

EAST COAST RAILWAY
QUESTION BOOKLET No: AB002

FOR WRITTEN TEST/SUITABILITY TEST FOR THE POST OF JE (SIGNAL)/JE (TELE)
IN CONNECTION WITH COMPASSIONATE GROUND APPOINTMENT ON **10.06.2020**

TOTAL NUMBER OF PRINTED PAGES ON THIS QUESTION BOOKLET: **24**

INSTRUCTIONS TO THE CANDIDATE

Read the instructions given below and on back side of the duplicate OMR Answer Sheet.

Noncompliance of instructions can lead to disqualification

1. This Question Booklet contains 150 numbers of Multiple Choice Questions, which are to be answered in **120 minutes**. The candidate (s) are required to answer all the questions. Each question carries 1 (One) mark. There would be no negative marking for wrong answers for objective questions.
2. Each question has four multiple choice answers: (A), (B), (C), (D). Select the correct/most appropriate answer. Darken the corresponding circle provided in OMR Answer sheet as shown in example on reverse of OMR answer Sheet. Once darkened change is not allowed. Multiple darkening of the circle will not be evaluated.
3. Carrying and using any additional paper, calculator, watch, mobile phone, pager or any electronic equipment is strictly prohibited during exam and will lead to disqualification.
4. Do not tick or indicate answers on Question Booklet.
5. Do not remove or tear off any sheet from the question Booklet. Do not separate the duplicate carbon copy of OMR Answer Sheet from the top original OMR Answer Sheet.
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7. No candidate shall leave examination hall before completion of examination. Candidates shall leave the examination hall only after the Room Invigilator gives permission, after collecting OMR Answer Sheets from all candidates in the room.
8. Rough work is to be done in the space available at the end of each page and at the end of the Question Booklet.

Section-1: General Awareness

1. "Sikkim" is a
 - A. Country.
 - B. Union territory.
 - C. State.
 - D. None of the above.
2. 'Mahanadi' flows through which states?
 - A. Chhattisgarh & Odisha
 - B. Odisha & Jharkhand.
 - C. Andhra Pradesh & Odisha.
 - D. None of the above.
3. When United Nation came in to existence?
 - A. 15th August 1947.
 - B. 24th October 1945.
 - C. 26th January 1950
 - D. None of the above.
4. Who is the writer of Odia patriotic poem "Bande Utkal Janani"?
 - A. Radhanath Ray.
 - B. Fakir Mohan Senapati.
 - C. Gangadhar Meher.
 - D. Katakabi Laxmikanta Mohapatra.
5. Which train runs between Puri and Howrah?
 - A. Konark Express.
 - B. Coromandal Express.
 - C. Sri Jagannath Express.
 - D. Purushottam Express.
6. Who is the founder of Odia newspaper "The Samaja"?
 - A. Radhanath Rath.
 - B. Utkalmani Gopabandhu Das.
 - C. Hare Krushna Mahatab.
 - D. Janaki Patnaik.
7. Who is the Governor of Andhra Pradesh?
 - A. Biswabhusan Harichandan.
 - B. Ganeshi Lal.
 - C. Draupadi Murmu
 - D. None of the above.

8. Who is the Minister of Railways?
- A. L.K.Advani. B. Piyush Goyal.
C. Dharmendra Pradhan. D. None of the above.
9. "Hubli" is the Zonal Head Quarter for which Railway Zone?
- A. East Central Railway. B. North Western Railway.
C. South Central Railway. D. South Western Railway.
10. Who is known as 'Kabiguru'?
- A. Sarojini Naidu. B. Kabir Das.
C. Rabindranath Tagore. D. Bankim Chandra Chatterjee.
11. Every year India celebrate 'Engineers day' on birth anniversary of
- A. E. Sridharan. B. A.P.J. Abdul Kalam.
C. Satish Dhawan. D. M.Visvesvaraya.
12. 'Davis Cup' is associated with
- A. Football, B. Cricket.
C. Tennis. D. Hockey.
13. In which city Asian Athletics Championship 2017 was organized?
- A. Bhubaneswar B. Colombo
C. New Delhi D. None of the above.
14. In which year Indian National Congress was formed?
- A. 1885 B. 1947
C. 1758 D. 1920
15. Who presents the TV program "Kaun Banega Crorepati"?
- A. Lata Mangeskar. B. Udit Narayan.
C. Amitabh Bachchan. D. None of the above.

