SUB-ENGINEER (MECH) GRADE-I OR STORE UNDER DEPT OF AGRICULTURE

YEAR OF ADVT: 2019
DATE OF EXAM: 20-JAN-2024

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

QUESTION BOOKLET

SERIES II

Subjects : General English, Automobile Engg/Mechanical Engg/Agricultural Engg.

BOOKLET SERIAL NO.	**1178**	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- Automobile Engg OR Mechanical Engg OR Agricultural Engg : 100 questions

2. All Questions are compulsory. **Part B is optional. Candidates has to opt either Automobile Engg OR Mechanical Engg OR Agricultural Engg**
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, substitute each sentence with a single word from among the given alternatives.

1. A place where nuns live and work
a) Hostel b) Convent
c) Dormitory d) Quarter

2. A person who studies stars, planets and other heavenly bodies
a) Astrologer b) Raconteur
c) Flounder d) Astronomer

3. Open refusal to obey orders
a) Obedience b) Adherance
c) Defiance d) Compliance

4. To throw an event into confusion and disorder
a) Disrupt b) Detonate
c) Erupt d) Explode

5. The Life history of a man written by himself is called
a) Bibliography b) Autobiography
c) Biography d) Calligraphy

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

6. Intense
a) Struggle b) Allow
c) Furious d) Calm

7. Zenith
a) Height b) Apex
c) Bottom d) Top

8. Timid
a) Tired b) Brave
c) Gentle d) Snicker

9. Sinister
a) Good b) Long
c) Evil d) Short

10. Provoke
a) Insult b) Encourage
c) Anger d) Soothe

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

11. Uncouth
a) Ill-mannered b) Unfriendly
c) Polite d) Boring

12. Stumbling Block
a) Argument b) Frustration
c) Hurdle d) Advantage

13. Busy
a) Active b) Diligent
c) Pre-occupied d) Occupied

14. Feeble
a) Rude b) Stupid
c) Weak d) Invalid

15. Masterly
a) Cruel b) Brilliant
c) Influential d) Crafty

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. Pulses are a rich source <u>in</u> protein
a) On b) From
c) Of d) No errors

17. I go to school every day <u>through the</u> bus
a) In b) By
c) With d) No errors

18. It is raining cats <u>or</u> dogs

a) And b) With
c) Along with d) No errors

19. Tom is the tallest kid in his class
a) Tall b) Taller
c) More tall d) No errors

20. People are wanting to see the home team win the game
a) Want b) Feel
c) Thought d) No errors

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

21. 'In the last few months, the competition has become ____.'
a) Much tougher
b) More tougher
c) Much more tougher
d) More tough

22. 'How ____ renew a passport?'
a) Often do you have to
b) Do often you to have
c) You often do have to
d) You do have to often

23. 'The stairs are wet and slippery. Walk ___.'
a) Careful b) Care
c) Carefully d) Caringly

24. The house ____ I was born belongs to my grandparents.
a) In b) Which
c) Where d) When

25. 'There wasn't enough paper in the printer, ___?'
a) Are there b) Was there
c) Is there d) Were there

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.

26. My cousin said, "My room-mate had snored throughout the night."
a) My cousin said that her room-mate snored throughout the night.
b) My cousin told me that her room-mate snored throughout the night.
c) My cousin complained to me that her room-mate is snoring throughout the night.
d) My cousin felt that her room-mate may be snoring throughout the night.

27. I told him that he was not working hard.
a) I said to him, "He is not working hard."
b) I told to him, "You are not working hard."
c) I said, "You are not working hard."
d) I said to him, "You are not working hard."

28. "Are you alone, my son?" asked a soft voice close behind me.
a) A soft voice asked that what I was doing there alone.
b) A soft voice behind me asked if I was alone.
c) A soft voice from my back asked if I was alone.
d) A soft voice said to me are you alone son.

29. "What about going for a swim," he said, "It's quite fine now."
a) He asked me what about going for a swim as it was quite fine then.
b) He proposed going for swim as it was quite fine.
c) He suggested going for a swim as it was quite fine.
d) He advised me to go for a swim as it was quite fine.

30. His father ordered him to go to his room and study.
a) His father shouted, "Go right now to your study room"
b) His father said to him, "Go and study in your room."
c) His father said, "Go to your room and study."
d) His father said firmly, "Go and study in your room."

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

31. (A) entered the shop/(B) of a theatrical com-

pany/(C) the invisible man/(D) to get some clothes

a) ABCD b) CABD
c) BACD d) CADB

32. (A) to encourage the development of/(B) cottage industries in the village/(C) an exhibition was organized/(D) by the district authorities

a) ABCD b) BADC
c) CDAB d) ACDB

33. (A) I sow a seed/(B) I saw the sapling/(C) I saw a sprout/(D) I saw a plant

a) ACBD b) DCBA
c) ABCD d) CBAD

34. (A) but he/(B) was, in/(C) foolish person/(D) fact, a

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

35. (A) i happily ran/(B) in the world/(C) without a care/(D) after the aeroplane

a) CDBA b) ADCB
c) ABCD d) DABC

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.

More animals, including the great cats, do not **36** man and they do their best to avoid him. My brain turns round and round like a whirlwind at this odd behaviour. The explanation that the animals **37** that man is a killer is hardly believable.

To me, men are comparatively **38** and defenseless. Animals are more agile and alert than man. Nevertheless, it is a fact that animals **39** avoid man. My view is shared **40** other hunters that man has developed a defensive armour.

36. a) Prefer b) Admire
c) Hate d) Like

37. a) Know b) Believe
c) Feel d) See

38. a) Strong b) Weak
c) Powerful d) Fragile

39. a) Seldom b) Never
c) Occasionally d) Normally

40. a) With b) Along
c) By d) Among

Directions : Read the following passage and answer the questions by marking the answer choice from the alternatives given.

When you grow up in a place where it rains for five months a year, wise elders help you to get acquainted with the rain early. They teach you that it is ignorance to think that it is same rain falling every day. There is rain that is gentle, and there is also rain that falls too hard and damages the crops. Hence, pray for the sweet rain that helps the crops to grow.

The monsoon in the Naga Hills goes by the native name, 'Khuthotei' (which means the rice-growing season). It lasts from May to early or mid-October. The local residents firmly believe that Durga Puja in October announces the end to rain. After that, one might expect a couple of short winter showers, and the spring showers in March and April. Finally, comes the 'big rain' in May; proper rainstorms accompanied by heart-stopping lightning and ear-splitting thunder. I have stood out in storms looking at lightning arc across the dark skies, a light-and-sound show that can go on for hours.

This is the season when people use the word 'sezuo' and 'suzu' to refer to the week-long rains, when clothes don't dry and smell of mould, when fungus forms on the floor and when you can't see the moon or the stars.

