

**EXAMINATION FOR RECRUITMENT OF JUNIOR ENGINEER FOR THE
NATIONAL INSTITUTE OF WIND ENERGY, GOVT. OF INDIA**


AUGUST 2018

Name: _____

Roll No:

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Instructions to the Candidates

1. Each candidate will be supplied with a Question Paper Booklet and an Optical Mark Reading (OMR) answer sheet.
2. There are totally 120 questions printed in 16 pages of the Question Paper Booklet. Kindly check whether all pages is intact.
3. Time allotted for the examination is 90 minutes.
4. For rough work, there are sheets provided (Page 17 & 18) at the end of the question paper booklet. Writing is not allowed in the other pages of question paper booklet.
5. Do **NOT** start writing till you are instructed to start.
6. Answers are to be marked **ONLY** on the Optical Mark Reading (OMR) answer sheet provided.
7. Answers marked on the Question Paper Booklet will not be considered.
8. Mark your answers by **darkening the oval** for the  alternatives A, B, C, D for each of the questions on the Optical Mark Reading (OMR).
9. Candidates writing the examination will not be allowed out of the examination hall until the examination is over (In case of emergency the invigilator should obtain permission from the Chief Controller of Examination.)
10. All candidates should return both the Question Paper Booklet and Optical Mark Reading (OMR) after completion, before leaving.
11. Roll No. and Name should be written both on the Question Paper Booklet and on the Optical Mark Reading (OMR) in the designated places. No writing on any other part of the Optical Mark Reading (OMR) answer sheet is allowed.
12. All candidates should sign in Optical Mark Reading (OMR) answer sheet.
13. Written test call letter will be verified by the invigilator.
14. Question not answered will carry no mark. Wrong answers will result in **NEGATIVE** marks. For every wrong answer, one-fourth (1/4th) mark will be deducted.
15. The answers for each of the questions are to be marked on a separate, specially designed, machine-gradable sheet of paper (Optical Mark Reading). While answering each of the questions the candidate is expected to darken the bubble(s) against correct answer(s).
16. **Wish you all the best!**

Directions :

- (i) Answer **all** Questions
- (ii) Answers should be marked only on the OMR answer sheet provided
- (iii) Each Question carries **One Mark**.
- (iv) Questions NOT answered will carry no mark.
- (v) For every wrong answer, one-fourth (1/4th) mark will be deducted.

PART – I

1. Who of the following become the 53rd Grandmaster of India?
 - a) Aravindh Chithambaram
 - b) Nihal Sarin
 - c) Praggnanandhaa Rameshbabu
 - d) Parimarjan Negi
2. The 2018 World Organ Donation Day has been observed on which date?
 - a) August 16
 - b) August 15
 - c) August 14
 - d) August 13
3. Who has been appointed as head coach of the women's national cricket team till the ICC World T20?
 - a) Sunil Gavaskar
 - b) Rahul Dravid
 - c) Ramesh Powar
 - d) Tushar Arothe
4. Name the girl who became India's latest Woman Grandmaster (WGM) recently.
 - a) R Vaishali
 - b) M Swetha
 - c) Pinky Reddy
 - d) Pihu Chawla
5. With which technological giant Prasar Bharati join hands to telecast 2018 Independence Day programme live online?
 - a) Google
 - b) Twitter
 - c) Facebook
 - d) Instagram
6. NASA selects Indian origin Sunita Williams for which program to the International Space Station.
 - a) Boeing
 - b) Gemini
 - c) Apollo
 - d) Mercury

7. Which railway station ranks to be 3rd in country to have airport-like facilities?
- Chennai
 - Surat
 - Kolkata
 - Hyderabad
8. With which country India have decided to set up a new "people to people mechanism" to build on the momentum in bilateral ties from the Wuhan Summit?
- Brazil
 - Russia
 - China
 - South Korea
9. Which Indian player received the International Player of the Year award for 2017-2018 from England's Barmy Army?
- Rohit Sharma
 - M S Dhoni
 - Virat Kohli
 - Suresh Raina
10. The 6th India-UK Science & Innovation Council (SIC) meeting held in _____.
- Chennai
 - New Delhi
 - Pune
 - Mumbai
11. In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women?
- 63
 - 90
 - 126
 - 45
12. How many 4-letter words with or without meaning, can be formed out of the letters of the word, 'LOGARITHMS', if repetition of letters is not allowed?
- 40
 - 400
 - 5040
 - 2520
13. Two stations A and B are 110 km apart on a straight line. One train starts from A at 7 a.m. and travels towards B at 20 kmph. Another train starts from B at 8 a.m. and travels towards A at a speed of 25 kmph. At what time will they meet?
- 9 a.m.
 - 10 a.m.
 - 10.30 a.m.
 - 11 a.m.
14. From a point P on a level ground, the angle of elevation of the top tower is 30° . If the tower is 100 m high, the distance of point P from the foot of the tower is:
- 149 m
 - 156 m
 - 173 m
 - 200 m