16. Who wrote the "Tapaswini"?
- A. Ramachandra Bhanj. B. Gangadhar Bal.
C. Madhubabu. D. Swabhabkabi Gangadhar Meher.
17. Goutam Buddha delivered his first sermon at which place?
- A. Kapilvastu B. Rajagriha
C. Sarnath D. None of the above.
18. The famous Chinese pilgrim 'Hieun Tsang' visited India during the reign of
- A. Ashok. B. Chandragupta.
C. Skandagupta. D. Harsha Vardhan.
19. Nagarjuna Sagar dam is on which river?
- A. Krishna B. Godavari
C. Ganga D. Kaveri
20. Who gave the slogan "do or die" (Karo ya Maro)?
- A. Mahatma Gandhi B. Jawaharlal Nehru
C. Netaji Subhas Chandra Bose D. Narendra Modi

Section-2: General Intelligence & reasoning

21. $729 : 3 :: 64 : ?$
- A. -686 B. 686
C. 1 D. 2
22. Choose the odd numeral pair.
- A. 18-36 B. 15-25
C. 25-54 D. 27-81

23. Complete the series.

1, 3, 9, 27, ? , 243.

- A. 18
B. 81
C. 0
D. 54

24. If OUGHT is coded as ABCDE in a certain language, how can TOUGH can be coded in the same language?

- A. ABCDE B. BCDEA
C. CDEAB D. EABCD

25. Pointing to a man in the photograph Kabir said, 'His son's mother is the only daughter in law of my mother. Who is the person in photograph to Kabir?

- A. Brother B. Uncle
C. Father D. Kabir himself

26. Rahul and Govind start race and together they run for 50m. Rahul turns right and runs 60m, while Govind turns left and runs 40m. Then Rahul turns left and runs 50m, while Govind turns right and runs 50m. How far are both now from each other?

- A. 60m B. 100m
C. 20m D. 150m

27. How many such letters are there in the word 'ACCELERATION' each of which is as far away from the beginning of the word as it is from the beginning of the English alphabet?

- A. None B. One
C. Two D. Three

28. Find out the word coming last in the dictionary?

1. Large, 2. Long, 3. Lust, 4. Love

- A. Large B. Long
C. Lust D. Love

29. Arrange the words given below in a meaningful sequence.

1. Country, 2. Continent, 3. Earth, 4. District, 5. State

A. 3, 2, 4, 5, 1

B. 3, 2, 1, 5, 4

C. 3, 1, 5, 4, 2

D. 1, 2, 3, 4, 5

30. **Statement:** Some leaders are as corrupt as Mahesh.

Conclusion:

A. Mahesh is corrupt.

B. Most of the leaders are corrupt.

C. Mahesh is not corrupt.

D. Leaders are not corrupt.

31. Select the related word/letters/number from the given alternatives.

4 : 44 :: ? : 77

A. 3

B. 6

C. 7

D. 5

32. If the hands in a clock are 3 minutes division apart, then the angle between them is

A. 3^0

B. 18^0

C. 24^0

D. 60^0

33. The calendar for the year 2005 is the same as for the year

A. 2010

B. 2011

C. 2012

D. 2013

34. A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

Rajasthan, Madhya Pradesh, Maharashtra, ?

A. Uttar Pradesh

B. Jammu Kashmir

C. Tamil Nadu

D. Assam

35. A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

200, 100, 50, 25, 12.5, 6.25, ?

- A. 2.125 B. 3.025
C. 3.125 D. 2.025

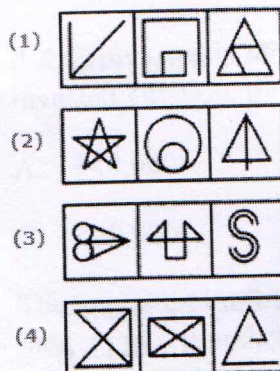
36. Find the minimum number of straight lines required to make the given figure.



- A. 11 B. 14
C. 16 D. 17

37. Choose the set of figures which follows the given rule.

Rule: Any figure can be traced by a single unbroken line without retracting.



- A. (1) B. (2)
C. (3) D. (4)

38. Farhan travels 4 km in the north-east direction and then turns towards the south-east to travel another 3 km. How far is he now from his original position?

