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Test Booklet Series

T. B. C. : AAE – 1/19

A**TEST BOOKLET****ASSISTANT AGRICULTURE ENGINEERS**

Sl. No.

1321**PAPER – I****Time Allowed : 2 Hours****Maximum Marks : 100****: INSTRUCTIONS TO CANDIDATES :**

1. IMMEDIATELY AFTER COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEM SETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF THE SAME SERIES ISSUED TO YOU.
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5. This Test Booklet contains 100 items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
6. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by using **BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
7. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There will be no negative marking for wrong response (answer).**
8. Before you proceed to mark (darken) in the Answer Sheet the responses (answers) to various items (questions) in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per the instructions sent to you with your **Admission Certificate**.
9. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the *Answer Sheet* issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the **Test Booklet**, after completion of the examination, for your reference.
10. Sheets for rough work are appended in the Test Booklet at the end.

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SEAL

1. Mechanization level is measured normally in terms of :
 (A) kW
 (B) MJ
 (C) kW/ha
 (D) kW/h
2. In indigenous plough, _____ is a narrow steel bar attached to the upper surface of which penetrates into the soil and breaks it.
 (A) Share
 (B) Body
 (C) Handle
 (D) Landside
3. The stage of farm mechanization, cropping system is modified to facilitate mechanization of subsequent operations is known as :
 (A) Motive power substitution
 (B) Human control substitution
 (C) Automation of agricultural production
 (D) Cropping system adaptation
4. In MB plough, _____ is the part of the plough, to which all other parts are attached.
 (A) Mould Board
 (B) Frog
 (C) Gunnel
 (D) Landside
5. The _____ tillage is the preparation of soil in such a way that plant residues or other mulching materials are specially left on or near the surface.
 (A) Mulch
 (B) Strip
 (C) Mulch
 (D) Combined
6. The _____ is the combination of rigid or resistant bodies having definite motions and capable of performing useful work.
 (A) Tool
 (B) Implement
 (C) Machine
 (D) None of these
7. In tillage, _____ is a raised ridge left at the centre of the strip of land when ploughing started from centre to side.
 (A) Furrow
 (B) Back furrow
 (C) Dead furrow
 (D) Channel

8. The _____ consists of dropping the seeds in furrow lines in a continuous flow and covering them by soil.
- (A) Drilling
(B) Planting
(C) Dibbling
(D) Transplanting
9. In seed drill, cup feed mechanism is associated with :
- (A) Fertilizer drilling
(B) Seed metering system
(C) Power transmission
(D) Rotation of wheel
10. The _____ is the ratio of number of weeds destroyed per unit area to total number of weeds per unit area before weeding.
- (A) Field capacity
(B) Field efficiency
(C) Weeding efficiency
(D) Weeding capacity
11. In sprayers, _____ is intended to break up the liquid into spray which issues out through an aperture in the disc.
- (A) Boom
(B) Nozzles
(C) Lance
(D) None of these
12. Defoliation in cotton crop is done so as to :
- (A) Minimize green leaf stains
(B) Better adherence of seed cotton to spindles
(C) Better removal of cotton from the spindles
(D) Maintain optimal moisture content
13. In severely lodged crops the hay recovery is maximum in :
- (A) Cutter bar mower
(B) Flail shredders
(C) Rotary cutters
(D) All of these
14. In a pitman drive mower with a 105 cm pitman rod and 30 cm offset, the pitman rod angle at the start and end of the stroke will be :
- (A) 14.3°
(B) 13.3°
(C) 16.6°
(D) 15.5°

15. The uncut crop is separated from the crop to be cut in a grain combine by:

- (A) Divider
- (B) Reel
- (C) Feeder conveyor
- (D) Straw walker

16. In case of combine harvesters, the reel index should be in the range of:

- (A) 1.4 to 1.6
- (B) 1.25 to 1.5
- (C) 1.75 to 2.0
- (D) 1.0 to 1.25

17. The threshing cylinder which is a modification of the chaff cutter is:

- (A) Wire loop type
- (B) Rasp bar type
- (C) Syndicator type
- (D) Spike tooth type

18. The threshing cylinder in small rice threshers are usually of:

- (A) Wire loop type
- (B) Rasp bar type

(C) Syndicator type

(D) Spike tooth type

19. The _____ is defined as analysis of behaviour of machine when compared with standard code under ideal and repeated conditions.

