

## FARM TRACTORS

1. An average man can develop the maximum power of about  
(A) **0.1 Hp** (B) 1.0 Hp (C) 2.5 Hp (D) 1.5 Hp
2. An average pair of bullock can develop the maximum power of about  
(A) 0.1 Hp (B) **1.0 Hp** (C) 1.5 Hp (D) 2.0 Hp
3. The average force that a draft animal can exert is approximately  
(A) **1/10 of its body weight** (B) 50 kg (C) 75 kg (D) 100 kg
4. The thermal efficiency of a tractor engine is about  
(A) 25% (B) 30% (C) **33%** (D) 42%
5. Maximum torques in a tractor engine is generated at  
(A) **Less than rated rpm** (B) Rated engine rpm  
(C) More than rated rpm (D) None of the above
6. The estimated useful life of a diesel engine is  
(A) 8 yrs (B) **10 yrs** (C) 12 yrs (D) 20 yrs
7. In a four stroke cycle engine for best results stroke bore ratio should be equal to  
(A) 1.00 (B) 1.25 (C) **1.50** (D) 1.75
8. Mechanical efficiency of an engine is ration of  
(A) IHP&BHP (B) **BHP&IHP** (C) BHP&FHP (D) FHP &BHP
9. Piston head thickness in a two stroke cycle engine as compared to in a four stroke engine  
(A) **More** (B) Less (C) Equal (D) None of the above
10. Usually number of ribs provided in a piston is  
(A) Three (B) Four (C) Five (D) **Six**
11. Piston skirt takes side thrust of connecting rod and in high speed engines side thrust should be  
(A) 2.7 kg/cm<sup>2</sup> (B) 3.6 kg/cm<sup>2</sup> (C) **4.9 kg/cm<sup>2</sup>** (D) 5.5 kg/cm<sup>2</sup>
12. The piston length is equal to  
(A) **1-1.5D** (B) 1.5-2.5D (C) 1.2-3.5D (D) 2-2.5D
13. The firing order of a four stroke four cylinder engine is  
(A) 1432 (B) 1243 (C) **1342** (D) 4231
14. In two stroke cycle engine the scavenging will be  
(A) **Poor** (B) Better (C) No change (D) Same as four stroke engine
15. Thermal efficiency of a diesel engine varies between  
(A) 25 - 28% (B) 28 - 32% (C) **32 - 35%** (D) 38 - 48%
16. The compression ratio of diesel engine is  
(A) 8 - 12:1 (B) 12 -14:1 (C) **14 - 20:1** (D) 22- 24:1
17. Connecting rod of a tractor engine is made of  
(A) Cast iron (B) **Cast steel** (C) Brass (D) Bronze
18. In a tractor engine the fly wheel absorbs energy while governor controls  
(A) DBHP (B) **Engine speed** (C) FHP (D) PTO
19. The calorific value of high speed diesel is  
(A) 10000 kcal/kg (B) **10500 kcal/kg** (C) 11500 kcal/kg (D) 12000 kcal/kg
20. The specific fuel consumption of diesel engine is  
(A) 150 g/bhp-h (B) **200 g/bhp-h** (C) 250 g/bhp-h (D) 350 g/bhp-h
21. Heavy smoke coming out of a tractor engine is due to  
(A) Rich mixture (B) Over loading (C) Late injection (D) **All of the above**