- A. 4 km B. 6 km
C. 7 km D. 5 km

39. If "S" denotes "multiplied by", "V" denotes "subtracted from", "M" denotes "added to" and "L" denotes "divided by", then $8 \text{ V } 10 \text{ M } 96 \text{ L } 6 \text{ S } 9 = ?$
- A. 140
B. 142
C. 134
D. 144
40. A man is facing east. He turns 60° in the anticlockwise direction and then again turns another 120° in the same direction. Which direction is he facing now?
- A. East
B. North-west
C. South-east
D. West

Section-3: Arithmetic

41. You purchased a shirt from a mall and got a similar shirt free. How much discount you got?
- A. 100%
B. 50%
C. 25%
D. 0%
42. A vendor purchased @ 3 apples per ₹ 2 and sold @ 2 apples per ₹ 3. What is the percentage of profit or loss?
- A. 125% profit
B. 25% loss
C. 100% profit
D. None of the above.
43. A tank is filled up fully by a pipe in 5 minutes time and evacuated fully by another pipe in 10 minutes. If both the pipes are open at a time, how much time it will take to fill up the tank?
- A. 5 minutes
B. 15 minutes
C. 10 minutes
D. None of the above
44. If Five men complete a work in Six hours' time, then how many men shall be required to complete the work in Five hours?
- A. Six
B. Eight
C. Ten
D. None of the above

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59. The cube root of .000216 is

- A. .6
- B. .06
- C. 77
- D. 87

60. If one third of one fourth of a number is 15, then three-tenth of that number is :

- A. 35
- B. 36
- C. 45
- D. 54

Section-4: Technical Knowledge

61. Which of the following involves digital quantities?

- A. Ten position switch
- B. Current Meter
- C. Temperature
- D. Radio volume control

62. The decimal system is composed of ____ numerals or symbols.

- A. 2
- B. 10
- C. 8
- D. 16

63. Change in state is

- A. same state
- B. reset
- C. set
- D. toggle

64. What is the next binary number following $(10111)_2$ in the counting sequence?

- A. 11100
- B. 11001
- C. 10110
- D. 11000

65. A digital circuit is also referred to as a/an _____ circuit

- A. arithmetic
- B. logic
- C. electrical
- D. Sequential

66. CMOS means
- A. Complimentary Main-Oxide Semiconductor
 - B. Complimentary Metal-Oxide Semiconductor
 - C. Compliments Main-Oxidation Semiconductor
 - D. Correlation in Metal Oxidized Semiconductor
67. What is the smallest type of computer in terms of their physical size?
- A. Minicomputer
 - B. Mainframe
 - C. Maxi computer
 - D. Microcomputer
68. Which of the following items below is not one of the three basic operations of Boolean algebra?
- A. Logical addition
 - B. Logical complementation
 - C. Logical subtraction
 - D. Logical multiplication
69. The most widely used 7-bit alphanumeric code is the
- A. ASCII
 - B. EBCDIC
 - C. Straight binary code
 - D. Gray code
70. The _____ operation result will be 1 if any one or more variable is at 1.
- A. NOT
 - B. AND
 - C. OR
 - D. NOR
71. A circuit that operates in such a way that its output is high when all its inputs are high.
- A. OR
 - B. NAND
 - C. NOR
 - D. AND
72. What type of gate is equivalent to NAND gate followed by an inverter?
- A. OR
 - B. AND
 - C. XOR
 - D. NOR

73. Electron flow assumes charges flow from
- A. Negative to positive
 - B. Negative to negative
 - C. Positive to negative
 - D. Positive to positive
74. The symbol Q refers to
- A. Resonance quotient
 - B. Quality factor
 - C. Power quotient
 - D. Qualification test
75. What is reciprocal of quality factor?
- A. Power factor
 - B. Reactive factor
 - C. Dissipation factor
 - D. I/Q factor
76. In liquids and gases ionization current results from a flow of
- A. Positive or negative ions
 - B. Free electrons
 - C. Ions that are lighter in weight than electrons
 - D. Protons
77. What is the other name of relative permittivity?
- A. Dielectric strength
 - B. Potential gradient
 - C. Breakdown voltage
 - D. Specific inductance capacity
78. The current is _____ times the maximum current at half-power points of a resonance curve.
- A. 0.707
 - B. 1.414
 - C. 0.5
 - D. 0.632
79. If three 9 mH inductors are connected in parallel without mutual inductance then the total inductance is ____ mH.
- A. 3
 - B. 9
 - C. 27
 - D. 18
80. If two capacitors of capacitance 9 μF and 18 μF in series will have total capacitance of

