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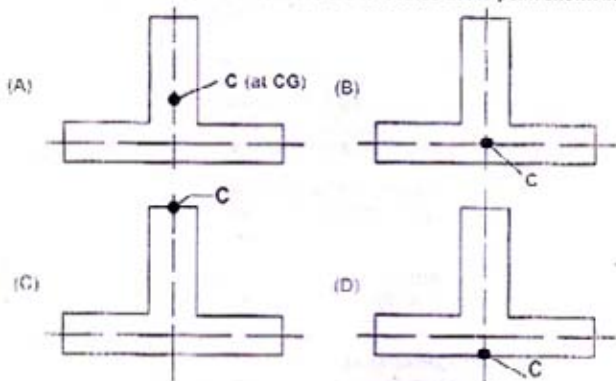
# RRB Secunderabad Sr. Section Engineers Exam

(Held on 21-12-2014)

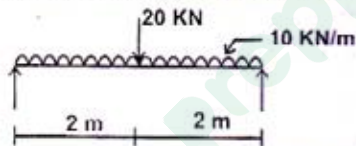
## SECTION I ENGLISH VERSION

- When donor type impurity is added to a semi-conductor material  
(A) electrons are generated and material is N-type  
(B) electrons are generated and material is P-type  
(C) holes are generated and material is called P-type  
(D) holes are generated and material is called N-type
- To increase bandwidth, the distributed amplifier utilizes  
(A) common base configuration (B) Transmission line  
(C) tuned Circuit (D) Cascade amplifier
- A p-n junction diode's dynamic conductance is directly proportional to  
(A) the applied voltage (B) the temperature  
(C) its current (D) the thermal voltage
- King closers are related to  
(A) doors and windows (B) King post truss  
(C) Queen Post truss (D) Brick Masonry
- Seasoning of timber is required to  
(A) Soften the timber (B) Harden the timber  
(C) Straighten the timber (D) Remove sap from the timber
- Batching in concrete refers to  
(A) Controlling the total quantity of each batch  
(B) Weighing accurately, the quantity of each material for a job before mixing  
(C) Controlling the quantity of each material into each batch  
(D) Adjusting the water to be added in each batch according to the moisture content of the materials being mixed in the batch
- Gypsum is used as an admixture in cement grouts for  
(A) accelerating the setting time  
(B) retarding the setting time  
(C) increasing the plasticity  
(D) reducing the grout shrinkage
- The maximum deflection of a fixed beam carrying a central load W is equal to (other notations standard)  
(A)  $\frac{WL^3}{48EI}$  (B)  $\frac{WL^3}{96EI}$   
(C)  $\frac{WL^3}{192EI}$  (D)  $\frac{5}{384} \frac{WL^3}{EI}$

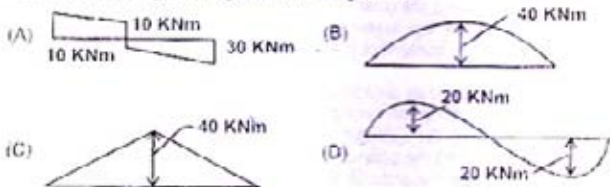
9. In a thin-wall T-section, the shear centre C is located at the point shown in



10. A simply supported beam is loaded as below



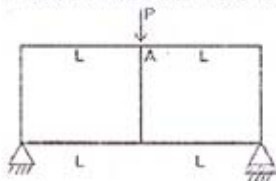
The corresponding Bending Moment Diagram is



11. What is the radius of Mohr's circle in case of bi-axial state of stress ?

- (A) Half the sum of the two principal stresses
- (B) Half the difference of the two principal stresses
- (C) Difference of the two principal stresses
- (D) Sum of the two principal stresses