22. Break horse power of an engine is available at  
 (A) PTO shaft (B) Front wheels (C) Rear wheel (D) Fly wheel
23. In a spark ignition engine the intake valve opens about 10 degree  
 (A) **Before TDC** (B) After TDC (C) Before BDC (D) After BDC
24. An example of external combustion engine is  
 (A) Diesel engine (B) Petrol engine (C) **Steam engine** (D) Powerine engine
25. Ignition delay in a diesel engine refers to the period between  
 (A) Completions of fuel injection and ignition (B) **Beginning of fuel injection and ignition** (C) Completion of fuel injection and exhaust stroke (D) Completion of fuel injection and power stroke
26. The first I.C engine was invented by  
 (A) **Nikolaus Otto (1876)** (B) James watt (C) Hudson (D) Norman
27. Air fuel mixture, which is exposed in the engine cylinder is called  
 (A) Fuel (B) **Charge** (C) Air (D) Reagent
28. Top portion of piston is called  
 (A) **Crown** (B) Head (C) Skrit (D) TDC
29. Piston pin is also called  
 (A) Gudgeon pin (B) Wrist pin (C) Connecting pin (D) **Both A & B**
30. The material for construction of wrist pin is  
 (A) Cast iron (B) Drop forged steel (C) Case hardened alloy steel (D) **Both B & C**
31. In a four stroke diesel engine, the sequence of stroke is  
 (A) **Intake, Compression, Expansion and Exhaust** (B) Intake, Expansion, Compression and Exhaust (C) Intake, Compression, Exhaust and Expansion (D) Compression Intake,, Expansion and Exhaust
32. The material for construction of connecting rod is  
 (A) Brass (B) Cast iron (C) Mild steel (D) **Drop forged steel**
33. Number of power strokes in a two stroke cycle engine as compared to four stroke engine  
 (A) Half (B) **Twice** (C) Equal (D) Four
34. The process of removal of burnt or exhaust gas from the engine cylinder is known as  
 (A) Drainage (B) **Scavenging** (C) Gas lasting (D) All of the above
35. The size of inlet valve of an IC engine  
 (A) **Larger than exhaust valve** (B) Smaller than exhaust valve  
 (C) Equal to exhaust valve (D) Twice the exhaust valve
36. Lower portion of the piston is called  
 (A) Piston lands (B) BDC (C) **Skrit** (D) Sleeves
37. The main function of piston skrit is  
 (A) Absorb the thrust (B) **Absorb the side of piston movement**  
 (C) Lubricating of liner (D) Heat dissipation
38. In IC engines, the tappet is also called  
 (A) **Valve lifter** (B) Cam shaft (C) Half timing gear (D) Timing valve
39. The cam shaft gear is also called  
 (A) **Half timing gear** (B) Timing gear (C) Bevel gear (D) Spiral gear
40. The clearance between rocker arm and valve stem is called  
 (A) Valve clearance (B) Ring clearance (C) **Tappet clearance** (D) Buffer space

41. The size of camshaft gear is  
 (A) **Double of the crank shaft gear** (B) Half of the crank shaft gear  
 (C) Equal to the crank shaft gear (D) The same as timing gear
42. The piston displacement of an engine is also called  
 (A) Clearance volume (B) Swept volume (C) Displacement volume (D) **Both B & C**
43. The total distance travelled by piston in a cylinder during one minute time is called as  
 (A) Piston stroke (B) **Piston speed  $,(2Ln)$**  (C) Displacement volume (D) Clearance volume
44. The sequence of power stroke in engine cylinder is called  
 (A) **Firing order** (B) Stroke order (C) Ignition order (D) Missing order
45. Tappet clearance adjustment is carried out when  
 (A) Only inlet valve is in shut position (B) Only exhaust valve is in shut position  
 (C) Both inlet and exhaust valves are in shut position (D) Both inlet and exhaust valves are in slightly open position
46. In a four stroke cycle engine the speed of cam shaft should be  
 (A) Double the speed of crank shaft (B) **Half the speed of crank shaft**  
 (C) Equal to the speed of crank shaft (D) None of the above
47. The efficiency of external combustion engine is about  
 (A) **20 %** (B) 40 % (C) 60 % (D) 80 %
48. The timing interval between successive power strokes is called  
 (A) **Firing interval** (B) Stroke space (C) Stroke clearance (D) Missed space
49. In a tractor engines stroke bore ratio is about  
 (A) **1.25** (B) 1.50 (C) 1.75 (D) 2.00
50. The spontaneous combustion of remaining charge of fuel and air causing knocking due to rapid rise of high pressure in a gasoline engine is called  
 (A) Scavenging (B) Knocking (C) **Detonation** (D) Vibration
51. In metric system, the brake horse power is also called as  
 (A) **pferdekraft or P.S** (B) IHP (C) Horse power (D) 1.414 Hp
52. The piston diameter is  
 (A) Slightly smaller at the bottom (B) **Slightly smaller at the top**  
 (C) Slightly smaller at the centre (D) Equal in top and bottom
53. The average firing interval for six cylinder, four cycle engine is  
 (A) **120°** (B) 180° (C) 240° (D) 360°
54. The size of a tractor tyre may be represented by  
 (A) Section height x Rim width (B) Section height x Rim diameter  
 (C) Section thickness x Rim width (D) **Section thickness x Rim diameter**
55. The main difference between flywheel and governor is  
 (A) Fly wheel is heavier than governor (B) Fly wheel is fixed to the crankshaft while governor is not  
 (C) **Flywheel stores energy and governor controls speed** (D) All of the above

