



विषय / Subject : Agricultural Engineering



पुस्तिका में पृष्ठों की संख्या /
Number of Pages in Booklet : 16

पुस्तिका में प्रश्नों की संख्या /
Number of Questions in Booklet : 100

15 Agricultural
Engineering
बुकलेट
सीरीज

समय / Time : 2.00 घंटे / Hours

पूर्णांक / Maximum Marks : 200

INSTRUCTIONS

1. Answer all questions.
2. All questions carry equal marks.
3. Only one answer is to be given for each question.
4. If more than one answers are marked, it would be treated as wrong answer.
5. Each question has four alternative responses marked serially as 1, 2, 3, 4. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.
6. 1/3 part of the mark(s) of each question will be deducted for each wrong answer. (A wrong answer means an incorrect answer or more than one answers for any question. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer.)
7. The candidate should ensure that Series Code of the Question Paper Booklet and Answer Sheet must be same after opening the envelopes. In case they are different, a candidate must obtain another question paper of the same series. Candidate himself shall be responsible for ensuring this.
8. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt as per rules.
9. Please correctly fill your Roll Number in O.M.R. Sheet. 5 marks will be deducted for filling wrong or incomplete Roll Number.
10. If there is any sort of ambiguity/mistake either of printing or factual nature then out of Hindi and English Version of the question, the English Version will be treated as standard.

Warning : If a candidate is found copying or if any unauthorised material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted under Section 3 of the R.P.E. (Prevention of Unfairmeans) Act, 1992. Commission may also debar him/her permanently from all future examinations of the Commission.

निर्देश

1. सभी प्रश्नों के उत्तर दीजिए ।
2. सभी प्रश्नों के अंक समान हैं ।
3. प्रत्येक प्रश्न का केवल एक ही उत्तर दीजिए।
4. एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा ।
5. प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं, जिन्हें क्रमशः 1, 2, 3, 4 अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले अथवा बबल को उत्तर-पत्रक पर नीले बॉल प्वाइंट पेन से गहरा करना है ।
6. प्रत्येक गलत उत्तर के लिए प्रश्न अंक का 1/3 भाग काटा जायेगा। गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक से अधिक उत्तर से है । किसी भी प्रश्न से संबंधित गोले या बबल को खाली छोड़ना गलत उत्तर नहीं माना जायेगा।
7. प्रश्न-पत्र पुस्तिका एवं उत्तर पत्रक के लिफाफे की सील खोलने पर परीक्षार्थी यह सुनिश्चित कर लें कि उसके प्रश्न-पत्र पुस्तिका पर वही सीरीज अंकित है जो उत्तर पत्रक पर अंकित है। इसमें कोई भिन्नता हो तो वीक्षक से प्रश्न-पत्र की ही सीरीज वाला दूसरा प्रश्न-पत्र का लिफाफा प्राप्त कर लें। ऐसा न करने पर जिम्मेदारी अभ्यर्थी की होगी।
8. मोबाईल फोन अथवा इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।
9. कृपया अपना रोल नम्बर ओ.एम.आर. पत्रक पर सन्धधानी पूर्वक सही भरें । गलत अथवा अपूर्ण रोल नम्बर भरने पर 5 अंक कुल प्राप्तांको में से अनिवार्य रूप से काटे जाएंगे।
10. यदि किसी प्रश्न में किसी प्रकार की कोई मुद्रण वा तथ्यात्मक प्रकार की त्रुटि हो तो प्रश्न के हिन्दी तथा अंग्रेजी रूपान्तरों में से अंग्रेजी रूपान्तर मान्य होगा।

चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराई जायेगी और आर. पी. ई. (अनुचित साधनों की रोकथाम) अधिनियम, 1992 के नियम 3 के तहत कार्यवाही की जायेगी। साथ ही आयोग ऐसे अभ्यर्थी को भविष्य में होने वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।



- 1 The angle of intersection of the two plane mirrors of an optical square is :
- (1) 30° (2) 45°
(3) 60° (4) 90°
- 2 For earth work estimation during terrace construction, we need to refer a standard ratio which is generally known as,
- (1) rise : fall ratio (2) up : down ratio
(3) cur : fill ratio (4) all above
- 3 Size of a theodolite is specified by :
- (1) The length of the telescope
(2) The diameter of the vertical circle
(3) The diameter of the lower plate
(4) The diameter of the upper plate
- 4 The R.L. of the point A which is on the floor is 100 m and Back Side reading on A is 2.455 m. If the Fore Sight reading on point B, which is on the ceiling is 2.745 m, the R.L. of point B will be,
- (1) 94.80 (2) 99.71
(3) 100.29 (4) 105.20
- 5 Among below given statements, only one statement is correct. Select the correct statement :
- (1) A contour is not necessarily a closed curve
(2) A contour represents a ridge line if the concave side of lower value contour lies towards the higher value contour
(3) Two contours of different elevations do not cross each other except in case of an overhanging cliff
(4) All of the above statements are correct
- 6 If the radius of raindrop is doubled, then its kinetic energy will be increased by :
- (1) 8 times (2) 16 times
(3) 5 times (4) 4 times
- 7 For analysis of rainfall intensities and durations in a given watershed we need to have atleast following instrument installed therein,
- (1) a simple rain gauge (2) a water stage level recorder
(3) a water current meter (4) none of the above is correct



