



J. C. Bose University of Science and Technology, YMCA, Faridabad
(formerly YMCA University of Science and Technology)

A State Govt. University established wide State Legislative Act. No. 21 of 2009
SECTOR-6, FARIDABAD, HARYANA-121006

Question Booklet

Sr. No. **Q -**

Written Test for the post of **TECHNICIAN-RAC** (Advt No.01/2023)

Applicant ID Answer Sheet No.**A**-.....
Name of Applicant: Signature of the Candidate
Date of Examination: ...**Sept. 09, 2023**..... Signature of the Invigilator(s)

1.
2.

Time: 2:00 hrs

Maximum Marks: 95

IMPORTANT INSTRUCTIONS

- i. The question paper is in the form of Test-Booklet containing 95 questions. Each question carries four answers marked (A), (B), (C) and (D), out of which only one is correct.
- ii. On receipt of the Test-Booklet (Question Paper), the applicant must immediately check it and ensure that it contains all the pages, i.e., 95 questions. Discrepancy, if any, should be reported to the invigilator immediately after receiving the Test-Booklet.
- iii. The separate Answer-Sheet is provided with the Test-Booklet/Question Paper. On this sheet there are separate rows containing four circles each. One row pertains to one question.
- iv. The candidate should write his/her details at the places provided on the cover page of the Test-Booklet/Question Paper and on the Answer-Sheet and **NOWHERE ELSE**.
- v. No second Test-Booklet/Question Paper and Answer-Sheet will be provided. The candidates are advised to be careful in handling it and marking the answer on the Answer-Sheet.
- vi. For every correct answer of the question **One (1) mark will be awarded**. For every un-attempted question, zero (0) mark shall be awarded. **There is NO Negative Marking** for wrong answers.
- vii. Marking shall be done only based on answers responded on the Answer-Sheet.
- viii. To mark the answer on the Answer-Sheet, candidate should **darken** the appropriate circle in the row of each question with Blue or Black ink pen.
- ix. For each question only **ONE** circle should be **DARKENED** as a mark of the answer adopted by the candidate. If more than one circle for the question(s) are found darkened, the question will be treated as cancelled.
- x. The candidate should not remove any paper from the Test-Booklet. Attempting to remove any paper shall be liable to be punished for use of unfair means.
- xi. Rough work may be done on the blank space provided in the Test-Booklet/Question Paper only.
- xii. *Mobile phones (even in Switch-off mode) and such other communication/programmable devices are not allowed inside the examination hall.*
- xiii. No candidate shall be permitted to leave the examination hall before the expiry of the time.



Written Test for the post of Technician in Refrigeration & Air-Conditioning Shop

SECTION – A (General Aptitude)

1. Jagriti', which was seen in the news recently, is a mascot related to which field?
 - a) Income Tax
 - b) Climate Change
 - c) Consumer Awareness
 - d) Crypto currency
2. Which Union Ministry launched the 'Bal Raksha mobile app'?
 - a) Ministry of Ayush
 - b) Ministry of Women and Child Development
 - c) Ministry of Health and Family Welfare
 - d) Ministry of Law and Justice
3. Puli Thevar, whose birth anniversary was celebrated recently, was a freedom fighter from which state?
 - a) West Bengal
 - b) Tamil Nadu
 - c) Odisha
 - d) Gujarat
4. Who is the head of the Committee recently set up to review the current gas pricing formula?
 - a) Suresh Prabhu
 - b) Kirit Parikh
 - c) Jitendra Singh
 - d) Hardeep Singh Puri
5. Buxar Thermal Power Plant (BTPP) is located in which state/UT?
 - a) Odisha
 - b) Bihar
 - c) Uttar Pradesh
 - d) Maharashtra
6. In which year, an all-women bench has been constituted for the first time in the Supreme Court?
 - a) 1975



- b) 1992
- c) 2000
- d) 2013

7. As per a recent report, which sector has the maximum number of delayed projects?

- a) Railways
- b) Road, Transport and Highways
- c) Fisheries
- d) Industries

8. The word Gambit is related to which of the following sports?

- a) Chess
- b) Table Tennis
- c) Polo
- d) carom

9. Which is the governing body of Cycling sport in the world?

- a) Cycling Association of the World
- b) World Cycling Federation
- c) International Cycling Union
- d) International Cycling Association