15. How much time will it take for an amount of Rs. 450 to yield Rs. 81 as interest at 4.5% per annum of simple interest?
- 3.5 years
 - 4 years
 - 4.5 years
 - 5 years
16. A certain amount earns simple interest of Rs. 1750 after 7 years. Had the interest been 2% more, how much more interest would it have earned?
- Rs. 35
 - Rs. 245
 - Rs. 350
 - Cannot be determined
17. A shopkeeper expects a gain of 22.5% on his cost price. If in a week, his sale was of Rs. 392, what was his profit?
- Rs. 18.20
 - Rs. 70
 - Rs. 72
 - Rs. 88.25
18. Some articles were bought at 6 articles for Rs. 5 and sold at 5 articles for Rs. 6. Gain percent is:
- 30%
 - $33\frac{1}{3}\%$
 - 35%
 - 44%
19. If 20% of $a = b$, then $b\%$ of 20 is the same as:
- 4% of a
 - 5% of a
 - 20% of a
 - None of these
20. What will be the day of the week 15th August, 2010?
- Sunday
 - Monday
 - Tuesday
 - Friday
21. The average of 20 numbers is zero. Of them, at the most, how many may be greater than zero?
- 0
 - 1
 - 10
 - 19
22. The curved surface area of a cylindrical pillar is 264 m^2 and its volume is 924 m^3 . Find the ratio of its diameter to its height.
- 3 : 7
 - 7 : 3
 - 6 : 7
 - 7 : 6

23. Which of the following is a prime number?
a) 33
b) 81
c) 93
d) 97
24. If the number $5 * 2$ is divisible by 6, then $* = ?$
a) 2
b) 3
c) 6
d) 7
25. If $a - b = 3$ and $a^2 + b^2 = 29$, find the value of ab .
a) 10
b) 12
c) 15
d) 18
26. The value of $\log_2 16$ is:
a) 18
b) 4
c) 8
d) 16
27. Excluding stoppages, the speed of a bus is 54 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?
a) 9
b) 10
c) 12
d) 20
28. The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Re. 1. The sum (in Rs.) is:
a) 625
b) 630
c) 640
d) 650
29. A is two years older than B who is twice as old as C. If the total of the ages of A, B and C be 27, the how old is B?
a) 8
b) 9
c) 10
d) 11
30. How many times in a day, the hands of a clock are straight?
a) 22
b) 24
c) 44
d) 48

31. Three times the first of three consecutive odd integers is 3 more than twice the third. The third integer is:
- a) 9
 - b) 11
 - c) 13
 - d) 15
32. What decimal of an hour is a second?
- a) .0025
 - b) .0256
 - c) .00027
 - d) .000126
33. The cube root of .000216 is:
- a) .6
 - b) .06
 - c) 77
 - d) 87
34. In order to obtain an income of Rs. 650 from 10% stock at Rs. 96, one must make an investment of:
- a) Rs. 3100
 - b) Rs. 6240
 - c) Rs. 6500
 - d) Rs. 9600
35. A man's speed with the current is 15 km/hr and the speed of the current is 2.5 km/hr. The man's speed against the current is:
- a) 8.5 km/hr
 - b) 9 km/hr
 - c) 10 km/hr
 - d) 12.5 km/hr
36. A man purchased a cow for Rs. 3000 and sold it the same day for Rs. 3600, allowing the buyer a credit of 2 years. If the rate of interest be 10% per annum, then the man has a gain of:
- a) 0%
 - b) 5%
 - c) 7.5%
 - d) 10%
37. If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number?
- a) 2 : 5
 - b) 3 : 7
 - c) 5 : 3
 - d) 7 : 3
38. The banker's discount on a bill due 4 months hence at 15% is Rs. 420. The true discount is:
- a) Rs. 400
 - b) Rs. 360
 - c) Rs. 480
 - d) Rs. 320

39. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together ?
- a) 4
 - b) 10
 - c) 15
 - d) 16
40. The least number which should be added to 2497 so that the sum is exactly divisible by 5, 6, 4 and 3 is:
- a) 3
 - b) 13
 - c) 23
 - d) 33

PART – II

41. The number of valence electrons in Phosphorus is
- a) 3
 - b) 4
 - c) 5
 - d) 6
42. In a common base connection, if a transistor has an emitter current of 10mA and collector current of 9.8mA then the base current is,
- a) 2000 μA
 - b) 200 μA
 - c) 20 μA
 - d) 2 μA
43. If two resistors such as R_1 , R_2 are connected in parallel, the equivalent resistance R_{eq} value is
- a) $R_1 + R_2$
 - b) $R_1 R_2 / (R_1 + R_2)$
 - c) $(R_1 + R_2) / R_1 R_2$
 - d) $R_1 - R_2$
44. Unit of capacitance is
- a) Ohm
 - b) Henry
 - c) Coulomb
 - d) Farad
45. Open loop gain of ideal Operational amplifier is
- a) 0
 - b) 1
 - c) infinite
 - d) -1
46. The number of basic operation modes in 555 Timer IC is
- a) 5
 - b) 4
 - c) 3
 - d) 2

47. Absorption theorem in Boolean algebra states that
- $X+0=X$
 - $X+1=1$
 - $X+X=X$
 - $X+XY=X$
48. TTL "high" signal for ideal case would be
- 3V
 - 4V
 - 5V
 - 6V
49. A 1 ohm, 1W resistor can safely pass a current of
- 100 mA
 - 50 mA
 - 30mA
 - 300mA
50. Peak to peak value of a sine wave is 200V. What is the RMS value of the given sine wave?
- 200V
 - $100 / \sqrt{2}$ V
 - $200 / \sqrt{2}$ V
 - 100V
51. The power factor of a RLC circuit of which $X_L > X_C$ is
- Lagging
 - Leading
 - Zero
 - Unity
52. In any DC generator, the emf generated in the armature is maximum, when
- rate of change of flux linkage is minimum
 - rate of change of flux linkage is maximum
 - flux linkage with conductors is maximum
 - flux linkage with conductors is minimum
53. The rate of change of wind speed with height is called
- Wind shear
 - Wind rose
 - Wind solidity
 - Tip speed
54. In which layer, data unit is called as 'frame'
- Physical layer
 - Data link layer
 - Network layer
 - Application layer
55. Which of the following protocol requires acknowledgement
- UDP
 - FTP
 - NVT
 - TCP

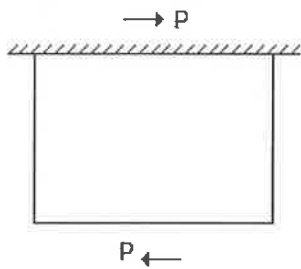
56. An IPv6 address is
- a) 32 bits
 - b) 64 bits
 - c) 128 bits
 - d) 256 bits
57. If a 500W carrier is modulated to a depth of 60% , then the total power in the modulated wave is
- a) 545W
 - b) 590W
 - c) 645W
 - d) 690W
58. How many side bands are present in VSB
- a) 4
 - b) 3
 - c) 2
 - d) 1
59. Maximum number of symbol(s) generated by QPSK is (are)
- a) 4
 - b) 3
 - c) 2
 - d) 1
60. Three voltage levels positive, negative, and zero are used in _____ encoding scheme
- a) UniPolar
 - b) BiPolar
 - c) Polar
 - d) BiPhase
61. M20 grade of concrete approximates
- a) 1 : 3 : 6 mix
 - b) 1 : 1 : 2 mix
 - c) 1 : 2 : 4 mix
 - d) 1 : 1.5 : 3 mix
62. According to IS:456-2000, the maximum percentage of reinforcement in a column is
- a) 2 %
 - b) 4 %
 - c) 6 %
 - d) 8 %
63. The soundness of cement is tested by
- a) Vicat's apparatus
 - b) Le-chartelier apparatus
 - c) Compression testing machine
 - d) Standard briquette test