- 8 Which is the correct sequence of hydrologic processes initiated on natural catchment just after first rain storm in a monsoon season ?
- (1) Rainfall > Surface runoff > Stemflow > Percolation > Evaporation
 - (2) Rainfall > Interception > Depression Storage > Infiltration > Surface Runoff
 - (3) Ground Water Recharge > Percolation > Evaporation > Surface Runoff
 - (4) Nothing can be said, sequence can be any one from above 3 options
- 9 Direct runoff in a watershed is generally :
- (1) The sum of surface runoff, interflows, and channel precipitation
 - (2) Surface runoff and channel flow
 - (3) Surface runoff and groundwater recharge
 - (4) None of the above
- 10 Watershed planning and management requires :
- (1) land use data
 - (2) socio-economic data
 - (3) hydrologic data
 - (4) all of these
- 11 The most famous equation of empirical prediction model for computing peak runoff rate on small watersheds is,
- (1) Cook's Method
 - (2) Rational Method
 - (3) Phillip's Model
 - (4) Holton's Model
- 12 Hydrograph is the graphical representation of :
- (1) Runoff rate versus time
 - (2) Infiltration rates versus time
 - (3) Rainfall rates versus time
 - (4) None of the above
- 13 The unit hydrograph of a specified duration can be used to synthesise or evaluate the unit hydrograph of storms of :
- (1) Same duration only
 - (2) Same or shorter duration only
 - (3) Same and longer durations only
 - (4) Any duration



- 14 Equation of continuity is based on the principle of conservation of,
(1) Mass (2) Energy
(3) Momentum (4) None of the above
- 15 Whenever there exists a sudden drop (say 1 or 2 m) on a channel bed, what kind of soil conservation structure is usually preferred at his point,
(1) Graded bund (2) Deep trench
(3) Drop inlet structure (4) Drop Structure
- 16 The two broad categories of gullies predominantly found in India have cross sections of,
(1) Rectangular shaped and parabolic shaped
(2) Straight sections and curved sections
(3) U-shaped and V-shaped cross sections
(4) None of the above
- 17 Usually, the highest volume of soil loss per unit area occurs during,
(1) Rill erosion (2) Sheet erosion
(3) Stream Bank erosion (4) Land Slides on hills
- 18 Two prominent grasses used for conserving soil and water offering effective control of soil erosion under Indian conditions are,
(1) Doob grass and buffalo grass
(2) Vetiver (Khus) and Sacrum Munja (Moonj)
(3) Napier Grass and stylo grass
(4) (1) and (3)
- 19 In terracing the field is divided into :
(1) large number of small channels
(2) series of strips levelled independently
(3) small check basins
(4) all of these
- 20 Interception loss is,
(1) More towards end of a storm
(2) More at the middle of a storm
(3) More at the beginning of a storm
(4) Uniform throughout the storm



- 21 In a chute spillway the flow is usually :
- (1) Uniform (2) Subcritical
(3) Critical (4) Supercritical
- 22 The highly wind erosion affected state (India) is :
- (1) M. P. (2) Gujarat
(3) A. P. (4) Rajasthan
- 23 Drip fertigation depicts the process of,
- (1) Applying fresh irrigation water
(2) Applying soluble fertilized through drip pipes while irrigation fields
(3) Applying combination of drip and sprinkler method
(4) All above i.e. (1), (2) and (3)
- 24 Lines joining the equal depth of water table are known as,
- (1) Water table lines (2) Isobar lines
(3) Isobath lines (4) None of the above
- 25 The ratio of total cropped land and the actual net cultivated land in a given catchment is known as,
- (1) Cropped area (2) Cropping intensity
(3) Sown area (4) All of the above
- 26 The capacity of a farm pond is computed by adopting which formula,
- (1) Trapezoidal rule (2) Clark's formula
(3) Rational formula (4) All above
- 27 The term "middle third" rule is generally used while designing the check dams. What does it really deal in such designing process ?
- (1) Crushing (2) Sliding
(3) Breaking (4) None of the above
- 28 Which of the following is not the component of a water harvesting pond ?
- (1) Emergency outlet (2) Inlet conduit/channel/weir
(3) Earthen embankment (4) Drainage well



