

Test 2: Subject Knowledge Test for Junior Engineer (Civil)

Date of Examination: 20.7.2019

Time: 2 Hrs

Name of the Candidate:										
Application No:										

Candidate's Signature

Invigilator's Signature

Instructions to Candidates:

1. Use of Calculators, cell phones and other electronic devices IS NOT permitted inside Examination Hall.
2. Candidate should carefully read the instructions on Question paper and mark correct entries in the Square bracket provided against each question
3. For each question, choose the correct response answer from out of four available options.
4. Each Correct answer carries one Mark and each wrong answer carries negative of 0.25 Mark. Marking more than one choice as answer will be treated as wrong answer.
5. Clarifications on questions are not permitted.
6. Rough work can be done in any blank space provided in the Question booklet only. Rough work should not be done anywhere except at the space provided at end of the question paper.
7. No candidate is allowed to leave the examination hall till the examination is over.

Part A – Junior Engineer (Civil)

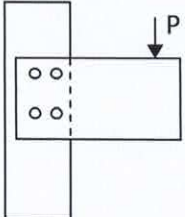
1	In the cylindrical container, the base radius is 8 cm. If the height of the water level is 20 cm, find the volume of the water in the container.	A) 5.6721 L	B) 4.0218 L	C) 3.8925 L	D) 4.97 L
2	A cylinder and a cone are of the same base radius and same height. Find the ratio of the volumes of the cylinder of that of the cone.	A) 1:3	B) 1:2	C) 3:1	D) 2:1
3	A toy is in the form of a cone mounted on a hemisphere of common base radius 7 cm. The total height of the toy is 31 cm. Find the total surface area of the toy.	A) 465	B) 912	C) 769	D) 858
4	The following is(are) physical hazard agent(s)	A) Falls	B) Electricity	C) Inhalation	D) All
5	Water is used to extinguish	A) Class-A fires	B) Class-B fires	C) Class-C fires	D) All of the above
6	The following class of fire occur in electrical equipment	A) Class-A fires	B) Class-B fires	C) Class-C fires	D) All of the above
7	_____ is best suited to extinguishing oil or flammable liquid fire.	A) Soda acid	B) Vaporizing liquid	C) Foam	D) Dry chemical
8	Occupational Safety and Health Act (OSHA) ensures that employees have been provided with	A) Job	B) Personal Protective Equipment	C) Insurance	D) Security
9	Electrical hazards arise due to _____.	A) faulty switches	B) spray chemicals	C) farm animals	D) all of the above
10	How long would you check to see if an unconscious casualty is breathing normally?	A) No more than 10 seconds.	B) Approximately 10 seconds.	C) Exactly 10 seconds	D) Atleast 10 seconds
11	Which medical condition will develop from severe blood loss?	A) Shock	B) Hypoglycaemia.	C) Anaphylaxis.	D) Hypothermia.
12	A non-renewable energy among the following is	A) Wind	B) Biomass	C) Coal	D) Tides
13	Carbon dioxide contributes _____ percent to global warming.	A) 10 to 15%	B) 20 to 25%	C) 30 to 35%	D) 40 to 45%
14	Which one of the following is a result of ozone layer depletion?	A) Increase in the oxygen level	B) Increase in the nitrogen level	C) Increase in the phosphorous level	D) Increases in the carbon dioxide level
15	Which one of the following cause ozone layer depletion?	A) Oxygen	B) Mercury	C) Sodium Silicate	D) Methyl chloroform

