

**Question Booklet Set - A (A)****Instructions :**

SAME PAPER-I (For both posts)  
 for Dy. General Manager  
 Honey Plant, Idandhar / Manager  
 Camaries  
 Jalandhar

1. Do not open this booklet until you are instructed to do so.
2. Use of calculator, mobile phone or any other electronic device is strictly NOT allowed.
3. Handover the OMR answer sheet to the invigilator after the examination is over.
4. There are 40 multiple choice questions (four choices a, b, c, d with one right / appropriate choice) in the question paper booklet.
5. Select the right / appropriate choice from the options given in each question. Each correct answer will carry one mark.
6. There is NEGATIVE marking in the question paper. 0.25 marks will be deducted for each wrong answer.
7. Time limit for the test is 45 minutes.
8. Do not fold / spoil the OMR answer sheet. Do not make stray marks on the OMR answer sheet.
9. For rough work, the space marked 'Rough Work' at the end of question booklet may be used.
10. OMR Answer Sheet is not to be taken out of the Examination Hall. Any candidate found doing so would be expelled from the examination and the matter will be reported to the police.
11. Kindly check your question booklet and OMR answer sheet before start answering. Make sure that no page or question is missing from the question booklet or the OMR answer sheet is damaged. If any defect is found in the question booklet or OMR answer sheet, the same should be got replaced from the invigilator within 10 minutes of the start of examination.

Open this booklet only when instructed

11-37

1. The rate of heat loss through a stainless steel slab 10cm thick which is maintained at 100°C on hot side and 30°C on the cold side. The thermal conductivity of steel is 16.37 W/m°C.
  - a) 11.459 kW/m<sup>2</sup>
  - b) 111.675 kW/m<sup>2</sup>
  - c) 34.56 kW/m<sup>2</sup>
  - d) 23.49 kW/m<sup>2</sup>
2. The principle nutrients which get increased in the parboiled rice include :
  - a) Thiamine alone
  - b) Thiamine and phosphorous
  - c) Thiamine, niacin and iron
  - d) Iron and vitamin
3. Physical hardness of which cereal grain is highest :
  - a) Rice
  - b) Jawar
  - c) Millet
  - d) Corn
4. Which of the following carbohydrates is NOT classified as dietary fibre ?
  - a) Agar
  - b) Pectin
  - c) Sodium alginate
  - d) Tapioca starch
5. A material shows a constant drying rate of 0.15 kgH<sub>2</sub>O/(min. kg dry matter) and has an a<sub>w</sub> of 1 at moisture content above 1.10 kgH<sub>2</sub>O/kg dry matter. How long will it take to dry this material from an initial moisture content of 75% (wet basis) to a final moisture content 8% (wet basis) ?
  - a) 30.3
  - b) 31.3
  - c) 35.7
  - d) 82.3
6. The door to a refrigerated room is 3.048 m high and 1.83 m wide. It is opened and closed at least five times each hour and remains open for at least 1 min at each opening. Calculate the refrigeration load due to the door opening if the room is maintained at 0°C and ambient temperature is 29.4°C.
  - a) 30.9 MJ
  - b) 35.58 MJ
  - c) 76.89 MJ
  - d) 45.85 MJ
7. The objective of heating milk to about 65°C before homogenization is to inactivate :
  - a) Invertases
  - b) Lactases
  - c) Lipases
  - d) Glucose oxidase
8. Which of the following non-nutritive sweeteners contains similar calories per gram as that of sucrose ?
  - a) Saccharin
  - b) Aspartame
  - c) Sucralose
  - d) Cyclamate
9. Which one is not the by-product of oil industry ?
  - a) Lecithin
  - b) Bleaching earth
  - c) Pectin
  - d) Soap stock
10. The LMTD for counter current flow in a heat exchanger where one stream rises from 28°C to 75°C where as other flow fall from 95°C to 85°C.
  - a) 65.2°C
  - b) 13.7°C
  - c) 38.5°C
  - d) 27.9°C
11. Moisture content of potato is 85% (wet basis). In dry basis, the value will be :
  - a) 333 %
  - b) 155 %
  - c) 566.6 %
  - d) 444 %