- 29 Soil moisture tension at field capacity varies from :
- (1) 0 to 0.1 atmosphere (2) 0.1 to 0.33 atmosphere
(3) 0.33 to 1.0 atmosphere (4) 5 to 30 atmosphere
- 30 Water use efficiency is simply defined as,
- (1) Crop yield per unit volume of irrigation water utilized
(2) % of irrigation water actually consumed by the plants
(3) Ratio of water delivered at field and the water remained unutilized at the end
(4) None of the above
- 31 A tubewell with an average discharge of 250 litres per minute is used to irrigate one hectare wheat crop in 40 hours. What is the average depth of irrigation :
- (1) 40 mm (2) 25 mm
(3) 50 mm (4) 60 mm
- 32 Depth of irrigation water required to bring the soil moisture content of a given soil upto its filled capacity is called :
- (1) Hygroscopic water (2) Equivalent moisture
(3) Soil moisture deficiency (4) Peculiar water
- 33 The velocity of flow in an open channel can be measured with the help of :
- (1) v-notch (2) infiltrometer
(3) water current meter (4) none of these
- 34 The difference between advance and recession curve in border strip denotes :
- (1) overlapping time (2) opportunity time
(3) time of concentration (4) depth of ponding
- 35 Depth of water required for a crop excluding rainfall is called :
- (1) Base (2) Duty
(3) Delta (4) none of these



- 36 Which pairs of components are most vital while designing a grassed waterway ?
- (1) Permissible flow velocity and type of grass
 - (2) Type of soil and volume of water
 - (3) Permissible velocity of flow and most economical channel cross section
 - (4) All above are equally important
- 37 Which equation is most commonly used for designing drainage system in an agricultural catchment, specifically the distance and configurations of drainage tiles etc,
- (1) USDA equation
 - (2) USLE
 - (3) Hooghout's equation
 - (4) All of the above
- 38 There are two different watersheds "P" and "Q". Both have same size, same location, same soils, same shape and all other factors same, except that P is flat and Q is sloppy having multidirectional slope. During a same intense rainfall event, on which watershed the drainage will be difficult and delayed,
- (1) P
 - (2) Q
 - (3) Both will have same, if rain is same
 - (4) Nothing can be said
- 39 Drainage coefficient in a given area can be judged as,
- (1) Ratio of total channel length to the total drainage area
 - (2) Ratio of total channel length to number of channels in the area
 - (3) Both (1) and (2)
 - (4) None of the above
- 40 When a channel receive supply from ground water it is known as,
- (1) Ground water recharging
 - (2) Effluent stream
 - (3) Effective stream
 - (4) None of the above is correct



- 41 Command area can be described as extent of area, where :
- (1) Encompassing all net work of small and big natural channels
 - (2) Total area whose runoff water passes through a single outlet point
 - (3) Both (1) and (2)
 - (4) None of the above
- 42 The ratio of the quantity of water delivered to the field and water diverted from the source is known as :
- (1) Water conveyance efficiency
 - (2) Water application efficiency
 - (3) Water use efficiency
 - (4) None of the above
- 43 Specific speed of a pump is :
- (1) directly proportional to the discharge
 - (2) proportional to the square of the discharge
 - (3) proportional to cube root of the discharge
 - (4) proportional to square root of the discharge
- 44 The major component used in a centrifugal pump is :
- | | |
|-----------------|-------------------------------------|
| (1) Turbine | (2) Impeller |
| (3) Valve inlet | (4) All above i.e. (1), (2) and (3) |
- 45 The pumps which are installed completely under water, including motor is called,
- | | |
|-----------------------|-----------------------|
| (1) Displacement pump | (2) Solar pump |
| (3) Submersible pump | (4) None of the above |
- 46 Propeller pump is used for :
- (1) low head and low discharge
 - (2) high head and low discharge
 - (3) low head and high discharge
 - (4) high head and high discharge
- 47 The conveyance efficiency of canal usually depends upon,
- (1) Length of canal, soil types, and the permeability
 - (2) Only canal flow rates
 - (3) Gates of canal
 - (4) None of the above