The rains are also called after flowering plants and people believe that the blossoming of those plants draws out rain. Once the monsoon sets in, field work is carried out in earnest and the work of uprooting and transplanting paddy in flooded fields is done. The months of hard labour are June, July and August. In August, as the 'phrogo' plant begins to bloom, a rain will fall. This August rain, also called 'phrogo', is a sign that the time for cultivation is over. If any new grain seeds are sown, they may not sprout; even if they do sprout, they are not likely to bear grain. The rain acts as a kind of farmer's almanac.

The urban population of school-goers and office-goers naturally dislikes the monsoon and its accompanying problems of landslides,

muddy, streets and periodic infections. For non-farmers, the month of September can be depressing, when the rainfall is incessant and the awareness persists that the monsoons will last out till October. One needs to have the heart of a farmer to remain grateful for the watery days, and be able to observe from what seems to the inexperienced as a continuous downpour-many kinds of rain. Some of the commonly known rain-weeks are named after the plants that alternately bloom in August and September. The native belief is that the flowers draw out the rain.

Each rain period has a job to fulfill: October rain helps garlic bulbs to form, while 'kumunyo' rain helps the rice bear grain. Without it, the ears of rice cannot form properly. End of October is the most beautiful time in the Naga Hills, as the fields turn gold and wild sunflowers bloom over the slopes, all heralding the harvest. Prayers go up for protecting the fields from storms, and the rains to retreat because the grains need to stand in the sun and ripen. The cycle nears completion a few weeks before the harvest, and the rain does retreat so thoroughly from the reaped furrows that the earth quickly turns hard. The months of rain becomes a distant memory until it starts all over again.

41. The rains are called after flowering plants because :
a) Heavy rains kill plants
b) Flowers grow in the rainy season
c) It is believed that the plants bring the rain
d) Flowers grow all the year-round

42. People who live in cities don't like rain because:
a) It brings mud and sickness with it
b) They are not bothered about the farmers
c) They don't like the plants that grow during the rain
d) Going shopping becomes difficult

43. People pray asking the rain to retreat because:
a) The fungus and mold need to dry
b) Children don't get a chance to play
c) The crops need the sun and heat to ripen
d) They like to pray

44. What does Durga Puja mean to the farmers of the Naga hills ?
a) It is a holy festival for them
b) It announces the end of rain
c) They expect, thereafter, water showers
d) They look for light and sound show during the festival

45. When can one see sunflowers blowing all over the Naga Hills ?
a) From May to October
b) In September-October
c) During the retreat of rain
d) End of October

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

46. Bed of Roses
a) Very soft bad
b) Belong to something
c) Dull life
d) Full of Joys

47. Spill the beans
a) To chop vegetables
b) To throw things
c) To disclose a secret
d) To keep a secret

48. Cry for the Moon
a) None of the below
b) To wish for something accessible
c) To try to have something by bad means
d) To wish for something impossible

49. Bring to light
a) Highlight b) Disclose
c) Prove d) Probe

50. Spick and Span
a) Spotlessly clean b) Watch the weather
c) To be wise d) Deceive somebody

PART - B -AUTOMOBILE ENGINEERING

(OPTIONAL)

Marks : 200

Each question carries 2 marks :

51. Royal Enfield Motorcycle were being sold in India since the year -
a) 1932 b) 1949
c) 1952 d) 1955

52. The Rajdoot/RD was a 2-stroke Yamaha motorcycle made in India by Escorts group from-
a) 1981-1986 b) 1982-1988
c) 1983-1989 d) 1984-1990

53. India's first electric car REVA was founded by -
a) Ratan Tata
b) Ghulam Muhammad
c) Jamanlal Bajaj
d) Chetan Maini

54. Petrol -
a) $C_{2n}H_{n+2}$ b) C_nH_{2n+2}
c) CH_{n+2n} d) $2C_nH+_{2n}$

55. Diesel -
a) C_8H_{18}-$C_{10}H_{20}$ b) $C_{10}H_{20}$-$C_{15}H_{28}$
c) $C_{12}H_{28}$-$C_{17}H_{30}$ d) $C_{18}H_{30}$-$C_{20}H_{32}$

56. An I.C Engine converts -
a) Chemical Energy to Heat Energy
b) Heat Energy to Mechanical Energy
c) Potential Energy to Kinetic Energy
d) All of the above

57. Compression Ratio -
a) $CR = (V_d+V_c)/V_d$
b) $CR = (V_d+V_c)/V_c$
c) $CR = (V_d \times V_c)/V_d$
d) $CR = (V_d \times V_c)/V_c$

58. Horse Power
a) $(F + d)/t$ b) $F \times d \times t$
c) $(F \times d)/t$ d) $(F + d) \times t$

59. Firing Orders of 4-stroke I.C Engine -
a) 1-3-4-2 b) 1-3-2-4
c) 1-4-3-2 d) All of the above

60. In an I.C Engine, Reciprocating motion is converted into Rotary motion by a -
a) Piston b) Crankshaft
c) Camshaft d) Connecting rod

61. A Linear motion is achieved from a Rotary motion by a -
a) Piston b) Crankshaft
c) Camshaft d) Cam

62. T-head, L-head, F-head and I-head are for
a) Engine types b) Engine blocks
c) Valves arrangement d) Engine head types

63. 1.5 litre engine is for -
a) Engine size b) Fuel Efficiency
c) Engine capacity d) Fuel consumption

64. An Automobile clutch is to -
a) Disengage engine and transmission
b) Disengage engine power and transmission system
c) Allows to change gears
d) Allows to select gears

65. A clutch's pressure plate is to -
a) Release the pressure from the clutch plate
b) To pressurize the clutch plate against the flywheel's face
c) Allows the disengagement of power flow
d) All of the above

66. The material of a single dry disc plate is -
a) Asbestos b) Non asbestos
c) Cast iron d) High carbon steels

67. Gearbox is -
a) Transmission system
b) Transmission
c) Gears
d) Torque and speed

68. Crash gearbox is
a) Synchromesh gearbox
b) Sliding mesh gearbox
c) Constant mesh gearbox
d) None of the above

69. Propeller shaft transmit power from
a) Engine to wheels
b) Engine to drive shafts
c) Transmission to differential
d) Transmission to drive shafts

70. Propeller shaft has
a) Two joints b) Three joints
c) Four joints d) None of the above

71. Slip joint is for
a) Variable angle b) Variable length
c) Different angle d) Different length

72. Universal joint is for -
a) Variable angle b) Different angle
c) Variable length d) Different length

73. TATA Nano is a -
a) Front wheel drive b) Rear wheel drive
c) Hybrid drive d) All of the above

74. Maruti-800 has -
a) No differential b) A differential
c) An Overdrive d) None of the above

75. 4-wheelers means -
a) 4 wheel drive b) 4 × 4
c) Both (a) and (b) d) None of the above