- (A) Validation
- (B) Testing
- (C) Evaluation
- (D) None of these

20. If number of knives in a cylindrical cutter head is doubled then the theoretical capacity in a forage harvester will be:

- (A) Doubled
- (B) Halved
- (C) Same
- (D) One-fourth

21. If an engine operates at 500 rpm, it is considered as _____ speed engine.

- (A) High
- (B) Medium
- (C) Low
- (D) Very high

22. In spark ignition engines, the compression ratio is in range of :
- (A) 4 : 1 and 8 : 1
(B) 14 : 1 and 20 : 1
(C) 20 : 1 and 25 : 1
(D) 16 : 1 and 24 : 1
23. In 4-stroke diesel engine, if the values of cylinder speed, stroke and bore are 24 m/min, 30 mm and 25 mm respectively, the cylinder speed will be _____ rpm.
- (A) 400
(B) 480
(C) 300
(D) 500
24. In otto cycle, if the values of air standard efficiency and thermal efficiency are 80% and 60% respectively, its relative efficiency will be _____ %.
- (A) 80
(B) 64
(C) 75
(D) 56
25. In carburetor, the _____ is a butterfly valve operated by hand lever or sometimes automatic to restrict the air flow and hence increasing the proportion of fuel in air fuel mixture.
- (A) Choke
(B) Throttle
(C) Nozzle
(D) Pin
26. Lowest temperature to which fuel must be heated to produce an ignitable vapour-air mixture above the liquid fuel when exposed to an open flame is known as _____ of fuel.
- (A) Cloud point
(B) Pour point
(C) Flash point
(D) Transition point
27. In the spark plug used in battery ignition system of SI engine, the voltage supplied for producing spark is in the range of _____ V.
- (A) 2000 and 2400
(B) 20 and 24
(C) 20000 and 24000
(D) 1000 and 1200

28. The _____ type of cooling system is used in tractors and stationary engines which works on the principle that hot water rises up and cold water goes down due to its heavier weight.
- (A) Thermo-syphon
(B) Direct
(C) Forced circulation
(D) Air cooling
29. In lubricants, _____ indicate the rate at which it thins out as temperature rises or it gets heavier as temperature falls.
- (A) Viscosity index
(B) Puddling index
(C) Viscosity
(D) Consistency index
30. In tractor, complete path of power transmission from engine to wheel is called :
- (A) Power train
(B) Power chain
(C) Valve train
(D) Transmission train
31. Band brakes are commonly used in automobiles for :
- (A) Reducing speed of vehicle
(B) Stopping the moving vehicle
(C) Keeping the vehicle stationary during parking
(D) All of these
32. Which of the following is a component of power transmission system of rear wheel drive tractor ?
- (A) Differential
(B) Front axle
(C) Flywheel
(D) Belt and Pulley
33. In case of a multiple disc clutch, if N_1 are the number of discs on the driving shaft and N_2 are the number of the discs on the driven shaft, then the number of pairs of contact surfaces will be :
- (A) $N_1 + N_2 - 1$
(B) $N_1 + N_2$
(C) $N_1 + N_2 + 1$
(D) $N_1 - N_2$

34. Hydraulic brakes function on the principle of :
- (A) Law of conservation of momentum
(B) Law of conservation of energy
(C) Pascal's law
(D) Bernoulli's law
35. Weight transfer in a tractor implement system is caused by :
- (A) Application of pull
(B) Tractive force
(C) Traction coefficient
(D) All are correct
36. Coefficient of traction is defined as :
- (A) Ratio of BHP to IHP
(B) Ratio of BHP to PTO HP
(C) Ratio of drawbar pull to dynamic loads
(D) Inverse ratio of BHP to IHP
37. In tractor, three-point hitch is operated by :
- (A) Clutch system
(B) Gear system
(C) Hydraulic system
(D) Electrical system
38. An average man can develop maximum power of about _____ for doing farm work.
- (A) 74.6 W
(B) 56 W
(C) 37 W
(D) 44.6 W
39. If values of theoretical speed and slip are 0.40 m/s and 20%, its actual speed will be _____ m/s.
- (A) 0.36
(B) 0.28
(C) 0.32
(D) 0.40
40. The additives used in lubricants, to reduce the temperature at which oil becomes too thick, are called _____.
- (A) Anti-oxidants
(B) Pour point depressant
(C) Metal deactivator
(D) Oil thinner