- 48 An artesian aquifer is the one where :
- (1) Water surface under the ground is at atmospheric pressure
 - (2) Water is under pressure between two impervious layers
 - (3) Water table serves as upper surface of zone of saturation
 - (4) None of the above
- 49 A flow in which the velocity of fluid at a particular fixed point does not change with time is known as :
- (1) Unsteady flow
 - (2) Laminar flow
 - (3) Turbulent flow
 - (4) None of the above
- 50 Maximum practical drawdown in a well is the distance between :
- (1) static water level and middle of well screen
 - (2) static water level and top of well screen
 - (3) static water level and pumping water level
 - (4) static water level and end of well screen
- 51 In I.C. engine. the air or air-fuel mixture is drawn into the cylinder during :
- (1) suction stroke
 - (2) compression stroke
 - (3) ignition
 - (4) combustion or compression
- 52 'Octane number' is associated to :
- (1) ignition quality of fuel
 - (2) fuel consumption
 - (3) fuel supply system
 - (4) all above
- 53 Function of crank shaft, is to :
- (1) turn the wheel
 - (2) power the piston
 - (3) rotate piston
 - (4) stop the engine
- 54 Fuel injection pressure in diesel engine rises more than :
- (1) 50 kg/cm²
 - (2) 70 kg/cm²
 - (3) 90 kg/cm²
 - (4) 120 kg/cm²
- 55 Primary function of lubrication in an engine is to reduce :
- (1) friction
 - (2) wear
 - (3) power loss
 - (4) above all three



- 56 Which of the following is not the part of air-cooled engine ?
(1) radiator (2) spark plug
(3) fins (4) carburetor
- 57 The function of governor in I.C. engines, is to :
(1) control engine speed
(2) control fuel supply rate, only
(3) control air-fuel mixture
(4) control detention
- 58 The tie rod of steering mechanism of a tractor is actuated by :
(1) Tie rod (2) Wheel spindle
(3) Drag link (4) Toe-in
- 59 The grade of oil used in tractor engine during summer should be :
(1) SAE-30 (2) SAE-40
(3) SAE-60 (4) SAE-90
- 60 The standard PTO speed in a tractor is :
(1) 540 (2) 1000
(3) Both (1) and (2) (4) None of above
- 61 The crank shaft and rear axle of tractor are attached at :
(1) right angles to each other (2) 30°
(3) 60° (4) 120°
- 62 A 'dibbler' is used for :
(1) sowing the seeds
(2) broadcasting the seed
(3) sowing the seed at fixed spacing
(4) none of the above
- 63 Which of the following, is the secondary tillage implement ?
(1) disc harrow (2) disc plough
(3) Bakhar and patela (4) both (1) and (3)



- 64 What is the function of wheel hand hoe ?
- (1) Weeding (2) Seeding
(3) Pulverization (4) Ditch making.
- 65 In fluted feed type seed metering device, the grooves on feed roller constructed at its :
- (1) central area (2) diagonals
(3) periphery (4) entire surface
- 66 The device used to spray the liquid is called :
- (1) sprayer (2) duster
(3) pump (4) both (1) and (3)
- 67 In thresher, the spikes are the part of :
- (1) cleaning unit (2) concave
(3) cylinder or drum (4) separator
- 68 The combine harvesters are fitted with the cylinder type :
- (1) Hammer (2) Spike tooth
(3) Raspbar (4) Loop
- 69 Now a days farmers in India are widely adopting small tractors on their fields. What is common range of Horse Power of these tractors ?
- (1) Below 5 HP (2) Up to 20 HP
(3) 25 to 50 HP (4) None of the above
- 70 Which technical term is more appropriately used while doing cost analysis of farm equipments in an agricultural farm,
- (1) Depreciation (2) Efficiency
(3) Both (1) and (2) (4) None of the above



- 71 In attrition mill, the size of food grain is reduced by :
- (1) Impact (2) Impact and shear
(3) Impact and crushing (4) Shear and crushing
- 72 Which one of the following bucket elevator is used for grain handling ?
- (1) Positive discharge
(2) Centrifugal discharge
(3) Continuous bucket type discharge
(4) All the above
- 73 The efficiency of a cyclone separator increases by :
- (1) Reducing the air diameter
(2) Increasing the air inlet velocity
(3) Reducing the size of the separator
(4) Decreasing the size of the particles
- 74 Potatoes are dried from 14% to 93% total solids. Considering 8% peeling losses that produce yield from one tonne of raw potato will be :
- (1) 10.56% (2) 13.85%
(3) 15.25% (4) 20.58%
- 75 Paddy consists rice husk :
- (1) 18-20% (2) 20-24%
(3) 20-30% (4) 20-28%
- 76 When evaporators are compared with dryers, they are :
- (1) Less efficient (2) More efficient
(3) Effect is same (4) None of the above
- 77 Sensible heating or cooling process of air-vapor mixture on psychometric chart is represented by :
- (1) Horizontal line (2) Vertical line
(3) Inclined line (4) None of the above