$\frac{85}{100} = \frac{x}{100}$   
 $x = \frac{85 \times 100}{100} = 85$   
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12. The quantity of heat required to heat 100 L of water initially at 38°C to a final temperature of 90°C is : (The specific enthalpy of water at 33°C is 137.8 kJ/kg and that at 90°C is 136.8 kJ/kg).
- a) 23826 kJ      b) 23900 kJ      c) 24000 kJ      d) 21000 kJ
13. One ton of Mango fruits at 35°C is to be cooled at 4°C in 8 h. The radiation and other losses are estimated to be 10 percent of the refrigeration load. Efficiency of the motor is 85 percent. Specific heat of Mango is equal to that of water. Tonnage of Refrigeration and Horse power of the motor is :
- a) 0.345 kW, 7.8 hp      b) 0.234 kW, 3.4 hp      c) 0.745 kW, 7.8 hp      d) 0.745 kW, 3.4 hp
14. Lemon juice is passing through an SS pipe of 1" diameter, schedule 40. The specific gravity of lemon juice is 1.05 and its viscosity is 2.5 cp. The volumetric flow rate of the juice is 60 lpm. The Reynolds number is :
- a) 2004      b) 40000      c) 10000      d) 20400
15. The refrigeration load when 100 kg/h of peas is frozen from 30°C to -40°C when the peas have a moisture content of 74% is :
- a) 11.42 kW      b) 43.78 kW      c) 4.11 x 107 J/h      d) 43.78 x 106 J/h
16. Sterilization value of a process has been calculated to be an  $F_0$  of 2.88. If each can contains 10 spores of an organism having a  $D_0$  of 1.5 min. Assuming that the  $F_0$  value was calculated using the same z value as the organism. The probability of spoilage ( $P_{spoilage}$ ) from this organism is :
- a) 0.45      b) 0.32      c) 0.12      d) 0.06
17. F value at 121°C equivalent to 99.999 % inactivation of a strain of *C. botulinum* is 1.2 min.  $D_0$  value of this organism is :
- a) 0.43 min      b) 0.24 min      c) 0.65 min      d) 0.12 min
18. Sealed tube containing equal number of spores of an isolate from a spoiled canned food were heated for 10 and 15 min at 115.5°C. The survivors were, respectively 4600 and 160. The lag time for heating the tubes to 115.5°C was established in prior experiments to be 0.5 min. D value is :
- a) 1.23 min      b) 3.42 min      c) 7.89 min      d) 4.56 min
19. Which one is not the appropriate reason when oil bearing material is cooked prior to oil extraction because cooking :
- a) Coagulates protein      c) Increases pressing efficiency  
b) Frees oil      d) cooking enhance nutritive value
20. Animal fat is extracted by :
- a) Distillation      b) Mechanical extraction      c) Rendering      d) leaching
21. Among the fats/oils the highest amount of saturated oil is present in :
- a) Coconut oil      b) Butter fat      c) Beef tallow      d) Palm oil