76. 2-wheelers mainly employs -
a) 2-stroke engine b) 4-stroke engine
c) Both (a) and (b) d) None of the above

77. Modern scooty employs -
a) Automatic transmission
b) CVT
c) Manual gear select
d) All of the above

78. Brake is to -
a) Stop the vehicle b) Control and stop
c) Stop when requires d) Apply force

79. Pascal's law is applicable in -
a) Air brake system
b) Mechanical brake system
c) Hydraulic brake system
d) Electrical brake system

80. Braking force is present when -
a) Brake pads are present
b) Brake linings are present
c) Friction are present
d) All of the above

81. Woman who invented brake shoe -
a) Bertha Benz b) Stephanie Kwolik
c) Mary Anderson d) Charlie Martin

82. Air Brake is -
a) For heavy duty
b) A power brake
c) An assist to hydraulic system
d) All of the above

83. ABS is under the control of -
a) ESP b) ECM
c) ECU d) TCS

84. ECU Controls -
a) Brake system b) Fuel system
c) Engine performance d) All of the above

85. Fifth wheel steering system is common in modern vehicles -
a) Yes b) No
c) Selected few d) High end variant vehicles

86. Steering is to -
a) Control the vehicle
b) Steer the vehicle
c) Change the angular direction of the wheels
d) Both (b) and (c)

87. Ackerman steering system is achieved by having -
a) A steering gearbox
b) A steering geometry
c) Tie rod and steering linkages
d) All of the above

88. Passenger vehicles employs steering box with a -
a) Rack and pinion gears
b) Wand roller
c) Re circulating ball type
d) All of the above

89. Turning radius is related to -

a) Steering geometry of the vehicle
b) Vehicle and turns
c) Smallest circle in which a vehicle can turn
d) All of the above

90. Kingpin inclination is -
a) Caster b) Camber
c) Toe-in d) None of the above

91. Toe-out is -
a) The negative toe-in
b) Angle in the inner wheel during turning
c) Positive of toe-in
d) Both (a) and (b)

92. Chassis is -
a) Suspension system
b) Transmission system
c) Chassi frame
d) All of the above

93. Chassi frame of Wrangler jeep is -
a) Channel type b) Ladder type
c) Tubular type d) Subframe

94. Ambassador car of Hindustan Motors uses
a) Leaf springs b) Coil springs
c) Torsion bar d) Both (a) and (c)

95. Shock absorber dampen -
a) Road shocks b) Spring shocks
c) Spring energy d) All of the above

96. Shock absorber is a -
a) Single acting b) Double acting
c) One way acting d) Both (a) and (b)

97. Road wheels are made of -
a) Rubber b) Steel
c) Both (a) and (b) d) None of the above

98. Tyres are part of -
a) Steering system b) Suspension system
c) Chassis d) Both (b) and (c)

99. Wheels with no tube -
a) Tubeless b) Solid tyre
c) Metal wheel d) All of the above

100. Tractors use -
a) Rigid suspension
b) Independent suspension
c) Leaf spring
d) Hitch suspension

101. Torsion bar absorbs shock by -
a) Compression b) Flexing
c) Twisting d) All of the above

102. Electrical motor is in -
a) Electric horn b) Air horn
c) Electronic horn d) All of the above

103. Automobile use -
a) A.C current b) D.C current
c) Battery d) Both (b) and (c)

104. D.C current is achieved through -
a) A Dynamo b) An Alternator
c) A Rectifier d) All of the above

105. Motor is -
a) Self starter b) Dynamo
c) Alternator d) All of the above

106. Self starter is to -
a) Start the engine b) Start the car
c) Crank the engine d) All of the above

107. Alternator converts -
a) Electrical Energy into Chemical Energy
b) Mechanical Energy into Electrical Energy
c) Chemical Energy into Mechanical Energy
d) Heat Energy into Electrical Energy

108. Battery stores -
a) Chemical Energy b) Electrical Energy
c) Potential Energy d) Voltages

109. Acids use in battery is -
a) HCI b) H_2SO_4
c) H_2CO_3 d) $C_2H_4O_2$

110. Electrolyte is in -
a) Radiator b) Windshield washer
c) Battery d) All of the above

111. Coolant and water ratio -
a) 50:50 b) 40:60
c) 30:70 d) 20:80

112. Cooling system is to -
a) Keep the engine at a working temperature
b) Cool the engine
c) Cool the engine compartment
d) All of the above

113. Air cooling system requires -
a) A coolant b) A radiator
c) A fan d) All of the above

114. There are ___ main types of cooling system
a) 2 b) 3
c) 4 d) All of the above

115. TATA Nano employs -
a) Air cooling system
b) Liquid cooling system
c) Hybrid cooling system
d) All of the above

116. Thermostat valve is located in the -
a) Radiator
b) Inlet to engine water jacket
c) Outlet to engine water jacket
d) Cooling fan

117. Water cooling engines uses -
a) Water b) Coolant
c) Anti freezer d) All of the above

118. There are ____ types of thermostat valve-
a) 2 b) 3
c) 4 d) 5

119. There are ___ types of Liquid cooling system -
a) 2 b) 3
c) 4 d) 5

120. The common anti freeze solution -
a) Denatured alcohol
b) Ethylene glycol
c) Distilled glycerin
d) All of the above

121. BS-4 is related to -
a) Engine controls b) Emission system
c) Engine power d) Vehicle variant

122. Muffler is for -
a) Air pollution b) Noise pollution
c) Temperature d) None of the above

123. Catalytic converter is for -
a) Air pollution b) Noise pollution
c) Heat converter d) All of the above

124. Material found in a catalytic converter is-
a) Palladium b) Rhodium
c) Potassium d) All of the above

125. Sequential injection is in -
a) T.B.I b) Carburetor
c) M.P.F.I d) All of the above

126. Indian Diesel Fuel system is -
a) D.I.C.O.R b) C.R.D.I
c) C.R.D.E d) All of the above

127. Diesel pressure developing unit is -
a) An injector b) F.I.P
c) Primary pump d) All of the above

128. A Pin which holds piston and connecting rod
a) Wrist pin b) Piston pin
c) Gudgeon pin d) All of the above

129. A device by means of which torque is multiplied while it is transmitted from the driving to the driven member by hydraulic action -
a) Fluid coupling b) Torque converter
c) Hydraulic actuator d) Power pack

130. Speedometer
a) Speed of a vehicle
b) Distance travelled by a vehicle
c) Records a specific distance travelled by a vehicle
d) All of the above

131. Odometer
a) Distance travelled by a vehicle
b) Records the total number of Kilometers done by a vehicle till date
c) Records a specific distance travelled by a vehicle
d) All of the above