12. What is the moment at A for a frame shown below :



Each vertical member has very large Moment of Inertia

- (A)  $\frac{PL}{2}$  (B)  $\frac{PL}{4}$   
(C)  $\frac{PL}{8}$  (D)  $\frac{PL}{16}$
13. A structure has two degree of indeterminacy. The number of plastic hinges that would be formed at complete collapse is  
(A) 0 (B) 1 (C) 2 (D) 3
14. For laminar flow between parallel plates separated by a distance  $2h$ , head loss varies  
(A) directly as  $h$  (B) inversely as  $h$   
(C) directly as  $h^2$  (D) inversely as  $h^3$
15. In Surveying, Offsets are  
(A) lateral measurements made with respect to main survey line  
(B) perpendiculars erected from chain lines  
(C) taken to avoid unnecessary walking between stations  
(D) measurements which are not made at right angles to the chain line
16. The true length of a line is known to be 200 m. When this is measured with a 20 m tape, the length is 200.8 m. The correct length of the 20 m tape is  
(A) 19.92 m (B) 19.98 m  
(C) 20.04 m (D) 20.08 m
17. Shear failure of soils takes place when  
(A) the angle of obliquity is maximum  
(B) maximum cohesion is reached in cohesive soils  
(C)  $\phi$  reaches its maximum value in cohesionless soils  
(D) residual strength of the soil is exhausted

18. What is the process of utilizing one data link for transmission of a group of variables known as ?  
(A) Encoding (B) Decoding  
(C) Demultiplexing (D) Multiplexing
19. In order to increase the range of a voltmeter  
(A) a low resistance is connected in parallel  
(B) a low resistance is connected in series  
(C) a high resistance is connected in parallel  
(D) a high resistance is connected in series
20. The internal resistance of the milliammeter must be very low for  
(A) high accuracy  
(B) high sensitivity  
(C) minimum effect on the current in the circuit  
(D) maximum voltage drop across the meter
21. In order to have fast, steady and accurate responses, the motors should have  
(A) Critical damping  
(B) Under damping  
(C) a very high damping coefficient  
(D) No damping
22. In case of overdamping, the instrument will become  
(A) Oscillating (B) dead  
(C) fast and sensitive (D) slow and lethargic
23. In reference to Acid rain, what is correct statement.  
(A) The pH value is below 5.6  
(B) It occurs due to presence of sulphuric acid or nitric acid in the atmosphere  
(C) Maximum acid is due to strong Carbonic Acid  
(D) Acid rain affects ecosystem
24. In Global Warming, the major contribution is due to  
(A) Carbon emission (B) Agriculture  
(C) Deforestation (D) Industry
25. Which of the following mechanisms is NOT for removing particulate matter from gas streams.  
(A) Gravitational settling (B) Centrifugal impaction  
(C) Electrostatic precipitation (D) Burning the particulate
26. Which one of the following is NOT Biotic components of ecology.  
(A) Consumers (B) Producers  
(C) Decomposers (D) Climate

27. Match Col. X (Result) and Col. Y (Cause)

<u>Col. X</u>	<u>Col. Y</u>
(P) Water pollution	1. Combustion of fossil fuel
(Q) Air pollution	2. Decaying of organic matter
(R) Noise pollution	3. Pesticides
(S) Soil pollution	4. High decibel
(A) P-2, Q-1, R-4, S-3	(B) P-1, Q-2, R-4, S-3
(C) P-3, Q-1, R-2, S-4	(D) P-1, Q-3, R-2, S-4

28. Part of the Computer where data and instructions are held is

- (A) Register Unit (B) Accumulator  
(C) Memory Unit (D) CPU

29. In a Computer, Assembler is

- (A) a program that places programs into memory and prepares them for execution  
(B) a program that automate the translation of assembly language into machine language  
(C) a program that accepts a program written in a high level language and produces an object program  
(D) is a program that appears to execute a source program if it were machine language

30. Which of the following is NOT a register in Computer ?

- (A) Accumulator (B) Stack Pointer  
(C) Program Counter (D) Buffer

31. Which Network protocol is used to send e-mail ?

- (A) FTP (B) SSH (C) POP 3 (D) SMTP

32. The use of a cache in Computer system increases the

- (A) available memory space for the program  
(B) available memory space for the data  
(C) available speed of memory access  
(D) addressing range of CPU

33. A microprocessor has 24 address lines and 32 data lines. If it uses 10 bits of opcode, the size of its Memory Buffer Register is