16	Groundwater is a source of trouble at which place?		[]
	A) Plains	B) Slopes	
	C) Rivers	D) Lakes	
17	Which of the following gases has the highest affinity for blood hemoglobin?		[]
	A) Carbon dioxide	B) Oxygen	
	C) Carbon monoxide	D) Nitrogen	
18	Which of the following are sources to fluorine air pollution?		[]
	A) Coal combustion	B) Steel industries	
	C) Phosphate fertilizer industries	D) All the mentioned	
19	Which of these is most likely to cause an accident in a workplace?		[]
	A) Administration	B) Manual Handling	
	C) Adequate lighting	D) Excessive Noise	
20	Handy fire extinguishers kept in chemical plants are containing		[]
	A) Dry chemical powder	B) Carbon dioxide	
	C) Either (a) or (b)	D) Foam	
21	In case of an accident, the victim should immediately be		[]
	A) Asked to take rest	B) Enquired about the accident	
	C) Attended to	D) Left to himself without treatment	
22	Temporary hardness to water is caused due to		[]
	A) Magnesium carbonate	B) Calcium sulphate	
	C) Magnesium sulphate	D) Magnesium chloride	
23	Which of the following is not a water borne disease?		[]
	A) Typhoid	B) Scabies	
	C) Cholera	D) Hepatitis	
24	Which of the following is not a water hygiene disease?		[]
	A) Leprosy	B) Conjunctivitis	
	C) Trachoma	D) Diarrhoea	
25	How groundwater contamination occurs from landfill?		[]
	A) Through leachate	B) Dust	
	C) Chemicals	D) Rodents	
26	Which of the following Hazardous waste cannot be recycled?		[]
	A) Used Oil	B) Treatment waste	
	C) Paints	D) Batteries	
27	Which of the following techniques can be implemented to reduce hazardous waste?		[]
	A) Analysis	B) Transportation	
	C) Trans boundary movement	D) Chemical exchange	
28	A computer hardware that is capable of executing a sequence of instruction is called		[]
	A) CU	B) Processor	
	C) CPU	D) ALU	
29	In computer, MICR stands for		[]
	A) magic in character redo	B) magnetic ink character recorder	
	C) magnetic ink character reader	D) magnetic ink chart receipt	
30	RAM' stands for		[]
	A) Random Access Memory	B) Read Access Memory	
	C) Read Arithmetic Memory	D) Random Arithmetic Memory	
31	Devices that accepts data from outside computer and transfer into CPU are called		[]
	A) input devices	B) digital devices	
	C) analogue devices	D) truth table peripherals	
32	Central Processing Unit (CPU) consists of		[]
	A) control unit	B) arithmetic and logic unit	

1.	Symmetric errors are those errors	A. Whose effects are cumulative and can be determined B. On circumference of circumscribing circle C. Outside the great triangle D. In the centre of the circumscribing circle	[]
2.	The bearings of the lines AB and BC are $S 30^{\circ} E$ and $N 70^{\circ} E$ respectively. The inclined angle ABC is	A. 220 B. 110 C. 40 D. 100	[]
3.	Which of the following test indicates the work done on concrete during the test?	A. Split tension Test B. Slump Test C. Compacting factor Test D. Kelley Ball Test	[]
4.	The normal annual precipitation at stations X, Y, Z and C are 700mm, 1000mm, 900mm and 800mm respectively. If the storm precipitation at three stations A, B and C were 100mm, 90mm and 80mm respectively, then the storm precipitation for station X will be	A. 105mm B. 70mm C. 80mm D. 90mm	[]

Test 2: Part B – Junior Engineer (Civil)

33	Keyboard and mouse are	A) DC devices B) analogue devices C) truth table devices D) input devices	[]
34	Devices that are controlled by central processing unit but are not a part of it are called	A) peripheral devices B) arithmetic units C) control unit devices D) main store devices	[]
35	What is the specific gravity of a substance with density 100 kg/m^3 with respect to reference substance of density 100 lb/m^3 ?	A) 1.1 B) 2.2 C) 3.3 D) 4.4	[]
36	Check list for Job Safety Analysis (JSA) consists of	A) Work area, material, machine, tools B) Men, machine, material, tools C) Men, machine, work area, tools D) Men, work area, Material, tools	[]
37	When performing CPR on an adult, how deep the chest compression should be?	A) 1 inch B) 2 inches C) 3 inches D) 4 inches	[]
38	Which of the following signs is most consistent with a stroke?	A) Confusion B) Chest pain C) Facial droop D) Nausea	[]
39	What powers the hydrologic cycle?	A) Earthquakes. B) Gravity C) Internal Heat D) Solar Energy	[]
40	Which of the following devices can be used to measure ozone in the stratosphere from the ground?	A) Spectrometer B) Photometer C) Spectrophotometer D) Spectro-ozonometer	[]