- 78 In general , during milling operation of cereals _____ and _____ are removed.
- (1) Hull and Endosperm (2) Germ and Endosperm
(3) Hull and Germ (4) Seed coat and Endosperm
- 79 For which crop the parboiling is more important and beneficial,
- (1) Maize (2) Mustard
(3) Rice (4) All of the above
- 80 Explosion Puffing is a Process of :
- (1) Drying (2) Extrusion
(3) Size reduction (4) All the above
- 81 Which of the motors is suitable for farm machinery ?
- (1) DC shunt motor
(2) DC series motor
(3) Cumulative compound motor
(4) Induction motor
- 82 Which wiring system is used inside the walls ?
- (1) PVC wiring (2) Batten wiring
(3) Concealed wiring (4) Pipe wiring
- 83 Three interdependent quantities which characterize direct current are,
- (1) Potential difference in the circuit, rate of current flow and resistance of circuit
(2) Length of wire, resistance of electric current, and highest voltage
(3) Diameter of electric wire, material of wire, and length of wire
(4) A. C. current, voltage, weight of wire
- 84 Floor area required per hundred adult hens :
- (1) 30-42 m² (2) 7-17 m²
(3) 17-27 m² (4) 42-50 m²
- 85 The base material for distemper is :
- (1) Lime (2) Chalk
(3) Cement wash (4) Lime putty



- 86 The width of flange of a T-beam should be less than :
- (1) distance between the centres of T-beam
 - (2) one third of the effective span of the T-beam
 - (3) breadth of the rib plus twelve times the thickness of the slab
 - (4) least of all the above
- 87 The most common ratio used in RCC structures for check dams etc in small streams remains as follows,
- (1) 1:2:4
 - (2) 1:4:8
 - (3) 1:5:10
 - (4) All are equally applicable
- 88 The maximum length of stall barn to house 72 cows should be :
- (1) 33 m
 - (2) 40 m
 - (3) 50 m
 - (4) 100 m
- 89 The camber on the pavements is provided by :
- (1) circular method
 - (2) straight line and parabolic at crown
 - (3) straight line method
 - (4) elliptical method
- 90 The drop man holes are provided in sewers for :
- (1) cities only
 - (2) hilly areas
 - (3) large towns
 - (4) industrial complex
- 91 Solar energy is distributed over entire surface of earth facing the sun and it seldom exceeds :
- (1) 1.0 MW/m²
 - (2) 1.0 kW/m²
 - (3) 1.35 MW/m²
 - (4) 1.20 MW/m²
- 92 Solar energy reaching per square meter of the earth's atmosphere called solar constants is equal to :
- (1) 1.63 kW
 - (2) 3.63 kW
 - (3) 1.36 kW
 - (4) 3.36 kW



- 93 In photovoltaic devices, sunlight falls on special semiconductor material, which converts :
- (1) More than 90 % of the sunlight energy directly into DC electricity
 - (2) At least 75 % of the sunlight energy directly into DC electricity
 - (3) It can convert 100% sunlight energy directly into DC electricity
 - (4) About 15 % of the sunlight energy directly into DC electricity
- 94 Solar cooker can have :
- (1) Only a single build in reflector
 - (2) Can have either single or even the double sided reflectors
 - (3) At least two reflectors
 - (4) None of the above is absolutely correct
- 95 Renewable energy sources are essentially,
- (1) Flows of energy
 - (2) Stocks of energy
 - (3) Motion of energy
 - (4) None of above
- 96 For the production of biogas, the temperature range 24°C to 45°C belongs to :
- (1) Thermophilic zone
 - (2) Psychrophilic zone
 - (3) Mesophilic zone
 - (4) All of these
- 97 The gasifier which gives lowest amount of tar is known as :
- (1) Imbert gasifier
 - (2) Stratified gasifier
 - (3) Fluidized bed gasifier
 - (4) None of the above
- 98 Calorific value of producer gas when air is used as a gasification medium :
- (1) 4.0-6.0 MJ/Nm³
 - (2) 4.0-6.0 kJ/ Nm³
 - (3) 5.0-8.0 kJ/ Nm³
 - (4) None of these
- 99 Blade surface of sail type windmill can be made from,
- (1) Cloth
 - (2) Nylon
 - (3) Plastic
 - (4) All of above
- 100 Digested slurry is a good source of :
- (1) Micro-Organisms
 - (2) Micro-Nutrients
 - (3) Macro-Nutrients
 - (4) Fungi



SPACE FOR ROUGH WORK

3.



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