UNIVERSITY OF RUHUNA
SECOND EXAMINATION IN B.Sc. AGRICULTURAL RESOURCE MANAGEMENT & TECHNOLOGY (PART II)- November 2022

Machinery System Engineering (EN2201) **Time: 30 minutes**

MCQ Type

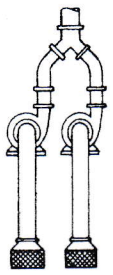
Index No:

Answer all questions.
Please ensure that you have written your index number in the space provided above.
Each question has 5 answers, indexed under (a), (b), (c), (d) and (e).
Mark the correct answer by placing " ✓ ".
Only one answer should be marked in each question. If more than one answer is marked for a question, that question will not be evaluated.
Only non – programmable calculators are permitted.
Mobile phones are not allowed.

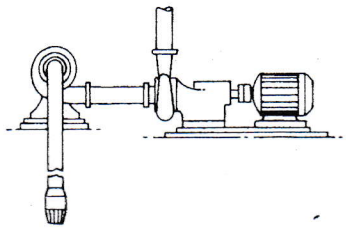
(1). Which plough of the followings is used to break hardpans or plough sole layer of soil?

(a) Mouldboard
(b) Rotovator
(c) Subsoil plough
(d) Disk plough
(e) Rotating auger plough

(2). Figure: A, and B indicate the different water pumps installation methods



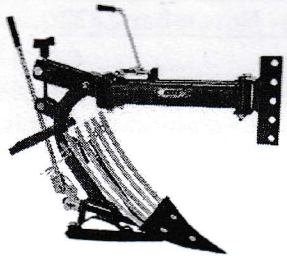
A



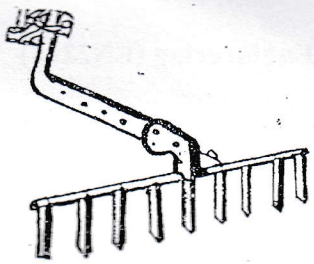
B

(a) In figure A; Pump are connected in parallel and in figure B; Pump are connected in series
(b) In figure A; Pump are connected in series and in figure B; Pump are connected in parallel
(c) In figure A and B Pumps are connected in parallel
(d) In figure A and B Pumps are connected in series
(e) In figure A; pumps connected with deep well kit

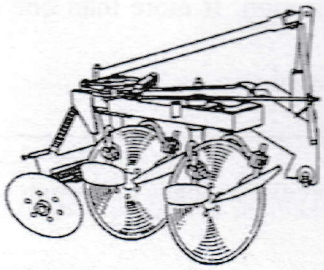
Use the following figures of implements to answer the questions numbers 3 – 5.



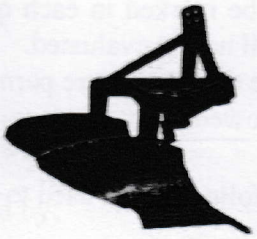
A



B



C



D

(3). Identify the plough types.

(a) A- Harrow, B- Mouldboard plough C- Disk plough, D- Reversible Mouldboard plough
(b) A- Mouldboard plough, B- Harrow, C- Disk plough, D- Reversible Mouldboard plough
(c) A-Reversible Mouldboard plough, B-Blade harrow, C-Disk plough, D-Mouldboard plough
(d) A- Mouldboard plough, B- Harrow, C- Disk harrow, D- Reversible Mouldboard plough
(e) A- Disk plough, B- harrow, C- Reversible Mouldboard plough, D- Mouldboard plough

(4). Two-wheel tractor operated plough/s is/are;

(a) Only A
(b) Only B
(c) Only A and B
(d) Only A, C and D
(e) A, B, C and D

(5). Four-wheel tractor operated plough/s is/are;

(a) Only A
(b) Only B
(c) Only A and B
(d) Only C and D
(e) A, B, C and D

(6). When a centrifugal pump casing is filled with liquid before it is started, it is called as;

(a) Adiabatic expansion
(b) Adiabatic compression
(c) Priming
(d) Isentropic expansion
(e) Water mining

(7). Mobility number of the traction device is a function of;

(a) Wheel numeric value
(b) Tire width –to– diameter ratio.
(c) Deflection ratio of the tire.
(d) All above three.
(e) None of the above.