5.	The maximum bending stress induced in a steel wire of modulus of elasticity 200 GPa and diameter 1 mm when wound on a drum of diameter 1 m is equal to A. 50 N/mm ² B. 100 N/mm ² C. 200 N/mm ² D. 400 N/mm ²	[]	
6.	A simply supported beam of span L and flexural rigidity EI, carries a unit point load at its centre. The strain energy in the beam due to bending is A. $L^3/48EI$ B. $L^3/192EI$ C. $L^3/16EI$ D. $L^3/96EI$	[]	
7.	When minimum eccentricity in column does not exceed 0.05 times the lateral dimension, the axial load carrying capacity is reduced by A. 8% B. 11% C. 14% D. 20%	[]	
8.	In a parallel system of forces acting in a plane the number of equilibrium equations are A. 4 B. 3 C. 6 D. 2	[]	
9.	The viscosity of a A. gas decreases with increase in temperature B. liquid increases with increase in temperature C. is independent of temperature D. liquid decreases with increase in temperature	[]	
10.	A falling drop of rain acquires spherical shape due to A. Viscosity B. Vapour pressure C. Capillarity D. Surface tension	[]	
11.	The rivets shown in Fig.1 due to eccentric load "P" are subjected to A. Combined direct shear and tensile stress B. Combined bending and torsional stress C. Combined direct and torsional stress D. Combined bending and direct stress		[]
12.	The plasticity characteristics of clays are due to A. Adsorbed water B. Free water C. Capillary water D. Absorbed water	[]	
13.	The capillary rise in a small tube is due to A. Cohesion B. Adhesion C. Cohesion and Adhesion D. Specific Gravity of fluid	[]	
14.	A soil has a discharge velocity 6×10^{-7} m/s and a void ratio of 0.5. Its seepage velocity is A. 12×10^{-7} m/s B. 18×10^{-7} m/s C. 30×10^{-7} m/s D. 3.6×10^{-7} m/s	[]	
15.	If the width of carriage way is 12.5m, outer edge 0.5m higher than the lower edge, the super elevation A. 1 in 25 B. 1 in 50 C. 1 in 12.5 D. 1 in 100	[]	

16.	The ideal shape of a transition curve is A. Clothoid B. Cubic Spiral C. Cubic Parabola D. Laminscate	[]
17.	The maximum super elevation on hill roads should not exceed A. 5% B. 7% C. 8% D. 10%	[]
18.	The CBR value obtained at 5mm penetration is higher than that at 2.5mm, then the test is repeated for checking; and the check test reveals a similar trend, then the CBR value is to be reported as the A. Mean of the values for 5mm and 2.5mm penetrations B. Difference of higher and lower value C. Lower value corresponding to 2.5mm penetration D. Higher value obtained at 5mm penetration	[]
19.	The probability of completion of any activity within its expected time is A. 50% B. 84.1% C. 99.9% D. 100%	[]
20.	Slack time refers to A. an activity B. an event C. both event and activity D. none	[]
21.	The plan of a survey plotted to a scale of 10m to 1cm is reduced in such a way that a line originally 10cm long now measures 9cm. the area of the reduced plan is measured as 81cm ² . The actual area(m ²) of the survey is A. 10000 B. 6561 C. 1000 D. 656	[]
22.	A 6 hours storm had 4cm rainfall and the resulting runoff was 2cm. If ϕ index remains at the same value, the runoff due to 10cm of rainfall in 12 hours in the catchment is A. 4.5 cm B. 6.0 cm C. 7.5 cm D. 9.0cm	[]
23.	A simply supported beam of length 4m is subjected to a couple of intensity 10kN.m. at one end of the beam (creating sagging moment). What is the mid span deflection of the beam if the flexural rigidity of the beam is $4 \times 10^3 \text{ kN.m}^2$. A. 2.5mm B. 1.25mm C. 5.0mm D. 4mm	[]
24.	The variation of bending stress across the depth of a circular cross section is A. Linear B. Parabolic C. Constant D. Sinusoidal	[]
25.	Location of maximum flexural shear stress in a triangular section is A. Top fiber B. Neutral axis C. Mid height D. $\frac{3}{4}$ th height from top	[]
26.	Modulus of elasticity and Poisson's ratio of a material are 200GPa and 0.25 respectively. Bulk modulus of the material is A. 100GPa B. 200GPa C. 167GPa D. 133GP	[]
27.	In a tension test the breaking stress is found to be 100MPa and the actual breaking stress is 200MPa. The percentage reduction in cross sectional area is A. 200% B. 50% C. 100% D. 400%	[]

[]	<p>28. A reinforced concrete beam of width 250mm and effective depth 400mm is reinforced with 8-20mm diameter HYSD bars. What is the ultimate flexural strength of the beam, if the grade of concrete is M25? A. 138kN.m B. 149kN.m C. 133kN.m D. 289kN.m</p>	[]
[]	<p>29. The population of a town in three consecutive years are 5000, 7000 and 8400 respectively. The population of the town in the fourth consecutive year according to geometrical increase method is A. 9500 B. 9800 C. 10100 D. 10920</p>	[]
[]	<p>30. A city supply of 15000 cubic meters of water per day is treated with a chlorine dosage of 0.5ppm. For this purpose, the requirement of 25% bleaching powder per day would be A. 300 kg B. 75kg C. 30kg D. 7.5kg</p>	[]