132. Tachometer -
a) Vehicle speed b) Wheel speed
c) Engine speed d) All of the above

133. Trip meter -
a) Records the distance travelled by a vehicle in a short trip
b) Records the total number of Kilometers done by a vehicle till date
c) Records a specific distance travelled by a vehicle
d) All of the above

134. S.A.E -
a) Systematic Association of Engineers
b) Sales Accountancy and Economics
c) Society of Automotive Engineers
d) System Analyst Engineering

135. I.S.O -
a) Institution Student Organisation
b) International Standard Organisation
c) Indian Service Operation
d) All of the above

136. I.S.I -
a) Inter Service Intelligence
b) International Standards of Institute
c) Indian State of Institutes
d) Indian Standards Institute

137. Petrol Engine is an-
a) S.I. Engine b) I.C. Engine
c) Otto Engine d) All of the above

138. Leonardo Da Vinci felt the possibility of self propelled vehicle in the-
a) 15th Century b) 16th Century
c) 17th Century d) 18th Century

139. Sir Isaac Newton suggested a steam carriage to be powered by a rewardly directed jet of steam in the year-
a) 1580 b) 1590
c) 1680 d) 1690

140. Nikolaus A. Otto and Engen Langen of Germany invented four stroke engine in the year-
a) 1830 b) 1836
c) 1850 d) 1866

141. Karl Benz of Germany produced a tricycle with an I.C Engine in the year-
a) 1882-83 b) 1884-85
c) 1885-86 d) 1886-87

142. Gottlieb Daimler built the first motorcycle in the year-
a) 1882-83 b) 1884-85
c) 1885-86 d) 1886-87

143. In the year 1886, a four wheeled carriage was produced by -
a) Rudolf Diesel b) Nikolaus Otto
c) Karl Benz d) Gottlieb Daimler

144. Maruti Udyog Limited was founded by the Government of India on the -
a) 24th January 1980
b) 27th January 1980
c) 24th January 1981
d) 27th January 1981

145. Hindustan Motors Limited was founded in Kolkata India in the year -
a) 1940 b) 1941
c) 1942 d) 1943

146. TATA Motors (Telco) was founded in Mumbai India in the year -
a) 1943 b) 1944
c) 1945 d) 1946

147. Mahindra and Mahindra was founded in Ludhiana India in the year -
a) 1940 b) 1942
c) 1945 d) 1947

148. Ashok Leyland was founded in Chennai India in the year -
a) 1943 b) 1944
c) 1947 d) 1948

149. Bajaj Auto Limited based in Pune India was founded in the year -
a) 1940 b) 1942
c) 1943 d) 1945

150. Royal Enfield Motorcycle was produced and designed by Bob Walker and Jules Gobiet and was launched in London in the year -
a) 1898 b) 1899
c) 1900 d) 1901

PART - B -MECHANICAL ENGINEERING

(OPTIONAL)

Marks :200

Each question carries 2 marks :

51. When starting a centrifugal pump, the delivery valve is kept
a) Fully open b) Fully closed
c) Half open d) Less than half open

52. Hydraulic ram is a pump which works on the principle of
a) Centrifugal action
b) Reciprocating action
c) Positive displacement action
d) Inertia forces of water in the supply line

53. Piston compression rings are made of
a) Cast iron b) Bronze
c) Aluminium d) White metal

54. Automobile connecting rods are mass produced by
a) Cold heading b) Forging
c) Fine sand casting d) Die casting

55. Stroke of an IC engine equals
a) Half the crank radius
b) The crank radius
c) Twice the crank radius
d) Four times the crank radius

56. Which is not the part of petrol engine ?
a) Camshaft b) Exhaust silencer
c) Spray nozzle d) Dynamo

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

58. Carburation is the term applied to
a) Supplying petrol to the cylinder of an SI engine
b) Atomizing of petrol and its mixing with air
c) Heating up of the charge going to the engine cylinder
d) Scavenging of the engine cylinder

59. Mixing of fuel in case of a diesel engine occurs in the
a) Inlet manifold b) Engine cylinder
c) Fuel pump d) Injector

60. Detonation is said to take place in the engine when
a) Sudden acceleration is imparted to the engine
b) Temperature rise is too high
c) High pressure waves are setup
d) Combustion of fuel takes place without spark provided to it

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

62. A fan is provided in the water-cooling system to
a) Draw the air through the radiator
b) Provide drive to the water pump
c) Cool the engine by blowing air over it
d) Increase flow of coolant

63. The automobile gears are generally made of
a) Cast iron b) Mild steel
c) Alloy steel d) Cast steel

64. Shock absorber in an automobile is a device meant for
a) Energy increase b) Energy release
c) Energy dissipation d) Energy absorption

65. The tilt of the car wheels from the vertical is called
a) Castor
b) Camber
c) Slip angle
d) Steering axis inclination

66. What type of brakes are usually employed on cars ?
a) Mechanical b) Pneumatic
c) Hydraulic d) Vacuum

67. A refrigeration working on a reversed Carnot

cycle has a COP of 4. If it works as a heat pump and consumes 1 kW, the heating effect will be
a) 1kW b) 4kW
c) 5kW d) 6kW

68. In a refrigeration system, expansion valve is incorporated between
a) Evaporator and compressor
b) Condenser and evaporator
c) Compressor and condenser
d) Super heater and sub cooler

69. A capillary tube is used in a small refrigerator to serve the purpose of
a) Thermostat b) Expansion valve
c) Drier d) Evaporator

70. The refrigerant R-22 is
a) Monochloro difluoro methane
b) Dichloro difluoro methane
c) Trichloro monochloro methane
d) Tetra chloro difluoro methane

71. Air-conditioning is the simultaneous control of ___ in a confined space
a) Temperature and air movement
b) Temperature and humidity
c) Temperature, humidity and air movement
d) Temperature, humidity, purity and air movement

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

73. A 100 percent relative humidity of air implies that
a) Wet bulb temperature equals the dew point temperature
b) Dew point temperature equals the saturation temperature
c) Saturation temperature equals the dry bulb temperature
d) Dry bulb, wet bulb, dew point and saturation temperatures are equal

74. In a psychrometric chart, the vertical lines parallel to the ordinate indicate
a) Dry bulb temperature
b) Wet bulb temperature
c) Specific humidity
d) Enthalpy of saturation

75. When atmosphere air is heated at constant pressure, the
a) Humidity ratio does not change
b) Relative humidity increases
c) Dew point temperature does not change
d) Wet bulb temperature increases

76. Sensible heat factor is defined as the ratio of
a) Sensible heat to total heat
b) Sensible heat to latent heat
c) Latent heat to total heat
d) Latent heat to sensible heat