41. The sound pressure is normally measured in terms of :
- (A) Sone
(B) N/mm^2
(C) Decibel
(D) None of these
42. The _____ is the machine's property which expresses the measure of capability to fulfil stated objectives of the object.
- (A) Durability
(B) Reliability
(C) Cost of operation
(D) Consumption ability
43. The _____ time can be defined as a total sum of times when an equipment is out of operation due to a defect.
- (A) Idle
(B) Down
(C) Repair
(D) Storing
44. Traction coefficient is maximum in a field when :
- (A) The field is dry
(B) The field is cultivated
(C) The field is irrigated
(D) The field is at optimum moisture content
45. In tractor tyre, _____ is the dimension measured from the axle center line to the ground when the tyre is under load.
- (A) Static loading radius
(B) Section width
(C) Section height
(D) Front angle
46. If body weight and height of a person are 80 kg and 160 cm respectively, on the basis of Body-Mass Index (BMI), the person is classified as _____.
- (A) Normal
(B) Class-I obese
(C) Under weight
(D) Class-II obese
47. In anthropometry, the _____ is straight line point to point measurement between anatomical landmarks.
- (A) Distance
(B) Curvature
(C) Reach
(D) None of these

48. In case of anthropometry, variation in anthropometric data over decades or centuries is called ____ variability.
- (A) Transient
(B) Secular
(C) Age
(D) Temporary
49. The ____ is a fundamental process to take nutrients in the form of food and drinks and convert their chemical energy into mechanical energy.
- (A) Metabolism
(B) Electromyography
(C) Aerobic capacity
(D) None of these
50. The area within which manual tasks can be performed easily is defined as :
- (A) Clearance
(B) Reach
(C) Reach envelope
(D) Clearance envelope
51. The average orientation of body parts over time is defined as :
- (A) Pronation
(B) Adduction
(C) Posture
(D) None of these
52. Most individuals will be comfortable when effective temperature of the tractor cab is between ____ °C.
- (A) 15 to 20
(B) 30 to 35
(C) 24 to 27
(D) 32 to 37
53. Anthropometer is used to measure :
- (A) Vibration
(B) Sound
(C) Body dimensions
(D) BMI
54. A branch of science which deals with design of machines, operations and work environment to match with human capabilities and limitations is known as ____.
- (A) Anthropometry
(B) Acoustics
(C) Ergonomics
(D) Physiology

55. Biogas produced from anaerobic fermentation contains :
- (A) CH_4 and CO_2
 (B) CH_4 and CO
 (C) CH_4 , CO_2 and N_2
 (D) CH_4 and N_2
56. Methane forming bacteria works best in temperature range of _____ $^{\circ}\text{C}$.
- (A) 10 and 20
 (B) 40 and 50
 (C) 20 and 50
 (D) 25 and 35
57. Energy in wind is proportional to _____ of wind velocity.
- (A) Cube
 (B) Square
 (C) Directly
 (D) Inverse square
58. The line of pull of 25 kN is making an angle is 12° with horizontal and 15° in vertical plane with the direction of travel of MB plough. The draft will be :
- (A) 23.6 kN
 (B) 6.32 kN
 (C) 25 kN
 (D) 26.22 kN
59. The specific gravity of diesel is _____.
- (A) > 1
 (B) $= 1$
 (C) < 1
 (D) $> 1 < 2$
60. For a linear programming equations, convex set of equations is included in the region of :
- (A) Feasible solutions
 (B) Disposed solutions
 (C) Profit solutions
 (D) Loss solutions
61. Objective of linear programming for an objective function is to :
- (A) Subset or proper set modeling
 (B) Maximize or minimize
 (C) Row or column modeling
 (D) Adjacent modeling