22. When wheat is stored between 16% and 30% moisture content, the mycotoxins formed is :  
 a) Aflatoxin      b) Ochratoxin      c) Botulinum      d) Salmonella
23. Drying mode commonly used in all types of cereal grain is :  
 a) Radiation      b) Conduction      c) Convection      d) Vacuum
24. The sweetness of HFS (DE: 95-96%) with respect to sucrose taken as one is :   
 a) 1.5      b) 2.0       c) 1.8      d) 3.0
25. Denaturation of proteins means :  
 a) loss of primary structure      c) De polymerization  
 b) loss of three dimensional structure      d) Coagulation
26. More than 50% of the hull is composed of :  
 a) Cellulose and lignin      c) Cellulose  
 b) Lignin and pentosans       d) Pentosans and Ash
27. Which of the following enzyme is responsible for off-flavor development in cream and butter ?  
 a) Lipase      b) Protease       c) Peroxidase      d) None of these
28. The fiber in food that produces necessary dietary roughage is largely :  
 a) Cellulose      b) hemicelluloses       c) dextrin      d) Pectin
29. The energy content of fat is how many times the energy content of protein and carbohydrate ?  
 a) 3 times       b) 2.25 times      c) 2.5 times      d) 2.75 times
30. Which of the following is called milk ejection hormone ?  
 a) Oxytocin      b) Vasopressin      c) Prolactin      d) None of these
31. The shelf life of a food product at 25°C is 200 days and at 35°C is 50 days. The  $Q_{10}$  value is :  
 a) 5      b) 6       c) 4      d) 3
32. At ambient temperature of 30°C, if the vapour pressure of water is 4.242 kPa, the partial pressure of water vapour in the atmosphere is 2.52 kPa and atmospheric pressure is 101.325 kPa, then the relative humidity is :  
 a) 41.8 %      b) 59.4 %       c) 68.6 %      d) 74.2 %
33. Hot water at a flow rate of 0.01 m<sup>3</sup>/min enters the tube side of a counter current shell and tube heat exchanger at 80°C and leaves at 50°C. Cold oil at a flow rate of 0.05 m<sup>3</sup>/min of density 800 kg/m<sup>3</sup> and specific heat of 2 kJ/kgK enters at 20°C. The log mean temperature difference is approximately :  
 a) 32 °C      b) 37 °C       c) 45 °C      d) 50 °C

34. It is desired to concentrate a 20% salt solution (20 kg of salt in 100 kg of solution) to a 30% salt solution in an evaporator. Consider a feed of 300 kg/min at 30°C. The boiling point of the solution is 110°C, the latent heat of vaporization is 2100 kJ/kg and the specific heat of the solution is 4 kJ/kgK. The rate at which the heat has to be supplied in (kJ/min) to the evaporator is :
- a)  $3.06 \times 10^5$       b)  $6.12 \times 10^5$        c)  $7.24 \times 10^5$       d)  $9.08 \times 10^5$
35. The wet basis moisture content of a particular grain is 20%. The moisture content on dry basis of that grain will be :
- a) 24 %      b) 27 %       c) 25 %      d) 30 %
36. The greatest pressure in a spherical tank of 2 m diameter filled with oil of specific gravity 0.92, if pressure measured at the highest point in the tank is 70 kPa will be :
- a) 90.13 kPa      b) 88.1 kPa      c) 79.4 kPa      d) None of these
37. The percentage regeneration when cold milk entering a pasteurizer at 4°C attains a temperature of 65°C after regeneration and 72°C after heating should be :
- a) 90.25 %       b) 87.13 %      c) 76.28 %      d) 89.7 %
38. 480 kg sauce is heated in a steam jacketed kettle from 25°C to 75°C using steam at 110°C. The product heating time is 30 min. The specific heat of sauce is 3100 kJ/kg K and overall heat transfer coefficient is 300 W/m<sup>2</sup> K. The heat transfer area required is :
- a) 2.8 m<sup>2</sup>      b) 3.8 m<sup>2</sup>       c) 2.75 m<sup>2</sup>      d) 2.4 m<sup>2</sup>
39. The amount of cream testing 35% fat that must be added to 500 kg of milk testing 4% fat to obtain cream testing 10% fat should be :
- a) 20 kg      b) 100 kg       c) 120 kg      d) 200 kg
40. Bacterial population in milk multiplies by a factor of 200 in 18 hours of storage at 20°C temperature. The increase in population in 3 hours of storage at the same temperature is :
- a) 5.85 times       b) 2.42 times      c) 66.67 times      d) 14.14 times

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Space for Rough Work