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

78. Which one of the following represents a closed system ?
a) Bomb calorimeter
b) Steam generator
c) Universe
d) Exhaust stroke of an IC engine

79. Zeroth law of thermodynamics forms the basis of ___ measurement
a) Pressure b) Temperature
c) Heat exchange d) Work

80. In Carnot cycle, the rejection of heat is
a) At constant pressure
b) At constant volume
c) At constant temperature
d) Partly at constant pressure and partly at constant volume

81. Systematic errors are
a) Unpredictable in character
b) Due to assignable causes
c) Have minimum scatter or dispersion
d) Distributed on both +ve and -ve sides of the mean value

82. A barometer measures
a) Absolute pressure
b) Gauge pressure
c) Vacuum

d) Atmospheric pressure

83. In a venturimeter, pressure at the throat is
a) Less than that in the entrance pipe
b) Greater than that in the entrance pipe
c) Equal to that in the entrance pipe
d) Independent of the rate of flow

84. Notch is a device used for measuring
a) Rate of flow through pipes
b) Rate of flow through a small channel
c) Flow velocity through a pipe line
d) Flow velocity through a small channel

85. Which one of the following is not a part of micrometer ?
a) Spindle b) Anvil
c) Beam d) Sleeve

86. The marking of circular scale in a micrometer screw gauge is done on
a) Ratchet b) Thimble
c) Barrel d) Spindle

87. The term wringing is associated with
a) Slip gauges
b) Rack and pinion
c) Shanks and collets of a drill
d) Angular measuring instruments

88. A comparator for its working depends on
a) Optical devices
b) Accurate calibrated scale
c) Comparison with standard
d) Accurate micrometer gauge

89. Which aspect is used to specify a sine bar?
a) The size of the rollers
b) The centre distance between the two rollers
c) Between inner circumference of two rollers
d) Between outer circumference of two rollers

90. All the following devices can be used for testing the straightness of a surface, except
a) Optical gauge b) Spirit level
c) Auto collimator d) Beam comparator

91. The surface roughness on a drawing is represented by
a) Circles b) Traingles
c) Squares d) Zig-zag lines

92. Gear tooth vernier is used to measure ___ of tooth
a) Depth
b) Pitch line thickness
c) Addendum and dedendum
d) Circular pitch

93. All of the following are advantages of process layout, except
a) Easy handling of break down
b) Simplified production planning and control
c) Lower investment due to lower cost of general-purpose machines
d) Higher utilisation of production facilities

94. What characterizes the fixed position layout?
a) Fixed position of machines
b) Fixed position of operations
c) Material movement along fixed paths
d) Fixed position of the largest component of a product

95. Which of the following is a constituent of direct expenses ?
a) Rent of factory building
b) Cost of advertisement
c) Salaries of office and administrative staff
d) Cost of jigs and fixtures made for the job

96. Time study is concerned with
a) Machine setting time
b) Method of fixing operation time of workers
c) Time taken by an average worker to do a job
d) Time appraisal of the value of work involving human efforts

97. Job evaluation is the method of determining
a) Utility of a product
b) Worth of a machine to perform a specific task
c) Relative value of a job
d) Worker's performance on a job

98. Economic order quantity is the quantity at which the cost of carrying is
a) Minimum
b) Equal to the cost of ordering
c) Less than the cost of ordering
d) Cost of overstocking

99. ABC analysis is used in
a) Job analysis
b) Production schedule
c) Inventory control

d) Simulation

100. What represents the abscissa of a break-even chart ?
a) Variable cost b) Total cost
c) Sales volume d) Profit

101. Bin cards are used in keeping record of
a) Man power
b) Machine utilisation
c) Material storage
d) Entry/exit time of workers

102. The routing function in a production system design is concerned with
a) Manpower utilisation
b) Machine utilisation
c) Quality assurance of the product
d) Optimizing material flow through the plan

103. PERT stands for
a) Programme evaluation and review technique
b) Process evaluation and reporting technique
c) Planning evaluation and reporting technique
d) Planning estimation and review technique

104. In value engineering, important consideration is given to
a) Cost reduction
b) Profit maximization
c) Function concept
d) Customer satisfaction

105. Acceptance or rejection of a lot is based on quality test on two or more samples is
a) Single sampling plan only
b) Double sampling plan only
c) Sequential sampling plan only
d) Both double and sequential sampling plans

106. Which is not the tool used in statistical quality control ?
a) Control chart
b) Theory of sampling
c) Analytical estimating
d) Frequency distribution chart

107. Copper sheets are manufactured by
a) Drawing b) Rolling
c) Extruding d) Hammering

108. Which one of the following is an advantage of forging ?
a) Good surface finish
b) Low tooling cost
c) Close tolerance
d) Improved physical property

109. In sand moulding, the top flask is known as
a) Cope b) Drag
c) Fillet d) Chill

110. Gate is provided in moulds to
a) Feed the casting at a constant rate
b) Give passage to gases
c) Compensate to shrinkage
d) Avoid cavities

111. The metal moulds are used in
a) Greensand mould
b) Dry sand mould
c) Die casting process
d) Loam moulding

112. The plastic articles are usually produced by
a) Shell moulding
b) Greensand moulding
c) Plaster moulds
d) Injection moulding

113. An alloy of copper, zinc and silver often used in fabrication work is called
a) Silver solder b) Electrician solder
c) Plumber's solder d) Spelter

114. Spot welding, projection welding and seam welding belong to the category of
a) Arc welding
b) Thermit welding
c) Forge welding
d) Electric resistance welding

115. In an inert gas welding process, the commonly gas used is
a) Hydrogen b) Nitrogen
c) Krypton d) Helium or argon

116. The arc in the arc welding is created by
a) Current b) Voltage
c) Frequency d) Contact resistance

117. For cutting and welding of non-ferrous metals, use is made of
a) Submerged arc welding
b) Inert gas arc welding

c) Carbon arc welding
d) Ultrasonic welding

118. Discontinuous or segmental chips are produced during machining of
a) Cast iron b) Mild steel
c) Copper d) High carbon steel

119. The tool life is influenced maximum by
a) Cutting speed
b) Tool material and geometry
c) Cutting fluid
d) Surface conditions of the work piece

120. Gang milling is a
a) Milling process for generating hexagonal surface
b) Process of cutting gears
c) Process in which two or more cutters are used simultaneously
d) Milling operation combined with turning

121. Helical grooves are provided on a twist drill to
a) Reduce the bulk
b) Guide the cutting lip
c) Increase the length of cutting edge
d) Facilitate removal of chip

122. Grinding is a ___ operation
a) Dressing b) Surface finishing
c) Forming d) Facing

123. In Electro-discharge machining, the tool is made of
a) Stainless steel b) Tungsten carbide
c) Brass or copper d) Diamond