64. The portion of the brick left after removing the corner equal to half the width and half the length is called
- Bevelled Closer
 - Queen Closer
 - King Closer
 - Mitred Closer
65. Which of the following wall resists the pressure of earth filling?
- Retaining wall
 - Buttress wall
 - Parapet wall
 - Breast wall
66. First class brick immersed in water for 24 hours, should not absorb water (by weight) more than
- 10%
 - 15%
 - 20%
 - 25%
67. The horizontal angle between the true meridian and magnetic meridian at a place is called
- Azimuth
 - Declination
 - Local attraction
 - Magnetic bearing
68. If the contour lines are equally spaced they indicate
- Steep slope
 - Depression
 - Plain ground
 - Uniform slope
69. Camber in the road is provided for
- effective drainage
 - counteracting the centrifugal force
 - having proper sight distance
 - control the speed
70. Gauge is the distance between
- centre to centre of rails
 - running faces of rails
 - outer faces of rails
 - height of rails
71. In a loaded beam, the point of contra flexure occurs at a section where
- bending moment is minimum
 - bending moment is zero or changes sign
 - bending moment is maximum
 - shearing force is maximum

72. A simply supported beam of span L carries a concentrated load W at its mid-span. The maximum bending moment M is

- a) $\frac{WL}{2}$
- b) $\frac{WL}{4}$
- c) $\frac{WL}{8}$
- d) $\frac{WL}{12}$

73. The forces acting on the bar as shown in the given figure introduce



- a) compressive stress
- b) tensile stress
- c) shear stress
- d) bending stress.

74. The equivalent length is of a column of length L having both the ends fixed, is

- a) $2L$
- b) L
- c) $L/2$
- d) $L/3$

75. Hydrograph is a graphical representation of

- a) surface run off
- b) ground water flow
- c) rain fall
- d) discharge flowing in the river

76. For predicting floods of a given frequency, the best reliable method is

- a) Unit hydrograph method
- b) Gumbel's analytical method
- c) California method
- d) Ryve's formula.

77. The average quantity of water required per capita for domestic purposes according to IS code is

- a) 100 lpd
- b) 120 lpd
- c) 70 lpd
- d) 135 lpd

78. The permissible pH value for public water supplies may range between
- 4.5 to 5.5
 - 5.5 to 6.5
 - 6.5 to 8.5
 - 8.5 to 10.5
79. The minimum water content at which the soil just begins to crumble when rolled into threads 3 mm in diameter, is known
- liquid limit
 - plastic limit
 - shrinkage limit
 - permeability limit.
80. The compression resulting from a long term static load and consequent escape of pore water, is known as
- compaction
 - consolidation
 - swelling
 - capillary.
81. Main memory of the computer system is also called
- Non-volatile
 - Volatile
 - Reserved
 - Large
82. To start an I/O operation the device driver loads the appropriate register info
- Memory
 - Secondary Storage
 - Device Controller
 - Array
83. One megabyte memory storage in the form of bytes is equal to
- 1024 bytes
 - 1024 kilo bytes
 - 1024 bits
 - 1000 kilo bytes
84. Transmission data rate is decided by
- Network Layer
 - Physical Layer
 - Data Link Layer
 - Transport Layer
85. Bluetooth is an example of
- Personal Area Network
 - Local Area Network
 - Virtual Area Network
 - Wide Area Network
86. IPv4 has address size
- 24 bit
 - 32 bit
 - 48 bit
 - 64 bit

87. Network protocols are

- a) Agreements on how communication components and DTE's are to communicate
- b) Logical communication channels for transferring data
- c) Physical communication channels used for transferring data
- d) None of above

88. What is the use of Network Interface Card(NIC)

- a) To remotely access PC
- b) To Connect computers to a network
- c) It is used in junipers routers for gateway
- d) To secure the data

89. When 1 is entered what is the output of the code below

```
#include <stdio.h>
void main()
{
    int ch;
    printf("enter a value btw 1 to 2:");
    scanf("%d", &ch);
    switch (ch)
    {
        case
            printf("1\n");

            printf("2\n");
    }
}
```