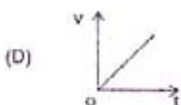
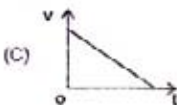
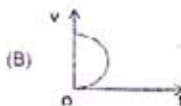
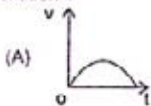
- (A) 22 bits (B) 24 bits  
(C) 32 bits (D) 14 bits

34. In a microprocessor when a CPU is interrupted, it

- (A) Stops execution of instructions  
(B) Acknowledges interrupt and branches off subroutine  
(C) Acknowledges interrupt and continues  
(D) Acknowledges interrupt and waits for the next instruction from the interrupting device

35. The MODEM is used with a personal computer to do which of the following ?  
 (A) Convert from serial to parallel and vice versa  
 (B) Convert signals between TTL and RS232 C standard and vice versa  
 (C) Convert from digital to analog signals and vice versa  
 (D) To convert the computer to a long distance communication link
36. The term digitization refers to  
 (A) conversion of analogue into digital  
 (B) conversion of digital into analogue  
 (C) use of analogue form of electricity  
 (D) a form of changing physical quantities
37. Which is NOT a Wireless Technology.  
 (A) Blue Tooth (B) A conventional telephone  
 (C) Wi-fi (D) Wi-Max
38. In an Engineering drawing, in double stroke Gothic lettering, which is correct.  
 (A) Letters are drawn thin  
 (B) The lettering template is used to draw the outline of letter  
 (C) This is not preferred for ink drawings  
 (D) This is having non-uniform line width
39. Match Col. X (Category) and Col. Y (Recommended Scale) in reference to an Engineering drawing.
- |   | <u>Col. X</u>   |    | <u>Col. Y</u> |
|---|-----------------|----|---------------|
| P | Enlarging Scale | 1. | 1 : 500       |
| Q | Full Scale      | 2. | 10 : 1        |
| R | Reducing Scale  | 3. | 1 : 1         |
|   |                 | 4. | 1 : 20        |
- (A) P - 4, Q - 1, R - 2, P - 3 (B) P - 2, Q - 3, R - 4, R - 1  
 (C) P - 1, Q - 3, R - 2, P - 4 (D) P - 2, Q - 1, R - 4, Q - 3
40. If RF is  $1/60000$  and distance, to be shown on drawing is 7.5 km, what is the length of line on drawing ?  
 (A) 12.5 cm (B) 8 cm (C) 45 cm (D) 10 cm
41. A parabola can be constructed on a drawing by the methods EXCEPT  
 (A) Eccentricity Method (B) Rectangle Method  
 (C) Parallelogram Method (D) Asymptote Method
42. Which of the Statements is NOT correct.  
 (A) Isometric scale is used to draw isometric projection  
 (B) Isometric scale is not used to draw isometric view  
 (C) A square is seen as rectangle in isometric  
 (D) A rectangle is seen as parallelogram in isometric

43. A particle moves along a circular path with constant speed. What is the nature of its acceleration ?  
 (A) It is zero (B) It is Uniform  
 (C) Its direction changes (D) Its magnitude changes
44. A body is at rest on the surface of the earth. Which of the following Statements is correct ?  
 (A) No force is acting on the body  
 (B) Only weight of the body acts on it  
 (C) Net downward force is equal to net upward force  
 (D) None of these is correct
45. The Specific Heat of the gas in an isothermal process is  
 (A) Zero (B) Infinite  
 (C) Negative (D) Remains constant
46. In a Simple Harmonic Oscillator, at the mean position  
 (A) Kinetic Energy is minimum, Potential Energy is maximum  
 (B) Both Kinetic and Potential Energies are maximum  
 (C) Kinetic Energy is maximum, Potential Energy is minimum  
 (D) Both Kinetic and Potential Energies are minimum
47. Mirage is a phenomenon due to  
 (A) Reflection of light (B) Refraction of light  
 (C) Total Internal reflection of light (D) Diffraction of light
48. Which of the following cannot be speed-time ( $v-t$ ) graph of a body in motion ?



49. Avogadro's number,  $N_A$  means  
 (A) number of protons in nucleus of an atom  
 (B) number of atoms in one gram atom of an element  
 (C) sum of the number of protons and the neutrons in the nucleus of an atom  
 (D) number of protons or electrons in one gram of Sodium





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