124. A ball and a socket joint forms a
a) Turning pair b) Rolling pair
c) Spherical pair d) Sliding pair

125. Sensitivity of a governor is defined as the ratio of
a) Effort of the governor to its speed range
b) Mean speed to speed range of the governor
c) Maximum to minimum speed of the governor
d) Speed range to mean speed of the governor

126. The radial distance from the top of tooth to the bottom of tooth in a meshing gear is known as
a) Addendum b) Dedendum
c) Working depth d) Total depth

127. Cam and follower mechanism constitutes a kinematic pair of the type
a) Lower and open b) Higher and open
c) Lower and closed d) Higher and closed

128. The iron are mostly used for the production of pig iron is
a) Haematite b) Siderite
c) Limonite d) Magnetite

129. Isothermal annealing is mainly used in alloy steels to improve
a) Machinability b) Toughness
c) Ductility d) Weldability

130. Slip gauges are generally made of
a) Aluminium b) Wrought iron
c) Alloy steel d) Cast iron

131. The ruby rod used in lasers is made of
a) Aluminium oxide b) Silicon
c) Copper d) Germanium

132. Resilience of a material is important when subjected to
a) Fatigue b) Wear and tear
c) Shock loading d) Inertia loading

133. The difference between the maximum material limits of mating parts is called
a) Clearance b) Deviation
c) Tolerance d) Allowance

134. Enlarging an existing circular hole with a rotating single point tool is called
a) Boring b) Drilling
c) Reaming d) Internal turning

135. Grinding wheel is considered soft or hard depending upon
a) Grain size b) Strength of bond
c) Structure of wheel d) Abrasive material

136. The coefficient of viscosity is a property of
a) The fluid
b) The boundary conditions
c) The body over which flow occurs
d) The flow velocity

137. The weight of liquid that rises in a tube due

to capillary action is supported by the
a) Friction on the walls of the tube
b) Atmospheric pressure
c) Vertical component of surface tension
d) Adhesion between liquid and solid surface

138. Ball pen works on the principle of -
a) Viscosity b) Surface tension
c) Gravitational force d) Boyle's law

139. All fluids exert -
a) Pressure in the direction of flow only
b) Pressure in the direction of force of gravity
c) Equal pressure in all directions
d) Equal pressure in x, y and z plane

140. One dimensional flow means -
a) Uniform flow
b) Steady flow
c) Straight line flow
d) Flow which neglects changes to transverse direction

141. The continuity equation represents conservation of
a) Mass b) Momentum
c) Energy d) Vorticity

142. The ratio of Pelton wheel lies between
a) 3-5 b) 6-10
c) 11-14 d) 20-25

143. The speed factor in a turbine represents the ratio between
a) Peripheral velocity of vane and spouting velocity
b) Whirl velocity and peripheral velocity
c) Flow velocity and spouting velocity
d) Absolute velocity and spouting velocity

144. Kaplan turbine is -
a) A high head mixed flow turbine
b) A low head axial flow turbine
c) An outward flow reaction turbine
d) An impulse inward flow turbine

145. Critical speed of a turbine is
a) Same as runaway speed
b) Speed that will cause mechanical failure of the shaft
c) Speed at which natural frequency of vibrations equal the number of revolutions in the same time
d) Speed equal to synchronous speed of the generator

146. Which of the following water turbine does not require a draft tube ?
a) Propeller turbine b) Pelton turbine
c) Kaplan turbine d) Francis turbine

147. Why are surge tanks used in a pipeline ?
a) To reduce frictional loss in pipe
b) To ensure uniform flow in pipe
c) To relieve the pressure due to water hammer
d) To reduce cavitation

148. In general, the vanes of a centrifugal pump are
a) Curved forward b) Curved backward
c) Radial d) Twisted

149. The power absorbed by a hydraulic pump is directly proportional to
a) N b) N^2
c) N^3 d) N^4

150. Cavitation in centrifugal pumps can be reduced by
a) Reducing the discharge
b) Reducing the suction head
c) Throttling the discharge
d) Increasing the flow velocity

PART - B -AGRICULTURAL ENGINEERING

(OPTIONAL)

Marks :200

Each question carries 2 marks :

51. Important function of communication
a) Information b) Influence
c) Integrative d) Persuasive

52. Generally the number on Richter scale ranges between
a) 0 and 6 b) 0 and 9
c) 1 to 5 d) 1 to 12

53. The extent to which a community, structure, services or geographic area is likely to be damaged or disrupted by the impact of particular hazard is termed as
a) Capacity b) Vulnerability
c) Risk d) Hazard assessment

54. In India, Cyclone is tracked through which satellite ?
a) INSAT b) IRS
c) Ocean SAT d) None of the above

55. The pressure at a point in a fluid will not be same in all directions when the fluid is ___
a) Moving b) Viscous
c) Viscous and moving d) Viscous and static

56. Identify the tense used in the given sentence. "You are always working on your laptop."
a) Present indefinite tense
b) Present perfect tense
c) Present continuous tense
d) Present perfect continuous tense

57. The normal stress in a fluid will be constant in all directions at a point only if
a) It is incompressible
b) It has uniform viscosity
c) It has zero viscosity
d) It is at rest

58. Specific weight of sea water is more than that of pure water because it contains ___
a) Dissolved air b) Dissolved salt
c) Suspended matter d) All of the above

59. A hydrometer is used to determine
a) Relative humidity
b) Surface tension of liquids
c) Specific gravity of liquids
d) Viscosity of liquids

60. Water flows between two plates of which the upper one is stationary and the lower one is moving with a velocity V. What will be the velocity of the fluid in contact with the upper plate ?
a) V b) N/2
c) 2V d) 0

61. Which one of the following is true about Bulk Modulus of elasticity ?
a) It is ratio of compressive stress to volumetric strain
b) It is ration between compressive stress to linear strain
c) It is ration of tensile stress to volumetric strain
d) It is ration of tensile stress to linear strain

62. The efficiency of Ericsson cycle is ___ Carnot cycle
a) Greater than b) Less than
c) Equal to d) None of the above

63. The locus of standard liquid line and standard vapour line meets at
a) Boiling point b) Critical point
c) Ice point d) Triple point

64. Change in enthalpy of a system is the heat supplied for
a) Constant pressure
b) Constant temperature
c) Constant volume
d) Constant entropy

65. Superheated vapour behaves

a) Exactly as gas
b) As steam
c) As ordinary vapour
d) Approximately as a gas

66. During a refrigeration cycle, heat is rejected by the refrigerant in a ___
a) Condenser b) Compressor
c) Evaporator d) Expansion valve

67. A carburettor is used to supply
a) Petrol, air and lubricating oil
b) Air and diesel
c) Petrol and lubricating oil
d) Petrol and air

