain high heat transfer coefficient
d) Facilitate very large temperature drop

155. The coefficient of performance of a refrigerator working on Carnot cycle is given by

a) $\frac{T_2}{T_1 - T_2}$

b) $\frac{T_1}{T_1 - T_2}$

c) $\frac{T_1 - T_2}{T_1}$

d) $\frac{T_1 - T_2}{T_2}$

156. One ton of refrigeration in kilo-Watt is equivalent to
a) 5 kW b) 3.5 kW
c) 2.5 kW d) 1 kW

157. The throttling operation in a refrigeration cycle is carried out in
a) Evaporator
b) Capillary tube
c) Discharge valve
d) Expansion valve

158. Which part of the vapour compression refrigeration cycle produces the refrigeration effect ?
a) Condenser
b) Throttle valve
c) Evaporator
d) Compressor

159. For better COP of refrigerator, the pressure range corresponding to temperature in evaporator and condenser must be
a) Small b) High
c) Equal d) Zero

160. The refrigerant for a refrigerator should have
a) Low latent heat
b) High latent heat
c) High sensible heat
d) Low sensible heat

161. Which of the following is not a desirable property of a good refrigerant ?
a) Low specific heat
b) High specific volume of vapour
c) Low boiling point
d) High critical temperature

162. Which of the following refrigerants has the minimum boiling point ?
a) Ammonia
b) Carbon dioxide
c) Freon-12
d) Freon-22

163. R-12 is generally preferred over R-22 in

deep freezers since
a) It has low operating pressures
b) It gives high coefficient of performance
c) It is miscible with oil over large range of temperatures
d) It is non-toxic and non-inflammable

164. The comfort air-conditioning and industrial air-conditioning differ in relation to
a) Process adopted
b) Equipment used
c) Indoor requirement
d) Environmental conditions

165. The wet bulb temperature is a measure of
a) Absolute humidity
b) Specific humidity
c) Relative humidity
d) Degree of saturation

166. A sling psychrometer can measure
a) Absolute humidity
b) Wet bulb temperature only
c) Specific humidity
d) Dry as well as wet bulb temperature

167. The pressure rise in the impeller of centrifugal compressor is achieved by
a) Decrease in volume and diffusion action
b) Centrifugal and diffusion action
c) Centrifugal action and decrease in volume
d) Centrifugal and push-pull action

168. Which of the following types of impeller vanes are most commonly used in centrifugal type impellers ?
a) Backward curved
b) Forward curved
c) Radial
d) Tangential

169. A centrifugal compressor is used for which of the following ?
a) Low pressure ratio, low mass flow
b) High pressure ratio, low mass flow
c) Low pressure ratio, high mass flow
d) High pressure ratio, high mass flow

170. A jet air-craft is powered by
a) Piston engine
b) Screw propeller
c) Gas turbine
d) Solar cells

171. Blades of a gas turbine are generally made of
a) Aluminium
b) Cast iron
c) Cast steel
d) Nickel cobalt alloy

172. The air-fuel ratio for a gas turbine is generally kept closer to
a) 60 : 1 b) 40 : 1
c) 30 : 1 d) 20 : 1

173. Compared to turbo jet, a turbo prop has an additional feature in having
a) Reduction gear
b) Inlet diffuser
c) Intercooler
d) Grid passages

174. The convective heat transfer coefficient in laminar flow over a flat plate.
a) Increases with distance
b) Increases if a denser fluid is used
c) Increases if a higher viscosity fluid is used
d) Decreases with increase in free stream velocity

175. A perfectly black body
a) Absorbs all the incident radiation
b) Reflects all the incident radiation
c) Allows incident radiation to pass through
d) Neither allow nor absorb any ray

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