- A. Permeance
B. Eddy current
C. Hysteresis
D. Reluctance
88. Voltage gain of a common collector configuration is
A. Unity
B. Zero
C. Very high
D. Moderate
89. A two-transistor class B power amplifier is commonly called
A. Push-pull amplifier
B. Dual amplifier
C. Symmetrical amplifier
D. Differential amplifier
90. Which power amplifier has the highest collector efficiency?
A. Class A
B. Class C
C. Class B
D. Class AB
91. An AF transformer is shielded to
A. Keep the amplifier cool
B. Prevent the induction due to stray magnetic fields
C. Protect from rusting
D. Prevent electric shock
92. The ear is not sensitive to ____ distortion.
A. Frequency
B. Amplitude
C. Harmonic
D. Phase
93. What piece of equipment in an oscilloscope is used to indicate pulse condition in a digital logic circuit?
A. Probe
B. Test prods
C. Connector
D. Logic probe
94. What type of coupling is generally used in power amplifiers?
A. Transformer
B. Direct
C. RC
D. Inductive

95. An oscillator produces _____ oscillations.
- A. Damped
 - B. Modulated
 - C. Undamped
 - D. Sinusoidal
96. What is the operating point in the characteristic curve called?
- A. Quiescent point
 - B. Load point
 - C. Biasing point
 - D. Saturation point
97. Oscillators operate on the principle of
- A. Positive feedback
 - B. Negative feedback
 - C. Signal feed-through
 - D. Attenuation
98. What is connected with the measurement of electric signals on the scalp, which arise from the underlying neural activity in the brain (including synaptic sources)
- A. ECG (Electrocardiogram)
 - B. EEG (Electroencephalogram)
 - C. Ultrasound
 - D. None of the above
99. In therapeutic radiology and in nuclear medicine, the energies of interest range from about
- A. 10 to 100 KeV
 - B. 100 to 10000 KeV
 - C. 10000 to 10000 KeV
 - D. 1 to 10 KeV
100. What is the typical value of the inter-base resistance of UJT's?
- A. 20 K Ω
 - B. Between 0 to 4 K Ω
 - C. 4 K Ω
 - D. Between 4 to 10 K Ω
101. What is a three terminal device used to control large current to a load?
- A. SCR
 - B. SCS
 - C. GTO
 - D. Thyristor
102. When the temperature increases, the inter-base resistance of a UJT
- A. Remains unchanged
 - B. Increases

110. An integrator op-amp uses what element in the feedback path?
- A. Capacitor
 - B. Resistor
 - C. Inductor
 - D. Transistor
111. Integrated circuits having upto 9 gates is called
- A. Small-scale integration (SSI)
 - B. Medium-scale integration (MSI)
 - C. Large-scale integration (LSI)
 - D. Very large-scale integration (VLSI)
112. ICs have advantages over discrete device circuits which is
- A. Lower cost
 - B. High reliability
 - C. Smaller size
 - D. All of the above
113. What is the typical input resistance of the op-amp when measured under open loop?
- A. $2\text{ M}\Omega$
 - B. $3\text{ M}\Omega$
 - C. $1.5\text{ M}\Omega$
 - D. $2.5\text{ M}\Omega$
114. For a constant input voltage to an integrator, why is the voltage across capacitor linear?
- A. Capacitor diode does not dissipate heat
 - B. Capacitor current is constantly changing
 - C. Capacitor current is linear
 - D. Capacitor current is constant
115. ICs for military and space applications are tested in the temperature range of
- A. 0°C to $+70^{\circ}\text{C}$
 - B. -55°C to $+125^{\circ}\text{C}$
 - C. -173°C to $+100^{\circ}\text{C}$
 - D. -10°C to $+25^{\circ}\text{C}$
116. Which of the following is the main function of the battery?
- A. To provide a source of steady DC voltage to a fixed polarity
 - B. To provide a source of steady DC voltage to a variable polarity
 - C. To provide a source of variable DC voltage to a fixed polarity
 - D. To provide a source of variable DC voltage to a variable polarity