56. The slugging ability of diesel engines refers to  
(A) Less reserve of torque (B) Torque is constantly high at lower speed than the rated speed  
(C) High reserve torque (D) **Both B & A**
57. Ignition quality of fuel is indicated by  
(A) Calorific value (B) Cetane number (Diesel) (C) Octane number (Petrol) (D) **Both B & C**
58. The octane number of commercial diesel fuel varies from  
(A) 10 to 20 (B) **30 to 60** (C) 20 to 40 (D) 70 to 80
59. The function of carburetor is  
(A) **To mix the air and fuel** (B) To control air supply (C) To control the fuel supply  
(D) To send the air fuel mixture into the cylinder
60. A choke in the carburetor of petrol is provided to  
(A) **To control air supply** (B) To control the fuel supply (C) To control air fuel mixture  
(D) To control cut - off air fuel mixture
61. The function of turbocharger is  
(A) **To supply the air under pressure to the cylinder** (B) Mix the air and fuel  
(C) Control speed (D) Control fuel
62. In IC engines the turbo charger is driven by  
(A) In take air (B) **Exhaust gas** (C) Fly wheel (D) Crank shaft
63. As per ASAE standard, the PTO speed (6 splines) under operating load is equal to  
(A) **540 ± 10 rpm** (B) 200 ± 10 rpm (C) 1200 ± 10 rpm (D) 340 ± 10 rpm
64. The most used and least efficient power output of a tractor is  
(A) PTO in the front (B) PTO in the rear (C) **Draw bar in the rear** (D) All of the above
65. The volumetric efficiency of a turbo charged diesel tractor engine is typically in the range of  
(A) **90 % to 100 %** (B) 100 % to 150 % (C) 150 % to 200 % (D) 200 % to 300 %
66. During summer the grade of sump oil should be  
(A) SAE 30 (B) **SAE 40** (C) SAE 60 (D) SAE 90
67. The grade of lubricating oil used in tractor gear box is  
(A) SAE 30 (B) SAE 40 (C) SAE 60 (D) **SAE 90**
68. API is referred to as  
(A) Asian Petroleum Institution (B) **American Petroleum Institute**  
(C) Average Petroleum Index (D) None of the above

69. Types of lubrication systems used in IC engines are  
 (A) **Splash & forced feed** (B) Splash type  
 (C) Forced type (D) None of the above
70. Most commonly used pump in a forced feed lubricating system is  
 (A) **Positive displacement pump** (B) Reciprocating pump  
 (C) Centrifugal pump (D) None of the above
71. The pressure of lubricating system in a tractor engines is about  
 (A)  $10 \text{ kg/cm}^2$  (B)  $15 \text{ kg/cm}^2$  (C)  $20 \text{ kg/cm}^2$  (D)  **$3 \text{ kg/cm}^2$**
72. The type of pump used in forced feed system of lubrication is  
 (A) Plunger pump (B) Rotary pump  
 (C) **Gear pump** (D) Jet pump
73. In forced feed lubrication system of a CI engine the oil pump is operated by  
 (A) **Crank shaft** (B) Cam shaft  
 (C) PTO shaft (D) Transmission shaft
74. The dimensions of kinematic viscosity is  
 (A)  $M^0L^0T^0$  (B)  $M^0L^0T^{-1}$  (C)  $M^0L^2T^{-1}$  (D)  $M^0L^2T^2$
75. In tractor engines the type of governor used is  
 (A) Constant speed governor (B) **Variable speed governor**  
 (C) Hit and miss system (D) Hydraulic governor
76. In stationary engines the type of governor used is  
 (A) **Constant speed governor** (B) Variable speed governor  
 (C) Hit and miss system (D) Hydraulic governor
77. The erratic variation in governor speed when it over compensated for speed change is called  
 (A) **Governor hunting** (B) Governor drop  
 (C) Energy drop (D) Speed increment
78. The fundamental law of hydraulics is  
 (A) **Pascal law (1653)** (B) Wischmer and Smith (1970)  
 (C) Kepner (1875) (D) Norman (1717)
79. Swinging type of drawbar in tractor advantageous because it  
 (A) Reduces side draft (B) Helps in taking short turns with machine wider than tractor  
 (C) Leaves only small area uncovered at corners of the field (D) **All of the above**
80. A nudging hydraulic control system is  
 (A) **Closed loop system** (B) Open loop system  
 (C) Mechanical linkages (D) Draft control