10. Which country is the host of the Commonwealth Games 2026?

- a) India
- b) Sri Lanka
- c) Australia
- d) UAE

11. Give the synonym of "Announce"

- a) Denounce
- b) Secret
- c) Hide
- d) Advertise

12. Give the antonym of "Regular"

- a) Irregular
- b) Disregular



- c) Unregular
- d) Imregular

13. Give the antonym of "Exemplary"

- a) Flattering
- b) Unsatisfactory
- c) Imitative
- d) Desirable

14. Our sir teaches mathematics.....english.

- a) Across
- b) Besides
- c) Beside
- d) Both

15. Please come.....the classroom

- a) Out of
- b) Over
- c) On
- d) In

16. Please stop.....so many mistakes

- a) To make
- b) Making
- c) Make
- d) Makes

17. He has been seriously injured. There is.....hope for his survival

- a) A little
- b) A few
- c) Little
- d) Few

18. For me, breakfast is.....meal of the day

- a) A
- b) An
- c) The
- d) None



19. They wanted to hear.....end of the story

- a) A
- b) An
- c) The
- d) None

20. Ryan isexcellent boy

- a) A
- b) An
- c) The
- d) None

21. As long as Rahul is.....India can hope for winning the hockey match

- a) Plays
- b) Play
- c) Played
- d) Playing

22. Which number should come next in the series 1, 2, 3, 10,

- a) 79
- b) 99
- c) 89
- d) 98

23. If NOIDA is written as OPJEB, then what will be the code for DELHI?

- a) EFMAK
- b) EFAMK
- c) EFMIJ
- d) EFMIK

24. We did not have..... questions for the lecturer

- a) No
- b) Some,
- c) Any
- d) None

25. Please.....your wet handkerchief and take this towel

- a) Throw out



- b) Throw up
- c) Throw away
- d) Throw on

26. What is the pH value of the human body?

- a) 9.2 to 9.8
- b) 7.0 to 7.8
- c) 6.1 to 6.3
- d) 5.4 to 5.6

27. Elections to panchayats in state are regulated by

- a) Gram panchayat
- b) Nagar Nigam
- c) Election Commission of India
- d) State Election Commission

28. Which of the following Himalayan regions is called "Shivalik's"?

- a) Upper Himalayas
- b) Lower Himalayas
- c) Outer Himalayas
- d) Inner Himalayas

29. On the recommendation of which of the given committee, the abolition of reservation of items for the small-scale sector in industry is considered?

- a) Lohia Committee
- b) Narasimhan Committee
- c) Ajit Kumar Committee
- d) Abid Hussain Committee

30. Which of the given cities is located on the bank of river Ganga?

- a) Patna
- b) Gwalior
- c) Bhopal
- d) Mathura

31. When the metal reacts with dilute acid, which gas is formed?

- a) Carbon Dioxide
- b) Helium



- c) Neon
 - d) Hydrogen
- 32. Who was the first Governor General of Bengal?**
- a) Robert Clive
 - b) William Bentick
 - c) Warren Hasting
 - d) Col. Sanders
- 33. The revolt of 1857 was started by**
- a) The sepoys
 - b) The zamindars
 - c) The peasants
 - d) The plantation workers
- 34. Mahatma Gandhi launched civil disobedience movement from**
- a) Sabarmati ashram
 - b) Ahmedabad
 - c) Dandi
 - d) Porbandar
- 35. River Sutlej originates from which of the following lakes?**
- a) Lake Mansarovar
 - b) Pangong Lake
 - c) Ebi Lake
 - d) Lake Rakshastal

SECTION – B (Subject Knowledge)

- 36. Friction is a**
- a) Contact force
 - b) Non-contact force
 - c) Magnetic force
 - d) Electrostatic force
- 37. Which of the following methods is commonly used to solve assignment problems?**
- a) Stepping stone method



- b) Hungarian method
 - c) North-West corner method
 - d) Vogel's approximation method
38. Moment of inertia of rectangular section having b =width and d =depth about X-axis is given by
- a) $I_x = bd^3/12$
 - b) $I_x = bd^3/24$
 - c) $I_x = bd^3/6$
 - d) $I_x = b^3d/12$
39. What is strain?
- a) Ratio of change in length to area
 - b) Ratio of change in area to length
 - c) Ratio of change in dimension to original dimension
 - d) None of the above
40. Which is dimensionless quantity?
- a) Stress
 - b) Strain
 - c) Volume
 - d) Area
41. A spring is stretched by applying load to its free end. The strain produced in the spring is
- a) Volumetric
 - b) Shear
 - c) Longitudinal and shear
 - d) Lateral
42. Mohr's circle is used to calculate
- a) Principal strain
 - b) Principal stress
 - c) Modulus of rigidity
 - d) Beam stiffness
43. Angle between two planes when shear stress is zero is
- a) 90°