- a) 1
- b) 2
- c) 1 2
- d) Run time error

90. What is the output of the code

```
#include <stdio.h>
int main()
{
    while ()
    printf("In while loop ");
    printf("After loop\n");
}
```

- a) In while loop After loop
- b) After loop
- c) Compile time error
- d) Infinite loop

91. Database Management System (DBMS) is

- a) Collection of interrelated data
- b) Collection of programs to access data
- c) Collection of data describing one particular enterprise
- d) All of the above

92. Data isolation caused due to _____ in the traditional system
- Complex Data
 - Scattering Data
 - Atomic Data
 - Duplicate Data
93. A data warehouse uses
- Partial operational data
 - Historical operational data
 - Future operational data
 - Health care data
94. Which of the following is non-linear data structure?
- Stacks
 - List
 - Strings
 - Trees
95. The operation of the stack is
- First in Last out
 - First in First Out
 - Last in First Out
 - Last in Last out
96. An error is called
- Bug
 - Debug
 - Cursor
 - Icon
97. Internet Explorer
- Operating System
 - Browser
 - IP Address
 - Compiler
98. Operating system is
- General Purpose Software
 - Application Software
 - System Software
 - None of the Above
99. URL stands for
- Unique Reference Label
 - Uniform Resource Link
 - Uniform Resource Locator
 - Unique Resource Locator
100. The Rotational speed of a disk is measured in
- Rotation Per Minute
 - Rotation Per Second
 - Rotation Per Hour
 - Rotation per millisecond

101. The capacity of the material to undergo deformation under tension without rupture is known as
- Mechanical strength
 - Stiffness
 - Toughness
 - Ductility
102. The hardness of steel primarily depends on
- Method of manufacture
 - Heat treatment employed
 - Shape of carbide and their distribution in iron
 - Percentage of carbon
103. The process of reducing the ore with carbon in the presence of flux is known as
- Hardening
 - Smelting
 - Quenching
 - Shaping
104. Increase in true rake angle of a cutting tool
- Deteriorates the surface finish
 - Improves the surface finish
 - Has no effect on the surface finish
 - First improves and then deteriorates the surface finish
105. In which milling operation there is a greater tendency for the chip to weld to the cutter
- Climb milling
 - Down milling
 - Conventional milling
 - Face milling
106. A process in which no heat is supplied or rejected and entropy is constant is known as
- Adiabatic process
 - Isentropic process
 - Polytropic process
 - Isothermal process
107. Which one is not the intensive property of the thermodynamic system
- Temperature
 - Total volume
 - Pressure
 - Density
108. The second law of thermodynamics defines
- Heat
 - Entropy
 - enthalpy
 - work
109. If fluid particles move in a zig zag manner the fluid is known as
- Unsteady
 - Non uniform
 - Turbulent
 - Incompressible

110. The venturimeter is used to measure
- Discharge
 - Average velocity
 - Velocity at a point
 - Pressure at a point
111. The process which prescribes the sequence of operations to be followed is known as
- Despatching
 - Scheduling
 - Routing
 - Loading
112. The information about the production schedule is obtained from
- Starting diagram
 - Distribution curves
 - Gantt chart
 - Travel chart
113. Shaft with collars at both ends fitted in to a circular hole forms a
- Turning pair
 - Rolling pair
 - Sliding pair
 - Spherical pair
114. A cylindrical rod with both ends threaded is known as
- Bolt
 - Stud
 - Tap bolt
 - Set screw
115. The most commonly used cross section for a key is
- Circular
 - Square
 - Rectangular
 - Conical
116. The type of springs mostly used for railway engine coach and road vehicles are
- Spiral torsion springs
 - Helical springs
 - Leaf springs
 - Belleville springs
117. In the watches and clocks, the type of tooth profile used for gears is
- Cycloidal
 - Involute
 - Epicycloid
 - Hypocycloid
118. Heat is absorbed in refrigerant during a refrigeration cycle in a
- Condenser
 - Evaporator
 - Compressor
 - Throttle valve

119. In a psychrometric chart the horizontal line shows
- a) Wet bulb temperature
 - b) Dry bulb temperature
 - c) Adiabatic saturation temperature
 - d) Specific humidity
120. The process of removing moisture from air at constant dry bulb temperature is known as
- a) Sensible heating
 - b) Sensible cooling
 - c) Humidification
 - d) Dehumidification

For Rough Work