81. The three point hitch consists of  
(A) Two tension links (B) One compression link  
(C) One tension links (D) **Both A and B**
82. Hydro kinematic transmission refers to  
(A) **Torque convertor** (B) Dog clutch  
(C) Power transmission (D) Friction clutch
83. In tractors, the function of torque convertor is  
(A) **Less torque at high speed** (B) High torque at high speed  
(C) Low torque at low speed (D) Low torque at high speed
84. The pump of the hydraulic system of tractor is often driven by  
(A) **Crank shaft** (B) Cam shaft (C) PTO (D) Ram cylinder
85. In the tractors the rear part is heavier than the front part  
(A) **To get higher tractive efficiency** (B) Balance the load  
(C) To achieve maximum working space (D) Increase speed of tractor
86. Upper link of three point hitch system of tractor is  
(A) Tension link (B) Tensile  
(C) Both tension and compression (D) **Compression**
87. The weight transfer is greater in the tractor when  
(A) **Pull is higher** (B) Speed is more  
(C) Speed is less (D) Fuel consumption is more
88. In a tractor the weight transfer is affected by  
(A) Wheel base (B) Hitch height  
(C) **Both A & B** (D) Wheel diameter
89. A device which is used to store energy in the hydraulic system known as  
(A) Hydraulic motor (B) Ram cylinder  
(C) **Accumulator** (D) Hydraulic pump
90. Inflation pressure in rear wheel of the tractor varies between  
(A) **0.8 to 1.5 kg/cm<sup>2</sup>** (B) 2.0 to 2.5 kg/cm<sup>2</sup>  
(C) 2.5 to 3.5 kg/cm<sup>2</sup> (D) 1.5 to 2.0 kg/cm<sup>2</sup>
91. Inflation pressure in front wheel of the tractor varies between  
(A) 0.8 to 1.5 kg/cm<sup>2</sup> (B) 2.0 to 2.5 kg/cm<sup>2</sup>  
(C) 2.5 to 3.5 kg/cm<sup>2</sup> (D) **1.5 to 2.0 kg/cm<sup>2</sup>**
92. Toe in provided in a tractor is approximately  
(A) 14 to 16 mm (B) **7 to 10 mm**  
(C) 18 to 25 mm (D) Above 25 mm

93. Ballast are sometimes used on front tyres of a four wheel tractor to  
(A) Increase traction (B) **Increase stability**  
(C) Decrease front wheel slippage (D) Decrease tractor vibration
94. Moving the centre of gravity of a tractor towards its front wheel creates the problem of  
(A) **Instability** (B) Over turning  
(C) Steering (D) Decrease traction
95. For a towed trailer wheel axle the torque is  
(A) Equal (B) Maximum (C) Low (D) **Zero**
96. Ratio of drawbar pull to dynamic load on the member is known as  
(A) **Coefficient of traction** (B) Rolling resistance  
(C) Wheel slippage (D) Transmission coefficient
97. The natural frequency of tractor seat suspension should be in the range of  
(A) 0.1 to 0.5 cycles/s (B) **0.5 to 2.0 cycles/s**  
(C) 2.0 to 2.5 cycles/s (D) 5 to 10 cycles/s
98. Metabolic rate of tractor driver usually varies from  
(A) **50 to 100 watts /m<sup>2</sup>** (B) 100 to 150 watts /m<sup>2</sup>  
(C) 150 to 200 watts /m<sup>2</sup> (D) 200 to 250 watts /m<sup>2</sup>
99. The undamped natural frequency of tractor wheel generally lies in the range of  
(A) 15Hz (B) **5 to 10 Hz** (C) 50 to 100 Hz (D) 15 to 25 Hz
100. Transmissibility of vibrations is the ratio of  
(A) **Output vibration intensity to input vibration intensity**  
(B) Input vibration intensity to output vibration intensity  
(C) Output vibration intensity to reference intensity  
(D) Output vibration intensity to reference intensity
101. The value of transmissibility of the tractor is considered  
(A) **Less than one** (B) Greater than one  
(C) Equal to one (D) More than five
102. Damping ratio of tractor seat suspension is  
(A) **Seat suspension damping and critical damping rate**  
(B) Critical damping rate and seat suspension damping  
(C) Critical damping and natural frequency of seat  
(D) Natural frequency of seat and critical damping
103. The study of man machine system is known as  
(A) Environment (B) Machine control  
(C) **Man -machine interface** (D) None of the above