117. Volt is a unit of _____.
- A. electromotive force
 - B. energy
 - C. force
 - D. magnetomotive force
118. What is the nominal output of an automotive battery having six lead acid cells in series?
- A. 12V
 - B. 24V
 - C. 6V
 - D. 3V
119. Low speed alternators are driven by
- A. hydraulic turbines.
 - B. steam turbines.
 - C. steam engines.
 - D. diesel engines.
120. Which of the following is not a secondary cell?
- A. Silver-zinc
 - B. Nickel-iron
 - C. Silver-oxide
 - D. Lead-acid
121. Carbon brushes are used in a dc machine because
- A. carbon lubricates and polishes the commutator
 - B. contact resistance is decreased
 - C. carbon is cheap
 - D. carbon is abundant
122. Which of the following is the main function of a dc motor?
- A. to generate power
 - B. to change mechanical energy to electrical energy
 - C. to change electrical energy to mechanical energy
 - D. to change chemical energy to mechanical energy
123. A method of converting chemical energy into electric energy by dissolving two different conducting materials in an electrolyte
- A. Battery
 - B. Cell
 - C. Voltaic cell
 - D. Charging

124. Galvanic cell is the other name of
- A. Voltaic cell
 - B. Primary cell
 - C. Secondary cell
 - D. Solar cell
125. The maximum permissible number of electrons in 3rd orbit is
- A. 18
 - B. 8
 - C. 32
 - D. 2
126. The electrons in the largest orbit travel _____ than the electrons in the smaller orbits.
- A. more slowly
 - B. faster
 - C. in the same velocity
 - D. a little bit slower
127. A semiconductor in its purest form is called
- A. Pure semiconductor
 - B. Doped semiconductor
 - C. Intrinsic semiconductor
 - D. Extrinsic semiconductor
128. For either germanium or silicon diodes, the barrier potential decreases _____ for each Celsius degree rise.
- A. 1 mV
 - B. 3 mV
 - C. 4 mV
 - D. 2 mV
129. There are two mechanisms by which holes and electrons move through a silicon crystal. They are
- A. Covalent bond and recombination
 - B. Diffusion and drift
 - C. Free and charge particles
 - D. Forward and reverse bias
130. A semiconductor is an element with a valence of
- A. Four
 - B. Eight
 - C. Two
 - D. One

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138. The pointer of an indicating instrument is generally made of
- A. Copper
 - B. Silver
 - C. Aluminum
 - D. Gold
139. A Wheatstone bridge is said to be balanced if
- A. The ratio of the resistors on one side of the bridge is one while the ratio of resistors on the other side is infinity.
 - B. The ratio of the resistors on one side of the bridge is greater than the ratio of resistors on the other side.
 - C. The ratio of the resistors on one side of the bridge equals the ratio of resistors on other side.
 - D. The bridge uses identical resistors.
140. All voltmeters except one of the following are operated by the passage of current.
- A. Moving-iron
 - B. Dynamometer
 - C. Electrostatic
 - D. Permanent-magnet moving coil
141. An oscilloscope provides easy measurement of _____ values.
- A. instantaneous
 - B. rms
 - C. Peak to peak
 - D. average
142. An element in electronics which serves as a protection against overload?
- A. Resistor
 - B. Transistor
 - C. Semiconductor
 - D. Fuse
143. When load impedance equals to Z_0 of the line, it means that the load _____ all powers.
- A. reflects
 - B. absorbs
 - C. attenuates
 - D. radiates
144. Which stands for dB relative level?
- A. dB_{rn}
 - B. dB_a
 - C. dB_r
 - D. dB_x

145. If the grade of service of a telephone system indicated $P=0.5$, what does it mean?
- A. Completed calls of 5%
 - B. Lost calls of 5%
 - C. Lost calls of 95%
 - D. Lost calls of 105%
146. The standard analog channel band width is
- A. 300-3400 Hz
 - B. 1200 Hz
 - C. 200-3200 Hz
 - D. 300-3000 Hz
147. In a waveguide _____ is a specific configuration of electric and magnetic field that allows a wave to propagate.
- A. set up
 - B. coupler
 - C. channel
 - D. mode
148. In an optic fiber communication system, which among the following is not a typical transmitter function?
- A. Coding for error protection
 - B. Decoding of input data
 - C. Electrical to optical conversion
 - D. Recording to match output
149. In an optical fiber system, the concept of numerical aperture is ap describing the ability of _____.
- A. light collection
 - B. light scattering
 - C. light dispersion
 - D. light polarization
150. What is the typical value of refractive index of ethyl alcohol?
- A. 1
 - B. 1.36
 - C. 2.6
 - D. 3.4

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