BASIC CIVIL AND MECHANICAL ENGINEERING [0BSES113]

MODEL ANSWER

Section I – Basic Civil Engineering

Q No	Particular	
Q1A	Explain the role of civil engineer in various construction activities ANS - Min. Eight role including technical data - Each carry 1 mark.	
Q1B	Enumerate the various governing principles of building planning. Explain any three of them with neat sketches ANS – Detailed explanation of any three principles including diagram and technical data – Each carry 3 marks	
Q1C I	List various materials used for building construction with two uses of each ANS - Two uses of any 4 materials - Each 1 mark	
Q1C II	Write a short note on : 'Bulking of Sand' ANS - Detailed note with technical data - 4 mark	
Q2A	Define scale. Define RF with formula and find the RF of following i) 10 cm = 2 km ii) 5 mm = 100 cm iii) 1 cm = 500 m iv) 1 mm = 10 km	
Q2B	The following are the bearings observed in Traversing, with a compass, an area where local attraction was suspected, calculate the interior angles of the traverse and correct them if necessary. Line FB BB AB 150°0' 330°0' BC 230°30' 48°0' CD 306°15' 127° 45' DE 298°0' 120°0' EA 49° 30' 229° 30' ANS – Interior angle A = 79°30' Interior angle B = 99°30' Exterior angle C = 258°15' Interior angle C = 101°45' Exterior angle D = 170° ' Interior angle D = 189°45' Interior angle E = 70°30' Sum of interior angles = 541° Correction per angle = - 60'/5 = - 12' Angle Calculated Value Correction Corrected Values A 79°30' -12' 79°18' B 99°30' -12' 99°18' C 101°45' -12' 101°33' D 189°45' -12' 189°33' E 70°30' -12' 70°18'	
Q2C I	Define the terms i) Reconnaissance survey ii) Index plan with neat sketch. ANS – Each one definition carry 2 mark	
Q2C II	Explain in detail local attraction? ANS - Detailed explaination with technical data - 4 mark	
Q3A	The following consecutive reading, where taken with a level and a staff on her	9

continuously sloping ground at 20 meter interval 0.602 (BM = 192.12), 1.234, 1.860, (2.574 & 0.238) C.P. , 0.914, 1.936, (2.872 & 0.568) C.P., 1.824, 2.722. Draw up a page of level book, by using rise and fall method find out R.L.s of all points. Calculate gradient of line joining first and last station. Write sample calculation.

Sum. of BS = 1.408   Sum. of FS = 8.168   Sum. of fall = 6.76
Arithmetic check = Sum. of BS – Sum. of FS = Last RL -1st RL = 6.76
Gradient = -1/23.66 or 1 in 23.66 (Falling)

| Q3B | The following consecutive reading were taken by means of a dumpy level and a four meter levelling staff on continuously sloping ground 0.500 (on P), 0.850, 1.640, 2.570, 3.810, 0.430, 1.960, 3.140, 0.250, 1.640, 2.850 (on Q) RL of Station P is 190.00 m. Enter the above reading in Level book page and determine RL of each point by rise and fall method. Find also the average slope of PQ if all the observations are taken at a common interval of 20 m. Instrument was shifted after 80 m and 120 m.

Sum. of BS = 1.18   Sum. of FS = 9.80   Sum. of fall = 8.620
Arithmetic check - Sum. of BS – Sum. of FS = sum of rise – sum of fall = Last RL -1st RL = -8.62
Gradient = Diff in RL/ total dist. = -8.62/160 = - 0.053875
1 in 18.56 (Falling) | |

Model ANSWER

Section II – Basic Mechanical Engineering

Q4A i	Classification of internal combustion engine (Minimum four types) = **4 Marks**
Q4A ii	Advantages of hydroelectric power plant.= **2 Marks** Disadvantages of hydroelectric power plant.= **2 Marks**
Q4b	Diagram of Nuclear power plant = **2 Marks** Construction of Nuclear power plant = **3 Marks** Working of Nuclear power plant =**3 Marks**
Q4C	Diagram of four stroke diesel engine = **2 Marks** Construction of four stroke diesel engine = **3 Marks** Working of four stroke diesel engine = **3 Marks**
Q5A I	Function of bearing= **2 Marks** Classification of bearings=**2 Marks**
Q5A II	Soldering process = **2 Marks** Application of Soldering process = **2 Marks**
Q5B	**Explanation of Minimum 4 gear drive with digram** (Simple gear grain, compound gear train, reverted gear train, epicylic gear grain) **(Each gear train carry 2 marks)**
Q6A	Diagram of sand casting process= **2 Marks** Construction= **3 Marks** Working= **4 Marks**
Q6B	Diagram of TIG welding process = **2 Marks** Construction of TIG welding= **3 Marks** Working of TIG welding= **4 Marks** .
Q6C	Diagram of MIG welding process = **2 Marks** Construction of MIG welding= **3 Marks** Working of MIG welding= **4 Marks**