- b) 45°
- c) 75°
- d) 60°

44. If the principal stresses in a plane stress problem are, $\sigma_1 = 100$ MPa, $\sigma_2 = 40$ MPa, magnitude of maximum shear stress in MPa will be

- a) 60
- b) 50
- c) 30
- d) 20

45. Rate of change of bending moment is

- a) Load intensity
- b) Half of shear force
- c) Half of load intensity
- d) Shear force

46. Bending moment for a certain portion of beam is constant. For that section, shear force would be

- a) Zero
- b) Increasing
- c) Decreasing
- d) Constant

47. What is the relationship between Young's modulus (E), modulus of rigidity (C) and bulk modulus (K)?

- a) $E = 9KC/(3K+C)$
- b) $E = KC/(8K+C)$
- c) $E = 7KC/(3K+4C)$
- d) $E = 9K/(3K+C)$

48. What is the expression for modulus of rigidity in terms of modulus of elasticity and Poisson's ratio?

- a) $G = 3E/2(1+\mu)$
- b) $G = 5E/2(1+2\mu)$
- c) $G = E/2(1+\mu)$
- d) $G = E/2(1-\mu)$



49. What is the limiting value of Poisson's ratio?

- a) -1 and 0.5
- b) -1 and +1
- c) 1 and 0.5
- d) 0 and 0.5

50. What is thermodynamics?

- a) Study of the relationship between heat and other forms of energy
- b) Study of the conversion of chemical energy to other forms of energy
- c) Study of the relationship between mechanical energy to other forms of energy
- d) Study of the conversion of mechanical energy to other forms of energy

51. Which of the following is a thermodynamics law?

- a) Zeroth law of thermodynamics
- b) Faraday's Law of thermodynamics
- c) Ideal Gas Law of thermodynamics
- d) Boyle's Law of thermodynamics

52. Heat does not spontaneously flow from a colder body to a hotter one. Which of the following thermodynamics law states this?

- a) Zeroth law of thermodynamics
- b) First law of thermodynamics
- c) Second law of thermodynamics
- d) Third law of thermodynamics

53. Which of the following is a type of thermodynamic system?

- a) Open system
- b) Closed system
- c) Thermally isolated system
- d) All of the mentioned

54. Which of the following is a method of heat transfer?

- a) Convection
- b) Radiation
- c) Conduction
- d) All of the mentioned

55. Which of the following is an example of steady-state heat transfer?



- a) Electric bulb cools down by the surrounding atmosphere
- b) Chilling effect of cold wind on a warm body
- c) Boilers and turbines
- d) Cooling of I.C engine

56. A thin metal plate of 4 cm diameter is suspended in atmospheric air whose temperature is 290 K. This plate attains a temperature of 295 K when one of its faces receives radiant energy from a heat source at the rate of 2 W. If the heat transfer coefficient on both surfaces of the plate is stated to be $87.5 \text{ W/m}^2 \text{ K}$, workout the energy lost by reflection in Watt.

- a) 0.8
- b) 0.3
- c) 0.9
- d) 0.10

57. A four stroke petrol engine operates on

- a) Diesel cycle
- b) Otto cycle
- c) Carnot cycle
- d) None of the above

58. A gas engine working on Otto cycle has a clearance volume of 10% of swept volume.

Compression ratio is

- a) 8
- b) 9
- c) 10
- d) 11

59. The efficiency of Carnot cycle is maximum for _____

- a) Gas engine
- b) Petrol engine
- c) Steam engine
- d) Reversible engine

60. Choose the correct statement from the following.

- a) Diesel cycle is more efficient than Otto cycle for a given compression ratio
- b) Otto cycle is more efficient than Diesel cycle for a given compression ratio



- c) For a given compression ratio, both Otto and Diesel cycles have same efficiency
- d) None of the mentioned

61. When is a fluid flow called laminar?

- a) High viscosity of fluid
- b) Reynolds number is greater than 2000
- c) Reynolds number is less than 2000
- d) The density of the fluid is low