62. For the products X & Y, which of the following could be a linear programming objective function ?
- (A) $C = X + 2Y^2$
 (B) $C = X + 2X/Y$
 (C) $C = X/Y$
 (D) $C = X + 2Y$
63. PERT analysis is based on :
- (A) Optimistic time
 (B) Most likely time
 (C) Pessimistic time
 (D) All of these
64. Which of the following aggregate planning methods does not work if hiring and layoffs are possible ?
- (A) Linear decision rule
 (B) Management coefficients model
 (C) Transportation method
 (D) Charting method
65. The center of resistance in a 2 bottom MB plough bottom usually assumed to be located at :
- (A) Half of width of cut
 (B) $1/4^{\text{th}}$ of width of cut
 (C) $1/4^{\text{th}}$ W from wing of the share
 (D) $2/3$ from share point
66. Disk angle of the disc plow varies in the range of :
- (A) 15° to 25°
 (B) 42° to 45°
 (C) 25° to 35°
 (D) 52° to 55°
67. Moving the centre of gravity of a tractor towards its rear wheel creates the problem of :
- (A) Overturning
 (B) Instability
 (C) Steering
 (D) None of these
68. If number revolution of ground wheel of a seed drill is N and diameter D, the seed spacing will be :
- (A) $2\pi DN$
 (B) $\pi DN/4$
 (C) $\pi DN/2$
 (D) πDN

69. Load carrying capacity of tires increases with :
- Inflation pressure
 - Loading pattern
 - Tire type
 - All of these
70. The percentage of unthreshed grain discharged at the rear of the combine is known as :
- Cylinder loss
 - Processing loss
 - Shoe loss
 - Walker loss
71. Which linear structure has a provision of Last-In-First-Out (LIFO) mechanism for its elements ?
- Stack
 - Queue
 - Both (A) and (B)
 - None of these
72. Where is the root directory of a disk placed ?
- Anywhere on the disk
 - At a fixed location on the system disk
 - At a fixed address in main memory
 - None of these
73. Translator which is used to convert codes of assembly language into machine language is termed as :
- Assembler
 - Assembler
 - Compiler
 - Debugger
74. Higher-order functions are not built into the :
- Object oriented programming
 - Structural language
 - Java
 - C++
75. Data type is shifted from short type to long type when :
- Value range decreases
 - Value range becomes zero
 - Value range increases
 - Value range become infinite
76. The accuracy of micrometers, calipers, dial indicators can be checked by a :
- Feeler gauge
 - Slip gauge
 - Ring gauge
 - Plug gauge

77. In arc welding, the electric arc is produced between the work and the electrode by :
- Voltage
 - Contact resistance
 - Flow of current
 - All of these
78. In forehand welding, the weld is made :
- From left to right
 - From right to left
 - First from left to right and then from right to left
 - Either from left to right or from right to left
79. The diameter of the drill is 15 mm and rpm of drill is 5. Find the value of cutting speed in meter/minute :
- 235.5
 - 0.075
 - 0.75
 - 0.2355
80. The instrument used to measure external and internal diameter of shafts, thickness of parts and depth of holes, is :
- Vernier caliper
 - Inside micrometer
 - Depth gauge micrometer
 - None of these
81. Lathe spindle has got _____.
- Internal Threads
 - Taper Threads
 - External Threads
 - No Threads
82. In long and short wall method of estimation, the length of long wall is the centre to centre distance between the walls and :
- Breadth of the wall
 - Half breadth of wall on each side
 - One-fourth breadth of wall on each side
 - None of these
83. The modular dimensions of a brick are :
- 200 mm × 100 mm × 100 mm
 - 200 mm × 90 mm × 90 mm
 - 190 mm × 90 mm × 90 mm
 - 190 mm × 100 mm × 90 mm