08. Cone index is an indication of;

(a) Soil moisture
(b) Soil hardness.
(c) Soil permeability
(d) Tractor performance
(e) Field capacity

(9). Most suitable traction development method for land preparation in paddy field would be;

(a) Using tandem wheels
(b) Ballasting
(c) Using lug wheels
(d) Using tracks
(e) Using dual tires

(10). A tractor working at 0.8 ha/h effective field capacity and lost 30 min for turning and loading seeds (Non-productive time). If the area covered is 4 ha, the productive time is;

(a) 2 h.
(b) 5 h.
(c) 3.5 h.
(d) 4.5 h.
(e) 5.5 h.

(11). Which statement is **incorrect** regarding the cost of farm machinery?

(a) Larger machine increases the labor costs
(b) Timeliness costs of machine decrease sharply when machines are too big.
(c) The machinery cost per hectare increases with machine size.
(d) If timeliness cost is not considered, the small machine would be more economical
(e) Machine with greater capacity will accomplish more timely work

(12). The least efficient power utilization activity of a tractor is;

(a) Rotary tillage
(b) Harrowing
(c) Power operated seeder
(d) Paddy reaping
(e) Water pumping for drip irrigation system

(13). What is a major advantage of centrifugal pump?

(a) Cost
(b) Efficiency
(c) Simple in construction
(d) Pump parameters
(e) High head

(14). The most common pump used for irrigation application is;

(a) Centrifugal pumps
(b) Gear pump
(c) Froth pumps
(d) Airlift pumps
(e) globe pumps

(15). Gear pumps are

(a) Tangential flow pumps
(b) Positive displacement, rotary type pumps
(c) Negative displacement pumps
(d) Radial pumps
(e) Variable displacement pumps

(16). Ply rating of tyre indicates

(a) Load-bearing capacity
(b) Load-pulling capacity
(c) Both (a) & (b)
(d) High mobility number
(e) Higher wheel numeric value

(17). Hitching an implement above the drawbar on a tractor to get traction will:

(a) Increase the weight on the front wheels
(b) Overload the rear axle
(c) Not move the position of center of gravity
(d) Increase chances of a rear rollover.
(e) Decrease the weight on the rear wheel

(18). A two-wheel tractor costing Rs. 100,000/= is expected to have useful life of 10 years and salvage value is 10 % of the purchase price and annual use 1000h. What is the depreciation rate of the tractor?

(a) 0.206
(b) 0.794
(c) 0.10
(d) 0.420
(e) None of the above

(19). A tractor with a rear wheel reaction and front wheel reactions are 25 kN and 16 kN when a tractor is sitting on horizontal surface. The wheelbase is 2082 mm. Calculate the horizontal distance from the rear axle centerline to the center of gravity.

(a) 812.5 mm
(b) 1269.5 mm
(c) 828.8 mm
(d) 1014.2 mm
(e) 1318.8 mm

(20). The suitable pump for small discharge at high-pressure is;

(a) Centrifugal
(b) Axial flow
(c) Mixed flow
(d) Propeller
(e) Piston

(21.) Which one of the following is an accessory to Mouldboard plough?.

(a). Share
(b). Disks
(c). Frog
(d). Coulter
(e). Mouldboard

(22). Width of cut of disk plough is increased by;

(a) Increasing disk horizontal angle
(b). Increasing disk vertical angle
(c). Decreasing disk horizontal angle
(d). Decreasing disk vertical angle
(e). Addition of more weight

(23). Reciprocating pump is also known as the....

(a) Positive displacement pump.
(b) Negative displacement pump
(c) Emulsion pump.
(d) Diaphragm pump
(e) Variable displacement pump

(24). A 2.0 Hp water pump is operating for 12h per day over a period of month (30 days). If the cost of electricity is Rs. 9.50/unit, the total cost of operation of the month for the pump would be;

(a) Rs. 537.12
(b) Rs. 170.08
(c) Rs, 5102.64
(d) Rs. 1611.36
(e) Rs. 2551.32

(25). Depth of ploughing of disk plough is increased by;

(a). Increasing disk horizontal angle
(b). Increasing disk vertical angle
(c). Decreasing disk horizontal angle
(d). Decreasing disk vertical angle
(e) . Addition of more weight

@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@