62. Stagnation point is the point in fluid mechanics where the velocity of the fluid at that point is _____

- a) Unity
- b) Constant
- c) Infinite
- d) Zero

63. Which of the following pump is not a positive displacement pump?

- a) Reciprocating pump
- b) Centrifugal pump
- c) Vane pump
- d) Gear pump

64. For completely submerged bodies, equilibrium is attained if centre of buoyancy lies.....centre of gravity

- a) Above
- b) Below
- c) Coincides
- d) None of the above

65. Which of the following refers to the term C.O.P. of refrigeration?

- a) Cooling for Performance
- b) Coefficient of Performance
- c) Capacity of Performance
- d) Co-efficient of Plant

66. Which of the following is the S.I. unit to measure pressure in refrigeration?

- a) Bar
- b) Newton



c) Joule

d) Pascal

67. On which of the following cycle the air conditioning systems are based in transport aviation?

a) Reversed Joule's cycle

b) Otto cycle

c) Reversed Carnot cycle

d) Reversed Brayton cycle

68. Internal gear can be made by

a) Hobbing

b) Gear shaping with pinion cutter

c) Gear shaping with rack cutter

d) Gear milling

69. Traversing of tool parallel to the axis of job is termed as _____

a) Cross feed

b) Longitudinal feed

c) Both cross feed and traversing feed

d) None of the mentioned

70. Which type of surface can be produced by lathe?

a) Flat

b) Cylindrical

c) Curvilinear

d) All of the mentioned

71. Which of the following machine is primarily intended for producing flat surfaces?

a) Shaper

b) Drilling

c) Lathe

d) None of the mentioned

72. Percentage range of carbon in mild steel.

a) 0.05-0.30 b) 0.30-0.60 c) 0.60-0.90 d) 0.90-1.60

73. Which process is used to remove internal stresses from a metal?

a) Annealing

b) Cold working



86. The angle which we can't make using a single Set-square is _____
- a) 45°
 - b) 60°
 - c) 30°
 - d) 75°
87. What is the type of scale in which the representative fraction is 1:1?
- a) Enlarged scale
 - b) Reduced scale
 - c) Full size scale
 - d) Graphical scale
88. If an isometric projection is drawn with true measurements but not with isometric scale then the drawings are called _____
- a) Isometric projection
 - b) Isometric view
 - c) Isometric perception
 - d) Orthographic view
89. The difference between the maximum and minimum permissible limits of the sizes is called
- a) Connection
 - b) Fits
 - c) Joints
 - d) Link
90. The relation between mating parts is called _____
- a) Deviation
 - b) Allowance
 - c) Tolerance
 - d) Actual deviation
91. Which of the following is a conic section?
- a) Circle
 - b) Rectangle
 - c) Triangle
 - d) Square



92. Which of the following conics has an eccentricity of unity?

- a) Circle
- b) Parabola
- c) Hyperbola
- d) Ellipse

93. The power developed by the engine cylinder of an I.C. engine is known as.....

- a) Indicated power
- b) Brake power
- c) Actual power
- d) None of the above

94. If the intake air temperature of I.C. engine increases, its efficiency will.....

- a). Increase
- b). Decreases
- c). Remain same
- d). Unpredictable

95. Most high speed compression engines operate on.....

- a). Diesel cycle
- b). Otto cycle
- c). Dual combustion cycle
- d). Carnot cycle

*****END*****



**J.C. Bose University of Science and Technology, YMCA, Faridabad
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Answer Key (RAC)					
MCQ No.	Option	MCQ No.	Option	MCQ No.	Option
1	C	33	A	65	B
2	A	34	A	66	D
3	B	35	D	67	D
4	B	36	A	68	B
5	B	37	B	69	B
6	D	38	A	70	D
7	B	39	C	71	A
8	A	40	B	72	A
9	C	41	C	73	A
10	C	42	B	74	D
11	D	43	A	75	C
12	A	44	C	76	C
13	B	45	D	77	B
14	B	46	A	78	D
15	A	47	A	79	C
16	B	48	C	80	A
17	C	49	D	81	B
18	C	50	A	82	D
19	C	51	A	83	A
20	B	52	C	84	B
21	D	53	D	85	C
22	B	54	D	86	D
23	C	55	A	87	C
24	C	56	C	88	B
25	C	57	B	89	B
26	B	58	D	90	C
27	D	59	D	91	A
28	C	60	B	92	B
29	D	61	C	93	B
30	A	62	D	94	B
31	D	63	B	95	C
32	C	64	A		