104. Tractor controls are designed for  
(A) 100 percentails (B) 5<sup>th</sup> percentails (C) 95<sup>th</sup> percentails (D) 5<sup>th</sup> and 95<sup>th</sup> percentails
105. Outward inclination of tractor's front wheels  
(A) Camber (B) Caster (C) King pin inclination (D) All of the above
106. Backward inclination of king pin of the tractor front axle  
(A) Camber (B) Caster (C) King pin inclination (D) All of the above
107. Inward inclination of king pin of the tractor front axle  
(A) King pin inclination (B) Caster (C) Camber (D) All of the above
108. The stability of a four wheel tractor up a hill can be improved by increasing the  
(A) Hitch angle (B) Grade angle  
(C) Moment of inertia of drive wheels (D) Moment of inertia of entire tractor
109. A power tiller is most suited for rotary cultivation  
(A) Generates negative draft (B) Traction requirement is low  
(C) Provides high degree of soil pulverization (D) All of the above
110. The type of starting aid generally used in a power tiller is  
(A) Glow plug (B) Thermostat  
(C) Decompression lever (D) Intake manifold surrounded by exhaust manifold
111. The power tiller is most suited for  
(A) Manure spreader (B) Rotary cultivation  
(C) Stationary operation (D) Transport work
112. The most inaccurate method of calculating depreciation for determining the real value of a tractor at any time during its useful life is  
(A) Estimated value (B) Constant percentage  
(C) Straight line (D) Sum of the digits
113. The method which depreciates the tractor or a machine to zero at the end of its expected life is known as  
(A) Estimated value (B) Decline balance (C) Straight line (D) Sum of the digits
114. The method which depreciates the tractor or a machine for any year is constant the remaining value at the beginning the year is known as  
(A) Estimated value (B) Straight line (C) Decline balance (D) Sum of the digits
115. The type of clutch generally used to engage/ disengage engine power from the transmission in 10 -15 hp commercial power tiller is  
(A) Cone clutch (B) Single plate clutch  
(C) V-belt with idler pulley (D) Multiple disc plate clutches



116. Breakeven point of tractor is estimated by the formula  
 (A) **Total fixed cost (Rs/h) / (Hourly custom charges – operating cost (Rs/h))**  
 (B) Total operating cost (Rs/h) / (Hourly custom charges – fixed cost (Rs/h))  
 (C) Total fixed cost (Rs/h) / (Hourly custom charges + operating cost (Rs/h))  
 (D) Total fixed cost (Rs/h) / (Hourly custom charges x operating cost (Rs/h))
117. Payback period of a tractor is given by  
 (A) **Investment cost (Rs) / Net benefits (Rs/yr)** (B) Salvage value (Rs) / Net benefits (Rs/yr)  
 (C) Total benefit (Rs) / Investment cost (Rs) (D) Investment cost (Rs) / salvage value (Rs)
118. When tractor is operating below breakeven point, the tractor owner will be in  
 (A) **Loss** (B) No loss and no profit (C) Profit (D) Non of the above
119. When the variable cost of the tractor is increases the breakeven point will be  
 (A) Advanced (B) **Delayed** (C) No change (D) None of the above
120. The salvage value of a tractor is also known ad  
 (A) **Resale value** (B) Initial value (C) Depreciation (D) Operating cost
121. The utility index is an indication of  
 (A) **Work machine contact hours** (B) Wear out life of machine  
 (C) Operating cost of machine (D) Reliability of machines working cost
122. From safety point of view a tractor should have fitments for  
 (A) ROP (B) **ROPS** (C) OPS (D) All of the above
123. Power tillers are not generally employed for draft application because of  
 (A) Low horse power (B) Low speed  
 (C) **Low coefficient of friction** (D) Non availability of matching implements
124. When the carrier is held in a simple planetary gear drive with the sun gear driving the gear set will provide.  
 (A) Forward reduction (B) **Forward overdrive**  
 (C) Reverse reduction (D) Reverse overdrive
125. The use of a pressurized radiator cap in forced-circulation water cooling system in tractor engines helps in  
 (A) Reducing the evaporation losses  
 (B) Increasing the engine-operating temperature  
 (C) **Increasing the boiling temperature of water**  
 (D) Increasing the radiator-cooling capacity
126. The sound level of an agricultural tractor should not exceed  
 (A) 110 Db (B) 100 dB (C) **90 dB** (D) 120 dB
127. In an epicyclic gear speed reduction unit, the ratio of the number of teeth of the annular gear to the sun gears  
 (A) 3:1 (B) **4:1** (C) 2.5:1 (D) 4.5:1

128. An epicyclic gear train is one, in which the gears, in addition to the motion about their respective axes have

- (A) At least two axes fixed
- (B) One axis fixed about which other axes revolve**
- (C) Another axis rotating at slow speed
- (D) One gear train rotating at high speed

129. The type of restrained' three point linkage system in which the depth of the implement is automatically adjusted to maintain a pre-selected constant draft is called

- (A) Automatic draft control system**
- (B) Precision control system
- (C) Depth control system
- (D) None of the above