Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course Name : Commercial Polymetallic mining & simulation **Semester : VIII**
Programme Name : B.Tech Mining Engineering **Time : 03 hrs**
Course Code : MIEG 351 **Max. Marks: 100**

SECTION A

S. No.		Marks	CO
Q 1	i. Describe the diagnostic feature of Manganese nodules ii. Define the role of sedimentation in formation of nodules iii. Differentiate between slow and quick formed nodules w.r.to the source iv. What is Cuprion process? v. Geographically, demarcate the three potential areas of nodular deposits.	**2*5 =10**	**CO1**
Q 2	i. Discuss the morphology of polymetallic ii. Specify the size of diagenetic nodules iii. Explain the framework of commercial polymetallic nodules iv. Highlight the reason behind low growth of polymetallic nodules compared to the surrounding sediments v. Define Vernadites	**2*5= 10**	**CO2**
Q 3	i. Discuss the significance of CCZ ii. Analyze the significance of EEZ in mining of cobalt crust/ sea-bed nodules iii. Based upon size, classify deep ocean polymetallic nodules iv. Examine the role of stable environment in growth of nodules v. Discuss the parameters to differentiate between economic and non-economic nodular deposits	**2*5= 10**	**CO4**

SECTION B

Q 4	i. Explain the three factors largely responsible for waning of interest in sea-bed nodule extraction ii. Define the function of UNCLOS.	**5*2 =10**	**CO2**
Q 5	Appraise the various theories governing the formation of Manganese nodules and suggest the most suitable one	**10**	**CO2**
Q 6	Discuss the favorable characteristics of deep ocean mining over conventional mining	**10**	**CO1**
Q 7	Critically examine the detrimental effects of deep sea mining	**10**	**CO3**
Q 8	Discuss the essential factors responsible for formation of Manganese Nodules **OR**	**10**	**CO1**

	Apart from educational qualifications, judge the role of mine production in deciding the statutory positions in Mine.		
SECTION C			
Q 9	Evaluate the performance of CLB system in deep ocean Nodular Mining. **OR** Elaborate the technique/s of exploring sea bed nodules, emphasizing the significance of Multi-beam echo sounder technique	**20** **10+10**	**CO4**