68. If the speed of the engine is increased, the indicated power will
a) Increase b) Decrease
c) Remain same d) None of the above

69. Cetane
a) Has zero cetane number
b) Has 100 cetane number
c) Is a straight chain paraffin
d) To improve lubricating quality of fuel

70. Piston ring are usually made of
a) Cast iron b) Aluminium
c) Carbon steel d) Babbitt

71. Inertia force acts
a) Perpendicular to the accelerating force
b) Along the direction of accelerating force
c) Opposite to the direction of accelerating force
d) In any direction w.r.t. accelerating force depending on the magnitude of two

72. A two high rolling mill consists of two rolls which rotate
a) At the same speed and in the same direction
b) At the same speed but in opposite direction
c) At different speeds and in the same direction
d) At different speeds and in the opposite direction

73. Projection welding is a
a) Continuous spot welding process
b) Multi-spot welding process
c) Arc welding process
d) Process used for joining round bars

74. Loam sand is a mixture of
a) 30% sand and 70% clay
b) 50% sand and 50% clay
c) 70% sand and 30% clay
d) 90% sand and 10% clay

75. Lancing is the operation of
a) Cutting a sheet of metal in a straight line along the length
b) Removal of metal to the desired shape from the edge of a plate
c) Cutting a sheet of metal through part of its length and then bending the cut portion
d) Bending a sheet of metal along a curved axis

76. According to Indian standards, the total numbers of tolerance grades are
a) 8 b) 12
c) 18 d) 20

77. For gas welding, the pressure desired at the welding torch for acetylene is
a) 7 to 103 kN/m^2
b) 70 to 280 kN/m^2
c) 280 to 560 kN/m^2
d) 560 to 840 kN/m^2

78. The process used to improve fatigue resistance of the metal by setting up compressive stresses in its surface, is known as
a) Hot piercing b) Extrusion
c) Cold peening d) Cold heading

79. An oxidising process used for aluminium and magnesium articles is called
a) Galvanizing b) Anodizing
c) Parkerising d) Sherardizing

80. For smoothing and cleaning out depres-

sions in the mould, a ___ is used
a) Slick b) Lifter
c) Swab d) Gagger

81. The centrifugal casting method, is used for casting articles of
a) Symmetrical shape about vertical axis
b) Symmetrical shape about horizontal axis
c) Irregular shape
d) Nonferrous metal only

82. The electrodes used in spot welding have a tip of
a) Stainless steel b) Aluminium
c) Copper d) Brass

83. According to Indian standard specifications, 100 H6/g5 means that
a) Basic size is 100 mm
b) Actual size is 100 mm
c) Difference between the actual size and basic size is 100 mm
d) None of the above

84. Locating the position of a plane table station with reference to three known points, is known as
a) Intersection method
b) Radiation method
c) Resection method
d) Three point problem

85. During secular variation of magnetic meridian at different places
a) Range of oscillations is constant
b) Period of oscillation is constant
c) Range and period of oscillation both vary
d) Period of oscillation only varies

86. While viewing through a level telescope and moving the eye slightly, a relative movement occurs between the image of the levelling staff and the cross hairs. The instrument is
a) Correctly focussed
b) Not correctly focussed
c) Said to have parallax
d) Free from parallax

87. An ideal vertical curve to join two gradients, is
a) Circular b) Parabolic
c) Elliptical d) Hyperbolic

88. In case of reduction of levels by the height of instrument method,
a) $\sum$B.S. – $\sum$F.S. = difference in R.L.S of the first station and last station
b) $\sum$(R.L.+I+F.S.) - first R.L = $\sum$(H.I.+No. of R.L.s.)
c) Both (a) and (b) above
d) Neither (a) nor (b)

89. If the declination of the needle is 10^0 W
a) Each of the whole circle reckoning has to be micros by 10^0
b) In the quadrantal method, the correction is positive in the 1st and 3rd quadrants
c) In the quadrantal method, the corrections is negative in 2nd and 4th quadrants
d) All of the above

90. The construction of optical square is based, on the principle of optical
a) Reflection b) Refraction
c) Double refraction d) Double reflection

91. In tangential tacheometry, an ordinary level staff is used
a) Leaning towards the instrument for inclined sights upward
b) Leaning away from the instrument for inclined sights downwards
c) Vertical in all cases
d) None of these

92. Gunnel is which face of the share that slides along the furrow wall ?
a) Vertical b) Horizontal
c) Centre d) Parallel

93. Which of the following is an indicator of the combustion speed of diesel fuel and compression needed for ignition ?
a) Cetane Number b) Octane Number
c) Calorific Value d) Pre-Ignition

94. The end of the connecting rod which fits

over the gudgeon pin is known as ___ connecting rod
a) Small end b) Big end
c) Piston d) Cylinder block

95. What is the correct sequence of strokes in four stroke cycle engines ?
a) Compression, Suction, Exhaust, Power
b) Power, Suction, Exhaust, Compression
c) Suction, Compression, Power, Exhaust
d) Suction, Power, Compression, Exhaust

96. Vapor lock is associated to the ___
a) Cooling system of engine
b) Ignition system of engine
c) Fuel supply system of engine
d) Governor system of engine

97. What is the rotating speed of an agitator in a power sprayer ?
a) 400-500 rev/min
b) 900-1000 rev/min
c) 600-700 rev/min
d) 100-200 rev/min

98. The most common mower, amongst the following is ___
a) Reciprocating mower
b) Lawn mower
c) Cylindrical mower
d) Horizontal mower

99. Which test is used to measure the resistance to flow of the lubricating oil ?
a) Pour point test b) Gravity test
c) Colour test d) Velocity test

100. What is the maximum permissible V-belt sag?
a) 15 mm b) 20 mm
c) 10 mm d) 18 mm

101. Which geometry has smothering effect on weeds ?
a) Planting b) Triangular
c) Circular d) Square

102. The main composition of biogas is
a) Methane b) Carbon Dioxide
c) Nitrogen d) Hydrogen

103. What is pH range of acid rain ?
a) Between 3-4 b) Between 6-8
c) 7 d) Between 4-6

104. Soil conservation can be achieved by having
a) Wind screen
b) Good plant cover
c) Restricted human activity
d) Low rainfall

105. Digging pits on the slopes just for the accumulation of run off is called as
a) Contour terracing
b) Contour trenching
c) Bench terracing
d) None of the above

106. A hyetograph is a graphical representation of
a) Rainfall intensity and time
b) Rainfall depth and time
c) Discharge and time
d) Cumulative rainfall and time

107. The stream which does not have any base flow contribution is called
a) Perennial stream b) Intermittent stream
c) Ephemeral stream d) None of the above

108. The shape of recession limb of a hydrograph depends upon
a) Basin characteristics only
b) Storm characteristics only
c) Both (a) and (b)
d) None of the above