84. Excess silica in cement :
- Weakens the strength of cement
 - Decreases the setting time
 - Increases the setting time
 - Does not affect setting time
85. The lime content in Portland Cement is :
- 60% to 70%
 - 40% to 50%
 - 30% to 40%
 - Less than 30%
86. Which of the following is not a primary quantity ?
- Mass (M)
 - Temperature (θ)
 - Time (T)
 - None of these
87. What are the dimensions of force ?
- $[MLT^{-2}]$
 - $[MLT^{-1}]$
 - $[ML^2T^{-2}]$
 - $[ML^2T^2]$
88. Which of the following quantities has the dimensions $[M^0L^0T^0]$?
- Density
 - Strain Rate
 - Strain
 - Stress
89. Which of the following is a dimensionless equation ?
- Reynold's equation
 - Euler's equation
 - Weber's equation
 - All of these
90. If there are 6 physical quantities and 3 fundamental units, then the number of pi terms are :
- 1
 - 2
 - 3
 - 4
91. The universal gate is _____.
- NAND gate
 - AND gate
 - OR gate
 - None of these
92. A single transistor can be used to build _____ gates.
- OR gate
 - AND gate
 - NOT gate
 - NAND gate

93. A transistor has _____ no. of pn junction.
- (A) 1
(B) 2
(C) 3
(D) 4
94. A Zener diode is used as :
- (A) Voltage regulator
(B) Amplifier
(C) Rectifier
(D) Multivibrator
95. A strain gauge is a passive transducer and is employed for converting :
- (A) Pressure into displacement
(B) Force into a displacement
(C) Pressure into a change of resistance
(D) Mechanical displacement into a change of resistance
96. Closed contours with lower values inside the loop indicate a :
- (A) Hill
(B) Saddle
(C) Depression
(D) Summit
97. Contours make an angle of _____ with a ridge or a valley line.
- (A) 190°
(B) 60°
(C) 99°
(D) 90°
98. The number of links in a 5 m long metric chain are _____.
- (A) 150
(B) 100
(C) 50
(D) 25
99. The orientation of green house in Odisha should be :
- (A) North-South
(B) East-West
(C) South West-North East
(D) None of these
100. The Unit of Kinematic Viscosity in SI unit is :
- (A) m^2/s
(B) Stokes
(C) m/s^2
(D) Poise



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By Adda247

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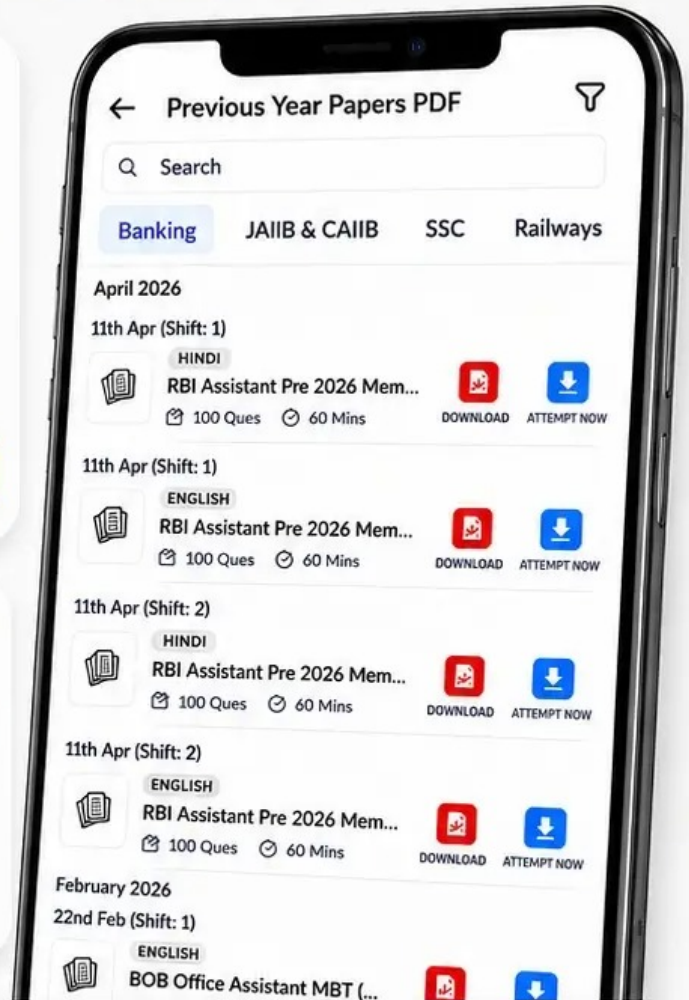
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