109. Consumptive use of a crop during growth, is the amount of
a) Interception b) Transpiration
c) Evaporation d) All of the above

110. Which of the following factor causing waterlogging suggests extensive irrigation ?
a) Excessive Rains

b) Seepage of Water from High Lands
c) Impervious Obstruction
d) Over and Intensive Irrigation

111. The field capacity of a soil depends upon
a) Capillary tension in soil
b) Porosity of soil
c) Both (a) and (b)
d) Neither (a) nor (b)

112. Top of the weir is called
a) Ridge b) Head
c) Crest d) Peak

113. A velocity in excess of the critical velocity is called
a) Supersonic velocity
b) Super critical velocity
c) Hyper critical velocity
d) High critical velocity

114. Plantation of high water consuming trees for withdrawal of ground water is termed as
a) Mole drainage
b) Interceptor drains
c) Bio drainage
d) None of the above

115. Loose rock fill dams are economical for gully control, when gully depth is up to ___
a) 1.2 m b) 2.0 m
c) 5.0 m d) 10.0 m

116. In case of sprinklers ___ are positioned across the direction of wind
a) Sprinklers b) Sub main
c) Laterals d) Main

117. Brass is the alloy of ___
a) Cu 60-70%, Zn 30-0%
b) Cu 50-60%, Zn 40-50%
c) Cu 80-90%, Zn 10-20%
d) All of the above

118. The ratio of cow dung and water for making slurry to feed the bio-gas plant is ___
a) 1:2 b) 4:5
c) 3:2 d) 1:5

119. Which heat energy form is called as hidden energy ?
a) Specific heat b) Latent heat
c) Sensible heat d) Radiation energy

120. What happens to the drying rate when it reaches critical moisture content ?
a) Declines b) Increases gradually
c) Stops d) Becomes constant

121. Unit operation is based on ___
a) Law of conservation of mass only
b) Law of conservation of energy only
c) Law of conservation of mass and energy
d) Third law of thermodynamics only

122. Thermal energy is transported through the molecules due to ___ and ___
a) Lattice waves, free electrons
b) Lattice waves, free protons
c) Free protons, free electrons
d) Lattice waves, longitudinal waves

123. ___ chillers are also called as centrifugal chiller type refrigeration systems.
a) Low-pressure b) Low-temperature
c) Low-velocity d) High-pressure

124. What is the cause of convection heat transfer in evaporators ?
a) Convection is heat transfer by neutrons
b) Convection is heat transfer by mass motion of a heat source
c) Convection is mass transfer by mass motion of a fluid
d) Convection is heat transfer by mass motion of a fluid

125. Which of the following pumps can be used as vacuum pumps ?
a) Positive displacement
b) Jet
c) Airlift
d) Propeller pumps

126. What is the best solvent for paper chromatography?

a) Water b) Alcohol
c) Vinegar d) Methanol

127. Which heat exchanger is most efficient ?
a) Parallel flow b) Cross flow
c) Counter flow d) Tangent flow

128. An agitator is selected depending upon the ___
a) Volume of liquid
b) Height of the tank
c) Power required
d) Fluid viscosity

129. What happens when milk is sterilized ?
a) Reduces the bacterial population
b) Destroys spores
c) Impart color
d) Impart flavor

130. The shear strength of a soil
a) Is directly proportional to the angle of internal friction of the soil
b) Is inversely proportional to the angle of internal friction of the soil
c) Decreases with increase in normal stress
d) Decreases with decrease in normal stress

131. Cyclone separator is used for separating the
a) Fine Particles b) Medium Particles
c) Heavy Particles d) All of the above

132. The recommended belt speed for grain conveying ranges is
a) 2.3-2.5 m/s b) 2.5-2.8 m/s
c) 3-3.5 m/s d) 3.5-4.5 m/s

133. The length of storage of fruits and vegetables is a function of ___
a) Resistance to attack by microorganisms
b) Composition
c) Gases in the environment
d) All of the above

134. Bacteria and yeast can ___
a) Grow with or without air
b) Need humid/warm conditions to grow
c) Need more moisture than molds
d) All of the above

135. Components that provide internal storage to the CPU are
a) Registers
b) Program Counters
c) Controllers
d) Internal chips

136. The first practical form of Random Access Memory was the ___
a) SSEM
b) Cathode Ray Tube
c) William's Tube
d) Thomas's Tube

137. If $f(x) = |x|$, then for interval $[-1, 1]$, $f(x)$
a) Satisfied all the conditions of Rolle's Theorem
b) Satisfied all the conditions of Mean Value Theorem
c) Does not satisfied the conditions of Mean Value Theorem
d) None of these

138. A set of linear equations is represented by the matrix equation $Ax = b$. The necessary condition for the existence of a solution for this system is
a) A must be invertible
b) b must be linearly depended on the columns of A
c) b must be linearly independent of the columns of A
d) None of these

139. The set of all real numbers under the usual multiplication operation is not a group since
a) Multiplication is not a binary operation
b) Multiplication is not associative
c) Identity element does not exist
d) Zero has no inverse

140. The angle between any two diagonals of a cube is
a) $\cos\theta = \sqrt{3}/2$ b) $\cos\theta = 1/\sqrt{2}$

c) $\cos\theta = 1/3$ d) $\cos\theta = 1/\sqrt{6}$

141. The solution of a differential equation which is not obtained from the general solution is known as
a) Particular Solution b) Singular Solution
c) Complete Solution d) Auxiliary Solution

142. In an average well decomposed FYM (Farmyard manure) contains
a) 0.5% N2 b) 0.2% P2O5
c) 0.5% K2O d) All of these

143. Which bacterium is responsible for denitrification in N2 cycle ?
a) Nitrobactor b) Nitrosomones
c) Rhizobium d) Bacillus subtilis

144. Which of the following crop does not belong to solanaceae ?
a) Potato b) Tobacco
c) Brinjal d) Sugar beet

145. The active soil forming factor
a) Climate b) Relief
c) Organism d) Both a and c

146. Mixing process of soil is called ___
a) Pedoturbation b) Podzolization
c) Laterization d) None of the above

147. Agricultural finance mainly concern with ___
a) Utilization of funds
b) Acquisition of funds
c) Both Utilization and Acquisition of funds
d) None of the above

148. Co-operatives for tribes are called as ___
a) Multi-purpose societies
b) Savita
c) Large agriculture multi-purpose Co-operative Societies
d) Lead Bank

149. What is the most important source of money lending to farmers in rural areas ?
a) Rural Banks
b) Local money lender
c) Nationalized banks
d) Cooperative agencies

150. 'Farmers first' model was put forwarded by ___
a) Robert Chamber b) A. Readdy
c) Knapp d) D. Berlo

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